SCOMM

#21:1

Introduced: 2/11/75
Referred: Finance

IN THE HOUSE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

HOUSE BILL NO. 146

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act making a special appropriation to the Department of Natural Resources, Alaska Royalty Oil and Gas Development Advisory Board; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $14,200 is appropriated from the general fund to the Department of Natural Resources to fund the Alaska Royalty Oil and Gas Development Advisory Board for the fiscal year ending June 30, 1975.

* Sec. 2. This Act takes effect immediately in accordance with AS 01.10.070(c).

Introduced: 5/5/76
Referred: Resources

IN THE SENATE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

SENATE CONCURRENT RESOLUTION NO. 106

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - SECOND SESSION

Relating to the taking of state-owned royalty oil or gas in-kind and its disposal by sale.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the legislature by enactment of the Alaska Royalty Oil and Gas Development Board statute, AS 38.06. et seq., has established a clear policy of favoring the taking of state-owned royalty oil or gas in-kind and making that royalty available for in-state uses; and

WHEREAS the State of Alaska presently receives a one-eighth royalty on gas produced from the North Cook Inlet Gas Field in value, but has the right to receive this royalty in-kind; and

WHEREAS the commissioner of natural resources has entered into a contract for the sale and purchase of state-owned royalty gas from the North Cook Inlet Gas Field with Alaska Pipeline Company, an Alaskan corporation which sells natural gas in the Anchorage and North Kenai Road areas; and

WHEREAS the contract between the State of Alaska and Alaska Pipeline Company requires as a condition precedent to its becoming effective approval by a majority of each house of the Legislature;

BE IT RESOLVED by the Alaska State Legislature that approval of Alaska Royalty Gas Sale No. 76-1, the contract for the sale of state royalty gas from the North Cook Inlet Gas Field to Alaska Pipeline Company, is hereby approved.

approved Feb 24, 1976

INTERIM REPORT
OF THE
JOINT GAS PIPELINE IMPACT COMMITTEE

This Committee, through public hearings and staff investigation, has become convinced that immediate action by the State of Alaska is essential if the citizens of this State are to receive maximum benefit from the State's natural gas resource.

The Committee will issue a full and complete report on its findings and recommendations at a later date, but is impelled to submit this interim report to the Legislature and the people of the State of Alaska because of the urgency of the present situation.

The Committee finds and concludes the following:

1. A federal decision authorizing the transportation of North Slope natural gas across Canada would be inimical to the interests of the State of Alaska. The State's resource would be drained, its people denied access to a premium fuel and raw material, its work force deprived of employment opportunities, and productive economic growth would be thwarted.
2. A federal decision authorizing the transportation of North Slope natural gas across the State of Alaska to an open port will serve the best interests of the State.
3. The level of benefits, and burdens reasonably to be expected by the State as a consequence of any decision on a North Slope gas transportation system are of such magnitude that the routing decision must be regarded as critical to the future of the State. Action to secure a Trans-Alaska routing must be pursued as expeditiously as possible; no reasonable step should be left untaken.
4. The position of the state as owner of a one-eighth royalty in natural

gas and natural gas liquids produced from State-owned lands on the North Slope creates an immediate opportunity for effective State action which can assist in securing a Trans-Alaska transportation system.

5. Affirmative, agressive action by the Governor, the Commissioner of Natural Resources, the State Royalty Board, and the Legislature with respect to the State's royalty gas is imperative.
6. Effective use of the State's royalty gas, to serve the best interests of the State, requires:
   a. The State must elect to take its royalty share of natural gas and natural gas liquids in kind.
   b. The State must commit a portion of its royalty gas to purchasers who will assist in securing approval of a Trans-Alaska transportation system, and who will thereafter utilize such a Trans-Alaska system.
7. Present levels of natural gas demand in Alaska permit a commitment of a portion of the State's royalty gas to purchasers outside the State; while every effort must be made to retain a substantial part of Alaska's gas for present and future in-state needs, it is in the overall best interests of the State to offer for sale outside the State, a substantial portion of the State's royalty gas to purchasers who can, and will, assist in securing authorization of a Trans-Alaska transportation system.
8. Those persons and firms interested in the construction and operation of a Trans-Alaska transportation system can materially alleviate State unemployment problems, and the State should, in striking a bargain for the commitment of State resources to a Trans-Alaska

system, secure appropriate commitments for the hire and training of Alaska residents in the construction and operation of such a system.

9. Finally, the risk that non-action by the State, or delayed action by the State, will cause the selection of a Trans-Canadian routing, and the risk that the State will lose substantial benefit of its natural gas resource are so great, it is the sense of this Committee that State action must not be delayed.

BY REASON OF THE FOREGOING, IT IS THE RECOMMENDATION OF THIS COMMITTEE THAT:

1. The commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with interested out-of-state purchasers to reach definitive sales and/or exchange agreements covering disposition of substantial portions of the State's royalty gas on the best obtainable terms.
2. The Commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with natural gas transporters involved in the proposal for a Trans-Alaska system to reach definitive transportation agreements covering the State's royalty gas sold for out-of-state use, and the State's withdrawal of the unsold portion of its royalty gas from the system for in-state use; appropriate commitments should be obtained with respect to hire and training of Alaska residents.
3. The arrangements and agreements so negotiated should be presented to the Legislature for ratification prior to the end of the Second Session of the Ninth Legislature to avoid, if possible, a special session.
4. The Legislature should hold itself ready for immediate consideration

of and prompt action on, the recommendations of the Commissioner and Board.

5. Such arrangements, contracts, and agreements as are negotiated by the Commissioner and Board and approved by the Legislature should be incorporated into the pending applications for a Trans-Alaska transportation system, presented to the Federal Power Commission by the appropriate transporter-applicant, and approval thereof obtained in the pending Federal Power Commission proceedings.
6. The Legislature should adopt SCR 66 and further seek the active cooperation of all owners of North Slope gas in support of the Trans-Alaska pipeline route.

2/24/76

GAS PIPELINE IMPACT COMMITTEE
February 24, 1976 - 1:00 PM

MEMBERS PRESENT: Senator John Rader, Chairman, Clark Gruening, Vice-Chairman, Senator John Huber, Senator Pat Rodey, Senator Kay Poland, Rep. Bob Bradley, Rep. Keith Specking, Rep. Nels Anderson, Rep. Steve Cowper

MEMBERS ABSENT: Rep. Ramona Kelley, Rep. Glenn Hackney, Senator Frank Ferguson, Senator Terry Miller, Senator Clem Tillion

CALL TO ORDER
The meeting was called to order by Chairman John Rader.

INTERIM REPORT OF THE JOINT GAS PIPELINE IMPACT COMMITTEE
Chairman Rader presented copy to members of proposed Interim Report, prepared by Rush Moody of Baker and Botts, Washington, D.C.

Committee members reviewed the report paragraph by paragraph for additions, deltions, suggestions, etc.

Representative Bradley suggested delineation of the Governor and Commissioner of Natural Resources in Conclusion #5, however, it was felt that specific figures named might inhibit negotiations.

Decision was made to add the word "and" in Conclusion #6(a): "The State must elect to take its royalty share of natural gas and natural gas liquids in kind", at the suggestion of Representative Gruening.

Representative Gruening stated that "must commit" in Conclusion #6(b) was perhaps too strong. Concensus of the Committee members was to express the statement with strong language. Motion was made TO SUPPORT AGGRESSIVE AND AFFIRMATIVE ACTION AND MAINTAIN MANDATORY LANGUAGE. The motion passed, with the opposition of Representative Gruening noted.

Discussion was held concerning Conclusion #7 that: "Present levels of natural gas demand in Alaska permit a commitment of a portion of the State's royalty gas to purchasers outside the State; while every effort must be made to retain a substantial part of Alaska's gas for present and future in-State needs, it is in the overall best interests of the State to offer for sale outside the state, a substantial portion of the State's royalty gas to purchasers who can, and will, assist in securing authorization of a Trans-Alaska transportation system". Representative Bradley asked for the "wisdom of the Chair" regarding this matter. Chairman Rader felt that if position was not taken by the Legislature that a special session may be imminent, or the decision would be postponed until the legislative session next year. Chairman presented the alternative to give the Royalty Board the authority to act on this issue. Representative Specking felt that the Royalty Board could complete, and the Legislature could ratify before the end of this session. Representative Cowper felt that this body should not surrender any more of the State's authority to the Executive Branch.

Chairman Rader proposed the following change to Recommendation #3: "The arrangements and agreements so negotiated should be presented to the Legislature for ratification as soon as possible and in all events prior to the end of the Second Session of the Ninth Legislature to avoid, if possible, a special session". Representative Anderson moved TO ACCEPT CHAIRMAN RADER'S CHANGE OF RECOMMENDATION #3. Representative Cowper moved TO OMIT THE WORDS "AS SOON AS POSSIBLE AND IN ALL EVENTS" FROM RECOMMENDATION #3. The change to Recommendation #3 as proposed by Chairman Rader, and amended by Representative Cowper, passed unanimously.

Representative Anderson moved TO ADOPT THE INTERIM REPORT WITH CHANGES AS NOTED BY THE COMMITTEE. The motion passed unanimously.

SUPPLEMENTAL APPROPRIATION CONCERNING ROYALTY GAS

Decision was made by Committee members for introduction of a bill "Rules Committee by Request" concerning a $50,000. appropriation for initiating supplemental appropriation to the Commissioner of Natural Resources to begin negotiations for commitment of North Slope royalty gas. Back up information on the appropriation will be submitted at the presentation of bill to the Finance Committee. Representative Anderson moved THAT APPROPRIATIONS BILL FROM THIS COMMITTEE BE SUBMITTED. Without further Committee action, the motion passed with no objection.

BANKING LEASES

Committee members discussed including a banking option in future royalty gas leases.

Representative Anderson moved that STAFF PREPARE PERMISSIVE BANKING BILL TO BE PRESENTED THROUGH THE SENATE AND HOUSE RULES COMMITTEES. Chairman Rader stated that copies of the bill would be distributed to Committee members informing them of bill presentation date. The motion passed with no objection.

ECONOMIC WASTE

Discussion was held concerning definition of economic and physical waste for submission in a billrelating to gas and oil production. Representative Anderson moved that THIS BILL BE PREPARED WITH INCLUSION OF "ECONOMIC WASTE" DEFINITION. The motion passed.

RESOLUTION DRAFT 2/23/76

Draft of a resolution dated 2/23/76 regarding severance tax on natural gas produced in Alaska was reviewed by Committee members. Representative Bradley moved THAT CHAIRMAN RADER BY EMPOWERED TO INTRODUCE THE RESOLUTION. With the minor exception that reference to Honorable Nathan Litt, Federal Power Commission, Washington, D.C. was misspelled, and in fact, is Honorable Nahum Litt, the motion was passed.

AUTHORIZATION OF COMMITTEE PROPOSALS

Chairman Rader proposed that the Committee would function by minutes rather than by circulating reports. The minutes would be used to give Chairman Rader the authority to submit bills, resolutions, and the report as authorized by the Committee. The proposal was approved with no objection.

ADJOURNMENT

The meeting was adjourned at 1:50 PM.

Alaska State Legislature

Senate

JUNEAU, ALASKA

February 27, 1976

Senator Chancy Croft
President of the Senate
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

Representative Mike Bradner
Speaker of the House
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

RE: Interim Report of the Joint Gas Pipeline Impact Committee

Dear Mr. President and Mr. Speaker:

Please consider this to be a letter of transmittal of the Interim Report of the Joint Gas Pipeline Impact Committee existing pursuant to H.B. 258 "The Gas Pipeline Impact Committee", Chapter 170 SLA 75. I request that this letter of transmittal, together with the report, be read into the appropriate Journal in each house.

As an aid to the interpretation of the Interim Report, I submit the following as being my understanding of the sense of the Committee:

1. The Committee does not intend to suggest that the Commissioner of Natural Resources or the Royalty Board enter into unreasonable agreements with prospective purchasers. It is the sense of the Committee that Alaska should indicate that it is a "willing seller" of a portion of it's gas and is seeking a "willing buyer" on terms which will reserve as much gas as possible for future use to meet Alaska's internal domestic and other needs. The Committee would expect the executive to negotiate the best possible agreement. Understanding, that when such an agreement is negotiated, it may or may not be acceptable to the Legislature. It may be that the executive will negotiate the best possible agreement, at the same time recommending against its implementation on the basis that too little is received by the State and too much given by the State. We believe that it is imperative, however, in the conduct of the people's business, that such a tentative agreement be made public and its merits debated.

2. We do not wish to tie our negotiator's hands by quantifying the word "substantial" as used in paragraph #7 in the Committee's findings, and paragraph #1 of the Committee's recommendations.

3. The Committee does not suggest an arbitrary time deadline for our executive negotiators. We do point out, however, for the agreement to be finalized, legislative approval is necessary and a special session should be avoided if possible.

4. We do not intend in any manner to preclude negotiations for use of royalty gas within the State of Alaska and the further exploration of petrochemical and domestic uses. The major thrust of the Committee's recommendations is based on the belief that a Trans-Alaska pipeline is essential for future domestic and petrochemical in-state use options of North Slope gas.

5. Pursuant to other action by the Committee, the following have been introduced by the respective Rules Committee by request:

SCR 85/HCR 107	"Relating to the Impact on Alaska of a Trans-Canada Gas Transportation System"
SB 685/HB 848	"An Act Making a Special Appropriation to the Department of Natural Resources for the Purpose of Conducting Negotiations with Prospective Purchasers of North Slope Natural Gas and Providing for an Effective Date"
SB 686/HB 850	"An Act Relating to Waste of Oil and Gas and Providing for an Effective Date"
SB 687/HB 849	"An Act Relating to the Leases of State Land for Oil and Gas into taking of Royalty Gas from them and Providing for an Effective Date"

6. Finally, and most importantly, our recommendations are based on the facts and circumstances as they exist today.

   The situation may change at any time rendering the presently recommended strategy inappropriate. For example, it has been suggested that the Federal Power Commission may conduct allocation proceedings nullifying contractual sales commitments. Gas may be more or less deregulated. The recent request of the President for authority to make the final route decision subsequent to January 1, 1977 may effect the political climate. It may be determined, as has been suggested by some, that neither the Trans-Alaska nor the Trans-Canada line are economically feasible at this time.

The recommendations of the Committee rely strongly on the advice of our consultant, Mr. Rush Moody, recently Vice-Chairman of the Federal Power Commission. The strategy may only be appropriate if the Federal Power Commission closes the certification hearings in May according to it's present schedule and further certifies one route based on the precedents, principles, and considerations customarily employed in past certification proceedings admittedly more limited in scope and of much less national significance.

The opportunity to use royalty gas to accomplish our public purposes as we perceive them may be lost unless we have substantially negotiated possible sale terms and are ready to move if and when the time arrives - which may be very soon.

Respectfully submitted,

Senator John Rader, Chairman
Gas Pipeline Impact Committee

JR/kb

Introduced: 3/7/75
Referred: Resources and Finance

Passed

BY FISCHER, ANDERSON, BOWMAN, BRADNER, BROWN, DAVIS, DUNCAN, FINK, FREEMAN, GUY, KELLEY MCKINNON, OSTERBACK, PARKER, PARR, RHODE AND SWANSON

IN THE HOUSE

HOUSE CONCURRENT RESOLUTION NO. 31

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

Relating to the proposed trans-Alaska gas pipeline.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the United States is experiencing a serious energy crisis; and

WHEREAS the State of Alaska has vast known and yet undiscovered natural resources, the wise development of which will serve to reduce this crisis; and

WHEREAS the economic viability of the State of Alaska is dependent to a large extent upon the development of its natural resources; and

WHEREAS it is in the best interests of the state and the country to initiate and support those programs and projects which will ensure the expeditious and wise development of these necessary resources; and

WHEREAS alternative trans-Alaskan or trans-Canadian pipeline proposals have been made for the transportation of the natural gas from the North Slope and

WHEREAS a trans-Alaska natural gas pipeline has numerous and significant benefits to the state and the nation, such as:

(1) the line would be entirely within the United States and not subject to the interests or partial control of a foreign government, however friendly;

(2) the line will cross geological basins which will possibly open new areas to exploration and development;

(3) it would provide employment of Alaskans and other citizens of the United States in the operation and maintenance of the gas pipeline and related facilities after the construction phase has ended and create

additional jobs in supporting industries;

(4) the pipeline would, directly and indirectly, create a large and significant permanent tax base for the State of Alaska and its cities and boroughs and would improve the nation's balance of payments;

(5) a trans-Alaska line could probably be completed much sooner, thus ensuring an earlier supply of natural gas to the United States;

(6) it would promote additional industrial development and consequent employment within many areas of Alaska through the use of natural gas as an energy source and provide for the needs of existing industry;

(7) the environmental impact in Alaska would be minimized;

(8) delivery of Alaska natural gas to the west coast of the United States will permit diversion of existing gas supplies to the midwest and eastern United States markets to assist in providing those markets with adequate supplies at moderate prices;

BE IT RESOLVED by the Alaska State Legislature that it supports the construction of a trans-Alaska natural gas pipeline, generally following the planned trans-Alaska oil pipeline, and strongly urges the Governor to make available all of the resources at his command to ensure an early favorable decision regarding the proposed trans-Alaska natural gas pipeline and the beginning of construction at the earliest possible time; and be it

FURTHER RESOLVED that the Alaska State Legislature urges the Governor to take the necessary action to assure that the interest of the State of Alaska is fully represented before the Federal Power Commission or any other federal agency having jurisdiction over the disposition of the gas produced from state lands.

Original sponsor: Rules Committee by request of the Chairman, Joint Gas Pipeline Impact Committee

Offered: 3/4/76
Referred: Rules

Passed

IN THE SENATE BY THE RESOURCES COMMITTEE

CS FOR SENATE CONCURRENT RESOLUTION NO. 66

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - SECOND SESSION

Relating to North Slope natural gas.

BE IS RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the State of Alaska is presently in the process of planning and developing options for the use and or sale of the state's North Slope royalty gas; and

WHEREAS two of the existing four members of the Federal Power Commission have publicly expressed their opinion that firm gas sale contracts should be made prior to commission certification of any pipeline for the transportation of North Slope natural gas; and

WHEREAS it is in the best interests of the state to retain as many options as possible for eventual intrastate use and sale of state North Slope royalty gas; and

WHEREAS the first session of the Ninth Alaska Legislature passed HCR 31 endorsing the concept of a trans-Alaska natural gas pipeline; and

WHEREAS the Legislature reaffirms and continues, on the basis of the best available information, to support the concept of a trans-Alaska natural gas pipeline; and

WHEREAS any firm commitment of natural gas, by potential producers, to customers or pipeline organizations dependent on a Canadian line routing would be persuasive evidence to the Federal Power Commission in favor of a Canadian line;

BE IT RESOLVED that the Alaska State Legislature request that all potential producers of North Slope natural gas make no commitment for the sale of the gas where a commitment might be detrimental to the certification of a trans-Alaska natural gas pipeline; and be it

FURTHER RESOLVED that the Alaska State Legislature request that all potential producers of North Slope natural gas make commitments, whenever possible, in support of a trans-Alaska natural gas pipeline routing.

Original sponsor: Bowman, Bradner, Brown, et al

Offered: 4/2/75
Referred: Rules

IN THE HOUSE BY THE FINANCE COMMITTEE

CS FOR HOUSE BILL NO. 258 am S

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act creating the Gas Pipeline Impact Committee; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 31.30 is amended by adding new sections to read:

Sec. 31.30.040. GAS PIPELINE IMPACT COMMITTEE. There is created the Gas Pipeline Impact Committee consisting of 12 members, appointed as follows: six members of the house of representatives at least two of whom shall be a member of the minority party appointed by the speaker of the house; six members of the senate at least two of whom shall be a member of the minority party appointed by the president of the senate.

Sec. 31.30.050. COMPENSATION. Members of the Gas Pipeline Impact Committee receive the same travel pay and per diem as provided by law for board members.

Sec. 31.30.060. STAFF. The committee may employ those persons necessary to carry out the purposes of secs. 40 - 70 of this chapter, including but not limited to regular or temporary employees, consultants, and other experts in the field.

Sec. 31.30.070. DUTIES OF THE COMMITTEE. The Gas Pipeline Impact Committee shall

(1) study route proposals by permit applicants to transport natural gas within or from the state, recommending a route which would maximize the economic benefits to the state, consistent with the public interest;

(2) study and recommend methods of state assistance and

involvement in the planning, development, and transportation of natural gas;

(3) consider the feasibility of full or partial state ownership of natural gas pipeline systems;

(4) determine means of receiving federal or other assistance for the development and transportation of natural gas;

(5) do other things considered advisable for maximizing the development of Alaska natural gas, consistent with the public interest, and adhering to Alaska resident hire laws;

(6) recommend legislation to accomplish the provisions of this section.

* Sec. 2. AS 39.50.200(9) is amended by adding a new subparagraph to read:

(JJ) Gas Pipeline Impact Committee (AS 31.30.040)

* Sec. 3. This Act takes effect immediately in accordance with AS 01.10.070(c).

* Sec. 4. This Act expires January 1, 1977.

LAWS OF ALASKA

1976

Chapter No. 39

Source SB 685 am

AN ACT

Making a special appropriation to the Department of Natural Resources for the purpose of conducting negotiations with prospective purchasers of North Slope natural gas; and providing for an effective date.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $50,000 is appropriated from the general fund to the Department of Natural Resources for the purpose of conducting negotiations with prospective purchasers of North Slope natural gas, the results of any such negotiations to be reported to the legislature in writing within two weeks from effective date of this Act and thereafter on a monthly basis.

* Sec. 2. This Act takes effect immediately in accordance with AS 01.10.070(c).

Permitted to become law without signature
Actual effective date: April 7, 1976

HB 417 am S

I have several reservations about this bill including (1) concerns about its impact upon the ability of the Department of Public Safety to conduct criminal investigations, (2) the effect of the developing regulations soon to be promulgated by the U.S. Department of Justice regarding the collection, maintenance and dissemination of criminal justice information by state agencies receiving Law Enforcement Assistance Administration funding, and (3) questions raised by the bill about the appropriate legal responsibility of the Commission on the Administration of Justice.

Sincerely,

Jay S. Hammond
Governor

SB 685 am

April 6, 1976

The Honorable Chancy Croft
President of the Senate
Alaska State Legislature
Juneau, Alaska 99811

Dear Mr. President:

I have allowed the following bill to become law without my signature and am transmitting the enrolled and engrossed copies to the Lieutenant Governor's Office for permanent filing:

SENATE BILL NO. 685
amended
(Chapter 39, SLA 1976)
(funds for negotiating natural gas sale)

My failing to sign the bill does not evidence a disapproval of either the appropriation or the additional requirement that the Administration keep the legislature informed about natural gas negotiation.

I have done so to evidence my concern about the appropriateness of combining an appropriation with a substantive statutory provision, as this bill does, so as to raise questions of its compliance with Article II, section 13 of the Alaska Constitution.

Sincerely,

Jay S. Hammond
Governor

April 22, 1976

The Honorable Chancy Croft
President of the Senate
Alaska State Legislature
Juneau, Alaska 99811

Dear Mr. President:

I have signed the following bill and am transmitting the enrolled and engrossed copy to the Lieutenant Governor's Office for permanent filing:

SENATE BILL NO. 168
amended
(Chapter 40, SLA 1976)

Sincerely,

Jay S. Hammond
Governor

April 23, 1976

The Honorable Chancy Croft
President of the Senate
Alaska State Legislature
Juneau, Alaska 99811

Dear Mr. President:

I have allowed the following bill to become law without signature and am transmitting the enrolled and engrossed copies to the Lieutenant Governor's Office for permanent filing:

SENATE BILL NO. 682
amended
(Chapter 41, SLA 1976)
(Relating to winery licenses)

Sincerely,

Jay S. Hammond
Governor

mineral leasing, notice of the proposed action shall also be given as provided in §§ 305 and 345 of this chapter. After the notice of noncompetitive leasing has been made as required in this subsection, notice of the subsequent issuance of a noncompetitive lease for the land involved shall be made by mail not less than 30 days before the issuance of the lease only to those who have requested the notice. (§ 1 art 3 ch 169 SLA 1959; am § 1 ch 30 SLA 1964; am § 1 ch 91 SLA 1967; am § 2 ch 71 SLA 1971; am § 10 ch 257 SLA 1976)

Effect of amendment. — The 1976 amendment added present subsection (b).

Cited in Moore v. State, Sup. Ct. Op. No. 1284 (File Nos. 2551, 2587), 553 P.2d 1 (1976).

Sec. 38.05.145. Leasing procedure.

Applied in Moore v. State, Sup. Ct. Op. No. 1284 (File Nos. 2551, 2587), 553 P.2d 8 (1976).

Sec. 38.05.180. Oil and gas.

Commissioner empowered to grant royalty reduction. — This section empowers the commissioner of the Department of Natural Resources, not the director, division of lands, to grant the specified royalty reduction. Union Oil Co. v. State Dep't of Natural Resources, Sup. Ct. Op. No. 1087 (File No. 2025), 526 P.2d 1 (1974).

Sec. 38.05.181. Geothermal resources.

(b) *Land survey and classification.* (1) Because of the absence of detailed geothermal mapping and the limited geochemical, geological or geophysical knowledge of the state's geothermal resources that is available, a survey of geothermal resources shall be included in the complete geological survey of the state authorized by AS 41.08.020, and a statement of the progress of the geothermal resources survey shall be contained in the annual report required by that section.

(2) The classification of known geothermal resources areas, each of which shall contain at least one well capable of producing geothermal resources in commercial quantities, shall be made by the commissioner upon recommendations of the director, the state geologist or the United States Geological Survey under AS 41.08.040.

(3) Within 125 days after August 15, 1971, the commissioner shall publish a statement of all lands which were included within any known geothermal resources areas on August 15, 1971. He shall also publish from time to time his determination of other known geothermal resources areas specifying in each case the date the lands were included in the area.

Sec. 38.06.050. Board approval required. (a) No sale, exchange, encumbrance, or other disposition of oil or gas or of the rights or waiver of the rights to receive future production of royalty oil or gas may be made by the commissioner of natural resources under AS 38.05.183 without the prior written approval of the board.

(b) Bids or applications for the purchase of royalty oil or gas may not be rejected by the commissioner of natural resources without the prior written approval of the board.

(c) Competitive bidding in a sale, exchange or other disposition described in (a) of this section may not be waived by the commissioner of natural resources under AS 38.05.183 without the prior written approval of the board.

(d) The board may require conditions relating to the sale, delivery, transportation, or refining or processing within the state to be included by the commissioner of natural resources in the offer of and sale by competitive bidding of oil or gas obtained by the state as royalty under AS 38.05.182. (§ 2 ch 9 SSSLA 1974)

Sec. 38.06.055. Action by legislature. (a) In addition to the approval by the board required under § 50 of this chapter, no sale, exchange or other disposition of oil or gas or of the rights or waiver of the rights to receive future production of royalty oil or gas may be made by the commissioner of natural resources under AS 38.05.183 without the prior approval of the legislature by a concurrent resolution concurred in by a majority of the members of each house.

(b) Until July 1, 1975, contracts for the sale of state-owned royalty gas or oil that specify the sale and delivery of not more than 400 barrels of crude oil per day or not more than 460 barrels of natural gas liquids per day or not more than 2,400 Mcf of natural gas per day may be executed without ratification by the legislature. (§ 2 ch 9 SSSLA 1974)

Sec. 38.06.060. Confidentiality. Notwithstanding AS 09.25.110 — 09.25.120, the board may provide by regulation for the confidentiality of those documents and records in its possession or control which contain confidential business or marketing information the protection of which is essential to the person who has submitted them to the board or in the judgment of the board is essential to the best interest of the state. Such confidentiality, however, shall not preclude the proper review by the legislature. (§ 2 ch 9 SSSLA 1974)

Sec. 38.06.070. Criteria. (a) In the exercise of its powers under § 40(1) — (2) and § 50 of this chapter the board shall consider

(1) the revenue needs and projected fiscal condition of the state;

(2) the existence and extent of present and projected local and regional needs for oil and gas products and by-products, the effect of state or federal commodity allocation requirements which might be applicable to those products and by-products, and the priorities among competing needs;

See CS instead

Introduced: 1/29/76
Referred: Resources

BY THE RULES COMMITTEE BY REQUEST OF THE CHAIRMAN, JOINT GAS PIPELINE IMPACT COMMITTEE

IN THE SENATE

SENATE CONCURRENT RESOLUTION NO. 66

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - SECOND SESSION

Relating to North Slope natural gas.

BE IS RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the State of Alaska is presently in the process of planning and developing options for the use and or sale of the state's North Slope royalty gas; and

WHEREAS two of the existing four members of the Federal Power Commission have publicly expressed their opinion that firm gas sale contracts should be made prior to commission certification of any pipeline for the transportation of North Slope natural gas; and

WHEREAS it is in the best interests of the state to retain as many options as possible for eventual use and sale of state North Slope royalty gas; and

WHEREAS the first session of the Ninth Alaska Legislature passed HCR 31 endorsing the concept of a trans-Alaska natural gas pipeline; and

WHEREAS the Legislature reaffirms and continues, on the basis of the best available information, to support the concept of a trans-Alaska natural gas pipeline; and

WHEREAS any firm commitment of natural gas, by potential producers, to customers or pipeline organizations dependent on a Canadian line routing would be persuasive evidence to the Federal Power Commission in favor of a Canadian line;

BE IT RESOLVED that the Alaska State Legislature request that all potential producers of North Slope natural gas make no commitment for the sale of the gas where a commitment might be detrimental to the certification of a trans-Alaska natural gas pipeline; and be it

FURTHER RESOLVED that the Alaska State Legislature request that all potential producers of North Slope natural gas make commitments, whenever possible, in support of a trans-Alaska natural gas pipeline routing.

Introduced: 2/11/75
Referred: Finance

IN THE HOUSE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

HOUSE BILL NO. 146

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act making a special appropriation to the Department of Natural Resources, Alaska Royalty Oil and Gas Development Advisory Board; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $14,200 is appropriated from the general fund to the Department of Natural Resources to fund the Alaska Royalty Oil and Gas Development Advisory Board for the fiscal year ending June 30, 1975.

* Sec. 2. This Act takes effect immediately in accordance with AS 01.10.070(c).

Introduced: 5/5/76
Referred: Resources

IN THE SENATE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

SENATE CONCURRENT RESOLUTION NO. 106

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - SECOND SESSION

Relating to the taking of state-owned royalty oil or gas in-kind and its disposal by sale.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the legislature by enactment of the Alaska Royalty Oil and Gas Development Board statute, AS 38.06. et seq., has established a clear policy of favoring the taking of state-owned royalty oil or gas in-kind and making that royalty available for in-state uses; and

WHEREAS the State of Alaska presently receives a one-eighth royalty on gas produced from the North Cook Inlet Gas Field in value, but has the right to receive this royalty in-kind; and

WHEREAS the commissioner of natural resources has entered into a contract for the sale and purchase of state-owned royalty gas from the North Cook Inlet Gas Field with Alaska Pipeline Company, an Alaskan corporation which sells natural gas in the Anchorage and North Kenai Road areas; and

WHEREAS the contract between the State of Alaska and Alaska Pipeline Company requires as a condition precedent to its becoming effective approval by a majority of each house of the Legislature;

BE IT RESOLVED by the Alaska State Legislature that approval of Alaska Royalty Gas Sale No. 76-1, the contract for the sale of state royalty gas from the North Cook Inlet Gas Field to Alaska Pipeline Company, is hereby approved.

HB 417 am S

I have several reservations about this bill including (1) concerns about its impact upon the ability of the Department of Public Safety to conduct criminal investigations, (2) the effect of the developing regulations soon to be promulgated by the U.S. Department of Justice regarding the collection, maintenance and dissemination of criminal justice information by state agencies receiving Law Enforcement Assistance Administration funding, and (3) questions raised by the bill about the appropriate legal responsibility of the Commission on the Administration of Justice.

Sincerely,

Jay S. Hammond
Governor

SB 685 am

April 6, 1976

The Honorable Chancy Croft
President of the Senate
Alaska State Legislature
Juneau, Alaska 99811

Dear Mr. President:

I have allowed the following bill to become law without my signature and am transmitting the enrolled and engrossed copies to the Lieutenant Governor's Office for permanent filing:

SENATE BILL NO. 685
amended
(Chapter 39, SLA 1976)
(funds for negotiating natural gas sale)

My failing to sign the bill does not evidence a disapproval of either the appropriation or the additional requirement that the Administration keep the legislature informed about natural gas negotiation.

I have done so to evidence my concern about the appropriateness of combining an appropriation with a substantive statutory provision, as this bill does, so as to raise questions of its compliance with Article II, section 13 of the Alaska Constitution.

Sincerely,

Jay S. Hammond
Governor

April 22, 1976

The Honorable Chancy Croft
President of the Senate
Alaska State Legislature
Juneau, Alaska 99811

Dear Mr. President:

I have signed the following bill and am transmitting the enrolled and engrossed copy to the Lieutenant Governor's Office for permanent filing:

SENATE BILL NO. 168
amended
(Chapter 40, SLA 1976)

Sincerely,

Jay S. Hammond
Governor

April 23, 1976

The Honorable Chancy Croft
President of the Senate
Alaska State Legislature
Juneau, Alaska 99811

Dear Mr. President:

I have allowed the following bill to become law without signature and am transmitting the enrolled and engrossed copies to the Lieutenant Governor's Office for permanent filing:

SENATE BILL NO. 682
amended
(Chapter 41, SLA 1976)
(Relating to winery licenses)

Sincerely,

Jay S. Hammond
Governor

LAWS OF ALASKA

1976

Source

SB 685 am

Chapter No.

39

AN ACT

Making a special appropriation to the Department of Natural Resources for the purpose of conducting negotiations with prospective purchasers of North Slope natural gas; and providing for an effective date.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $50,000 is appropriated from the general fund to the Department of Natural Resources for the purpose of conducting negotiations with prospective purchasers of North Slope natural gas, the results of any such negotiations to be reported to the legislature in writing within two weeks from effective date of this Act and thereafter on a monthly basis.

* Sec. 2. This Act takes effect immediately in accordance with AS 01.10.070(c).

Permitted to become law without signature
Actual effective date: April 7, 1976

Original sponsor: Bowman, Bradner, Brown, et al

Offered: 4/2/75
Referred: Rules

IN THE HOUSE BY THE FINANCE COMMITTEE

CS FOR HOUSE BILL NO. 258 am S

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act creating the Gas Pipeline Impact Committee; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 31.30 is amended by adding new sections to read:

Sec. 31.30.040. GAS PIPELINE IMPACT COMMITTEE. There is created the Gas Pipeline Impact Committee consisting of 12 members, appointed as follows: six members of the house of representatives at least two of whom shall be a member of the minority party appointed by the speaker of the house; six members of the senate at least two of whom shall be a member of the minority party appointed by the president of the senate.

Sec. 31.30.050. COMPENSATION. Members of the Gas Pipeline Impact Committee receive the same travel pay and per diem as provided by law for board members.

Sec. 31.30.060. STAFF. The committee may employ those persons necessary to carry out the purposes of secs. 40 - 70 of this chapter, including but not limited to regular or temporary employees, consultants, and other experts in the field.

Sec. 31.30.070. DUTIES OF THE COMMITTEE. The Gas Pipeline Impact Committee shall

(1) study route proposals by permit applicants to transport natural gas within or from the state, recommending a route which would maximize the economic benefits to the state, consistent with the public interest;

(2) study and recommend methods of state assistance and

involvement in the planning, development, and transportation of natural gas;

(3) consider the feasibility of full or partial state ownership of natural gas pipeline systems;

(4) determine means of receiving federal or other assistance for the development and transportation of natural gas;

(5) do other things considered advisable for maximizing the development of Alaska natural gas, consistent with the public interest, and adhering to Alaska resident hire laws;

(6) recommend legislation to accomplish the provisions of this section.

* Sec. 2. AS 39.50.200(9) is amended by adding a new subparagraph to read:

(JJ) Gas Pipeline Impact Committee (AS 31.30.040)

* Sec. 3. This Act takes effect immediately in accordance with AS 01.10.-070(c).

* Sec. 4. This Act expires January 1, 1977.

Original sponsor: Rules Committee by request of the Chairman, Joint Gas Pipeline Impact Committee

Offered: 3/4/76
Referred: Rules

Passed

IN THE SENATE BY THE RESOURCES COMMITTEE

CS FOR SENATE CONCURRENT RESOLUTION NO. 66

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - SECOND SESSION

Relating to North Slope natural gas.

BE IS RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the State of Alaska is presently in the process of planning and developing options for the use and or sale of the state's North Slope royalty gas; and

WHEREAS two of the existing four members of the Federal Power Commission have publicly expressed their opinion that firm gas sale contracts should be made prior to commission certification of any pipeline for the transportation of North Slope natural gas; and

WHEREAS it is in the best interests of the state to retain as many options as possible for eventual intrastate use and sale of state North Slope royalty gas; and

WHEREAS the first session of the Ninth Alaska Legislature passed HCR 31 endorsing the concept of a trans-Alaska natural gas pipeline; and

WHEREAS the Legislature reaffirms and continues, on the basis of the best available information, to support the concept of a trans-Alaska natural gas pipeline; and

WHEREAS any firm commitment of natural gas, by potential producers, to customers or pipeline organizations dependent on a Canadian line routing would be persuasive evidence to the Federal Power Commission in favor of a Canadian line;

BE IT RESOLVED that the Alaska State Legislature request that all potential producers of North Slope natural gas make no commitment for the sale of the gas where a commitment might be detrimental to the certification of a trans-Alaska natural gas pipeline; and be it

FURTHER RESOLVED that the Alaska State Legislature request that all potential producers of North Slope natural gas make commitments, whenever possible, in support of a trans-Alaska natural gas pipeline routing.

Introduced: 3/7/75
Referred: Resources and Finance

Passed

BY FISCHER, ANDERSON, BOWMAN, BRADNER, BROWN, DAVIS, DUNCAN, FINK, FREEMAN, GUY, KELLEY MCKINNON, OSTERBACK, PARKER, PARR, RHODE AND SWANSON

IN THE HOUSE

HOUSE CONCURRENT RESOLUTION NO. 31

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

Relating to the proposed trans-Alaska gas pipeline.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the United States is experiencing a serious energy crisis; and

WHEREAS the State of Alaska has vast known and yet undiscovered natural resources, the wise development of which will serve to reduce this crisis; and

WHEREAS the economic viability of the State of Alaska is dependent to a large extent upon the development of its natural resources; and

WHEREAS it is in the best interests of the state and the country to initiate and support those programs and projects which will ensure the expeditious and wise development of these necessary resources; and

WHEREAS alternative trans-Alaskan or trans-Canadian pipeline proposals have been made for the transportation of the natural gas from the North Slope and

WHEREAS a trans-Alaska natural gas pipeline has numerous and significant benefits to the state and the nation, such as:

(1) the line would be entirely within the United States and not subject to the interests or partial control of a foreign government, however friendly;

(2) the line will cross geological basins which will possibly open new areas to exploration and development;

(3) it would provide employment of Alaskans and other citizens of the United States in the operation and maintenance of the gas pipeline and related facilities after the construction phase has ended and create

additional jobs in supporting industries;

(4) the pipeline would, directly and indirectly, create a large and significant permanent tax base for the State of Alaska and its cities and boroughs and would improve the nation's balance of payments;

(5) a trans-Alaska line could probably be completed much sooner, thus ensuring an earlier supply of natural gas to the United States;

(6) it would promote additional industrial development and consequent employment within many areas of Alaska through the use of natural gas as an energy source and provide for the needs of existing industry;

(7) the environmental impact in Alaska would be minimized;

(8) delivery of Alaska natural gas to the west coast of the United States will permit diversion of existing gas supplies to the midwest and eastern United States markets to assist in providing those markets with adequate supplies at moderate prices;

BE IT RESOLVED by the Alaska State Legislature that it supports the construction of a trans-Alaska natural gas pipeline, generally following the planned trans-Alaska oil pipeline, and strongly urges the Governor to make available all of the resources at his command to ensure an early favorable decision regarding the proposed trans-Alaska natural gas pipeline and the beginning of construction at the earliest possible time; and be it

FURTHER RESOLVED that the Alaska State Legislature urges the Governor to take the necessary action to assure that the interest of the State of Alaska is fully represented before the Federal Power Commission or any other federal agency having jurisdiction over the disposition of the gas produced from state lands.

SJ CS instead

Introduced: 1/29/76
Referred: Resources

BY THE RULES COMMITTEE BY REQUEST OF THE CHAIRMAN, JOINT GAS PIPELINE IMPACT COMMITTEE

IN THE SENATE

SENATE CONCURRENT RESOLUTION NO. 66

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - SECOND SESSION

Relating to North Slope natural gas.

BE IS RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the State of Alaska is presently in the process of planning and developing options for the use and or sale of the state's North Slope royalty gas; and

WHEREAS two of the existing four members of the Federal Power Commission have publicly expressed their opinion that firm gas sale contracts should be made prior to commission certification of any pipeline for the transportation of North Slope natural gas; and

WHEREAS it is in the best interests of the state to retain as many options as possible for eventual use and sale of state North Slope royalty gas; and

WHEREAS the first session of the Ninth Alaska Legislature passed HCR 31 endorsing the concept of a trans-Alaska natural gas pipeline; and

WHEREAS the Legislature reaffirms and continues, on the basis of the best available information, to support the concept of a trans-Alaska natural gas pipeline; and

WHEREAS any firm commitment of natural gas, by potential producers, to customers or pipeline organizations dependent on a Canadian line routing would be persuasive evidence to the Federal Power Commission in favor of a Canadian line;

BE IT RESOLVED that the Alaska State Legislature request that all potential producers of North Slope natural gas make no commitment for the sale of the gas where a commitment might be detrimental to the certification of a trans-Alaska natural gas pipeline; and be it

February 27, 1976

Senator Chancy Croft
President of the Senate
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

Representative Mike Bradner
Speaker of the House
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

RE: Interim Report of the Joint Gas Pipeline Impact Committee

Dear Mr. President and Mr. Speaker:

Please consider this to be a letter of transmittal of the Interim Report of the Joint Gas Pipeline Impact Committee existing pursuant to H.B. 258 "The Gas Pipeline Impact Committee", Chapter 170 SLA 75. I request that this letter of transmittal, together with the report, be read into the appropriate Journal in each house.

As an aid to the interpretation of the Interim Report, I submit the following as being my understanding of the sense of the Committee:

1. The Committee does not intend to suggest that the Commissioner of Natural Resources or the Royalty Board enter into unreasonable agreements with prospective purchasers. It is the sense of the Committee that Alaska should indicate that it is a "willing seller" of a portion of it's gas and is seeking a "willing buyer" on terms which will reserve as much gas as possible for future use to meet Alaska's internal domestic and other needs. The Committee would expect the executive to negotiate the best possible agreement. Understanding, that when such an agreement is negotiated, it may or may not be acceptable to the Legislature. It may be that the executive will negotiate the best possible agreement, at the same time recommending against its implementation on the basis that too little is received by the State and too much given by the State. We believe that it is imperative, however, in the conduct of the people's business, that such a tentative agreement be made public and its merits debated.

2. We do not wish to tie our negotiator's hands by quantifying the word "substantial" as used in paragraph #7 in the Committee's findings, and paragraph #1 of the Committee's recommendations.

3. The Committee does not suggest an arbitrary time deadline for our executive negotiators. We do point out, however, for the agreement to be finalized, legislative approval is necessary and a special session should be avoided if possible.

4. We do not intend in any manner to preclude negotiations for use of royalty gas within the State of Alaska and the further exploration of petrochemical and domestic uses. The major thrust of the Committee's recommendations is based on the belief that a Trans-Alaska pipeline is essential for future domestic and petrochemical in-state use options of North Slope gas.

5. Pursuant to other action by the Committee, the following have been introduced by the respective Rules Committee by request:

SCR 85/HCR 107	"Relating to the Impact on Alaska of a Trans-Canada Gas Transportation System"
SB 685/HB 848	"An Act Making a Special Appropriation to the Department of Natural Resources for the Purpose of Conducting Negotiations with Prospective Purchasers of North Slope Natural Gas and Providing for an Effective Date"
SB 686/HB 850	"An Act Relating to Waste of Oil and Gas and Providing for an Effective Date"
SB 687/HB 849	"An Act Relating to the Leases of State Land for Oil and Gas into taking of Royalty Gas from them and Providing for an Effective Date"

6. Finally, and most importantly, our recommendations are based on the facts and circumstances as they exist today.

   The situation may change at any time rendering the presently recommended strategy inappropriate. For example, it has been suggested that the Federal Power Commission may conduct allocation proceedings nullifying contractual sales commitments. Gas may be more or less deregulated. The recent request of the President for authority to make the final route decision subsequent to January 1, 1977 may effect the political climate. It may be determined, as has been suggested by some, that neither the Trans-Alaska nor the Trans-Canada line are economically feasible at this time.

The recommendations of the Committee rely strongly on the advice of our consultant, Mr. Rush Moody, recently Vice-Chairman of the Federal Power Commission. The strategy may only be appropriate if the Federal Power Commission closes the certification hearings in May according to it's present schedule and further certifies one route based on the precedents, principles, and considerations customarily employed in past certification proceedings admittedly more limited in scope and of much less national significance.

The opportunity to use royalty gas to accomplish our public purposes as we perceive them may be lost unless we have substantially negotiated possible sale terms and are ready to move if and when the time arrives - which may be very soon.

Respectfully submitted,

Senator John Rader, Chairman
Gas Pipeline Impact Committee

JR/kb

INTERIM REPORT
OF THE
JOINT GAS PIPELINE IMPACT COMMITTEE

This Committee, through public hearings and staff investigation, has become convinced that immediate action by the State of Alaska is essential if the citizens of this State are to receive maximum benefit from the State's natural gas resource.

The Committee will issue a full and complete report on its findings and recommendations at a later date, but is impelled to submit this interim report to the Legislature and the people of the State of Alaska because of the urgency of the present situation.

The Committee finds and concludes the following:

1. A federal decision authorizing the transportation of North Slope natural gas across Canada would be inimical to the interests of the State of Alaska. The State's resource would be drained, its people denied access to a premium fuel and raw material, its work force deprived of employment opportunities, and productive economic growth would be thwarted.
2. A federal decision authorizing the transportation of North Slope natural gas across the State of Alaska to an open port will serve the best interests of the State.
3. The level of benefits, and burdens reasonably to be expected by the State as a consequence of any decision on a North Slope gas transportation system are of such magnitude that the routing decision must be regarded as critical to the future of the State. Action to secure a Trans-Alaska routing must be pursued as expeditiously as possible; no reasonable step should be left untaken.
4. The position of the state as owner of a one-eighth royalty in natural gas and natural gas liquids produced from State-owned lands on the North Slope creates an immediate opportunity for effective State action which can assist in securing a Trans-Alaska transportation system.

5. Affirmative, agressive action by the Governor, the Commissioner of Natural Resources, the State Royalty Board, and the Legislature with respect to the State's royalty gas is imperative.
6. Effective use of the State's royalty gas, to serve the best interests of the State, requires:
   a. The State must elect to take its royalty share of natural gas and natural gas liquids in kind.
   b. The State must commit a portion of its royalty gas to purchasers who will assist in securing approval of a Trans-Alaska transportation system, and who will thereafter utilize such a Trans-Alaska system.
7. Present levels of natural gas demand in Alaska permit a commitment of a portion of the State's royalty gas to purchasers outside the State; while every effort must be made to retain a substantial part of Alaska's gas for present and future in-state needs, it is in the overall best interests of the State to offer for sale outside the State, a substantial portion of the State's royalty gas to purchasers who can, and will, assist in securing authorization of a Trans-Alaska transportation system.
8. Those persons and firms interested in the construction and operation of a Trans-Alaska transportation system can materially alleviate State unemployment problems, and the State should, in striking a bargain for the commitment of State resources to a Trans-Alaska system, secure appropriate commitments for the hire and training of Alaska residents in the construction and operation of such a system.
9. Finally, the risk that non-action by the State, or delayed action by the State, will cause the selection of a Trans-Canadian routing, and the risk that the State will lose substantial benefit of its natural gas resource are so great, it is the sense of this Committee that State action must not be delayed.

BY REASON OF THE FOREGOING, IT IS THE RECOMMENDATION OF THIS COMMITTEE THAT:

1. The commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with interested out-of-state purchasers to reach definitive sales and/or exchange agreements covering disposition of substantial portions of the State's royalty gas on the best obtainable terms.
2. The Commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with natural gas transporters involved in the proposal for a Trans-Alaska system to reach definitive transportation agreements covering the State's royalty gas sold for out-of-state use, and the State's withdrawal of the unsold portion of its royalty gas from the system for in-state use; appropriate commitments should be obtained with respect to hire and training of Alaska residents.
3. The arrangements and agreements so negotiated should be presented to the Legislature for ratification prior to the end of the Second Session of the Ninth Legislature to avoid, if possible, a special session.
4. The Legislature should hold itself ready for immediate consideration of and prompt action on, the recommendations of the Commissioner and Board.
5. Such arrangements, contracts, and agreements as are negotiated by the Commissioner and Board and approved by the Legislature should be incorporated into the pending applications for a Trans-Alaska transportation system, presented to the Federal Power Commission by the appropriate transporter-applicant, and approval thereof obtained in the pending Federal Power Commission proceedings.
6. The Legislature should adopt SCR 66 and further seek the active cooperation of all owners of North Slope gas in support of the Trans-Alaska pipeline route.

JOURNAL

SUPPLEMENT

March 3, 1976 SENATE No. 7

February 27, 1976

Senator Chancy Croft
President of the Senate
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

Representative Mike Bradner
Speaker of the House
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

RE: Interim Report of the Joint Gas Pipeline Impact Committee

Dear Mr. President and Mr. Speaker:

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As an aid to the interpretation of the Interim Report, I submit the following as being my understanding of the sense of the Committee:

1. The Committee does not intend to suggest that the Commissioner of Natural Resources or the Royalty Board enter into unreasonable agreements with prospective purchasers. It is the sense of the Committee that Alaska should indicate that it is a "willing seller" of a portion of it's gas and is seeking a "willing buyer" on terms which will reserve as much gas as possible for future use to meet Alaska's internal domestic and other needs. The Committee would expect the executive to negotiate the best possible agreement. Understanding, that when such an agreement is negotiated, it may or may not be acceptable to the Legislature. It may be that the executive will negotiate the best possible agreement, at the same time recommending against its implementation on the basis that too little is received by the State and too much given by the State. We believe that it is imperative, however, in the conduct of the people's business, that such a tentative agreement be made public and its merits debated.

2. We do not wish to tie our negotiator's hands by quantifying the word "substantial" as used in paragraph #7 in the Committee's findings, and paragraph #1 of the Committee's recommendations.

3. The Committee does not suggest an arbitrary time deadline for our executive negotiators. We do point out, however, for the agreement to be finalized, legislative approval is necessary and a special session should be avoided if possible.

4. We do not intend in any manner to preclude negotiations for use of royalty gas within the State of Alaska and the further exploration of petrochemical and domestic uses. The major thrust of the Committee's recommendations is based on the belief that a Trans-Alaska pipeline is essential for future domestic and petrochemical in-state use options of North Slope gas.

5. Pursuant to other action by the Committee, the following have been introduced by the respective Rules Committee by request:

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6. Finally, and most importantly, our recommendations are based on the facts and circumstances as they exist today.

   The situation may change at any time rendering the presently recommended strategy inappropriate. For example, it has been suggested that the Federal Power Commission may conduct allocation proceedings nullifying contractual sales commitments. Gas may be more or less deregulated. The recent request of the President for authority to make the final route decision subsequent to January 1, 1977 may effect the political climate. It may be determined, as has been suggested by some, that neither the Trans-Alaska nor the Trans-Canada line are economically feasible at this time.

The recommendations of the Committee rely strongly on the advice of our consultant, Mr. Rush Moody, recently Vice-Chairman of the Federal Power Commission. The strategy may only be appropriate if the Federal Power Commission closes the certification hearings in May according to it's present schedule and further certifies one route based on the precedents, principles, and considerations customarily employed in past certification proceedings admittedly more limited in scope and of much less national significance.

The opportunity to use royalty gas to accomplish our public purposes as we perceive them may be lost unless we have substantially negotiated possible sale terms and are ready to move if and when the time arrives - which may be very soon.

Respectfully submitted,

Senator John Rader, Chairman
Gas Pipeline Impact Committee

JR/kb

INTERIM REPORT
OF THE
JOINT GAS PIPELINE IMPACT COMMITTEE

This Committee, through public hearings and staff investigation, has become convinced that immediate action by the State of Alaska is essential if the citizens of this State are to receive maximum benefit from the State's natural gas resource.

The Committee will issue a full and complete report on its findings and recommendations at a later date, but is impelled to submit this interim report to the Legislature and the people of the State of Alaska because of the urgency of the present situation.

The Committee finds and concludes the following:

1. A federal decision authorizing the transportation of North Slope natural gas across Canada would be inimical to the interests of the State of Alaska. The State's resource would be drained, its people denied access to a premium fuel and raw material, its work force deprived of employment opportunities, and productive economic growth would be thwarted.
2. A federal decision authorizing the transportation of North Slope natural gas across the State of Alaska to an open port will serve the best interests of the State.
3. The level of benefits, and burdens reasonably to be expected by the State as a consequence of any decision on a North Slope gas transportation system are of such magnitude that the routing decision must be regarded as critical to the future of the State. Action to secure a Trans-Alaska routing must be pursued as expeditiously as possible; no reasonable step should be left untaken.
4. The position of the state as owner of a one-eighth royalty in natural gas and natural gas liquids produced from State-owned lands on the North Slope creates an immediate opportunity for effective State action which can assist in securing a Trans-Alaska transportation system.

5. Affirmative, agressive action by the Governor, the Commissioner of Natural Resources, the State Royalty Board, and the Legislature with respect to the State's royalty gas is imperative.
6. Effective use of the State's royalty gas, to serve the best interests of the State, requires:
   a. The State must elect to take its royalty share of natural gas and natural gas liquids in kind.
   b. The State must commit a portion of its royalty gas to purchasers who will assist in securing approval of a Trans-Alaska transportation system, and who will thereafter utilize such a Trans-Alaska system.
7. Present levels of natural gas demand in Alaska permit a commitment of a portion of the State's royalty gas to purchasers outside the State; while every effort must be made to retain a substantial part of Alaska's gas for present and future in-state needs, it is in the overall best interests of the State to offer for sale outside the State, a substantial portion of the State's royalty gas to purchasers who can, and will, assist in securing authorization of a Trans-Alaska transportation system.
8. Those persons and firms interested in the construction and operation of a Trans-Alaska transportation system can materially alleviate State unemployment problems, and the State should, in striking a bargain for the commitment of State resources to a Trans-Alaska system, secure appropriate commitments for the hire and training of Alaska residents in the construction and operation of such a system.
9. Finally, the risk that non-action by the State, or delayed action by the State, will cause the selection of a Trans-Canadian routing, and the risk that the State will lose substantial benefit of its natural gas resource are so great, it is the sense of this Committee that State action must not be delayed.

BY REASON OF THE FOREGOING, IT IS THE RECOMMENDATION OF THIS COMMITTEE THAT:

1. The commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with interested out-of-state purchasers to reach definitive sales and/or exchange agreements covering disposition of substantial portions of the State's royalty gas on the best obtainable terms.
2. The Commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with natural gas transporters involved in the proposal for a Trans-Alaska system to reach definitive transportation agreements covering the State's royalty gas sold for out-of-state use, and the State's withdrawal of the unsold portion of its royalty gas from the system for in-state use; appropriate commitments should be obtained with respect to hire and training of Alaska residents.
3. The arrangements and agreements so negotiated should be presented to the Legislature for ratification prior to the end of the Second Session of the Ninth Legislature to avoid, if possible, a special session.
4. The Legislature should hold itself ready for immediate consideration of and prompt action on, the recommendations of the Commissioner and Board.
5. Such arrangements, contracts, and agreements as are negotiated by the Commissioner and Board and approved by the Legislature should be incorporated into the pending applications for a Trans-Alaska transportation system, presented to the Federal Power Commission by the appropriate transporter-applicant, and approval thereof obtained in the pending Federal Power Commission proceedings.
6. The Legislature should adopt SCR 66 and further seek the active cooperation of all owners of North Slope gas in support of the Trans-Alaska pipeline route.

1/31/77

LIST OF FORMAL DOCUMENTS EXPRESSING LEGISLATIVE INTENT ON GAS LINE ISSUE

prepared for House & Senate Special Committees on Royalty Sale

BILLS

CS HB 258 am S (170 SLA 75)
Creates Gas Pipeline Impact Committee

SB 685 am (39 SLA 76)
Appropriation to Dept. Natural Resources to negotiate with prospective purchasers

RESOLUTIONS

HCR 31 (passed 5/8/75)
Supports Trans-Alaska gas route and urges the Governor to act accordingly

CS SCR 66 (passed 4/12/76)
Requests Prudhoe producers to make no commitments of gas detrimental to the El Paso route

COMMITTEE REPORT

"Interim Report of the Joint Gas Pipeline Impact Committee" and meeting minutes. 2/24/76

Letter transmitting Interim Report to the Senate President and House Speaker for inclusion in the Journals. 2/27/76 (Appeared in Journal Supplement # 4, 3/3/76)

Royalty Sale Statutes

Sec. 38.06.050. Board approval required. (a) No sale, exchange, encumbrance, or other disposition of oil or gas or of the rights or waiver of the rights to receive future production of royalty oil or gas may be made by the commissioner of natural resources under AS 38.05.183 without the prior written approval of the board.

(b) Bids or applications for the purchase of royalty oil or gas may not be rejected by the commissioner of natural resources without the prior written approval of the board.

(c) Competitive bidding in a sale, exchange or other disposition described in (a) of this section may not be waived by the commissioner of natural resources under AS 38.05.183 without the prior written approval of the board.

(d) The board may require conditions relating to the sale, delivery, transportation, or refining or processing within the state to be included by the commissioner of natural resources in the offer of and sale by competitive bidding of oil or gas obtained by the state as royalty under AS 38.05.182. (§ 2 ch 9 SSSLA 1974)

Sec. 38.06.055. Action by legislature. (a) In addition to the approval by the board required under § 50 of this chapter, no sale, exchange or other disposition of oil or gas or of the rights or waiver of the rights to receive future production of royalty oil or gas may be made by the commissioner of natural resources under AS 38.05.183 without the prior approval of the legislature by a concurrent resolution concurred in by a majority of the members of each house.

(b) Until July 1, 1975, contracts for the sale of state-owned royalty gas or oil that specify the sale and delivery of not more than 400 barrels of crude oil per day or not more than 460 barrels of natural gas liquids per day or not more than 2,400 Mcf of natural gas per day may be executed without ratification by the legislature. (§ 2 ch 9 SSSLA 1974)

Sec. 38.06.060. Confidentiality. Notwithstanding AS 09.25.110 — 09.25.120, the board may provide by regulation for the confidentiality of those documents and records in its possession or control which contain confidential business or marketing information the protection of which is essential to the person who has submitted them to the board or in the judgment of the board is essential to the best interest of the state. Such confidentiality, however, shall not preclude the proper review by the legislature. (§ 2 ch 9 SSSLA 1974)

Sec. 38.06.070. Criteria. (a) In the exercise of its powers under § 40(1) — (2) and § 50 of this chapter the board shall consider

(1) the revenue needs and projected fiscal condition of the state;

(2) the existence and extent of present and projected local and regional needs for oil and gas products and by-products, the effect of state or federal commodity allocation requirements which might be applicable to those products and by-products, and the priorities among competing needs;

mineral leasing, notice of the proposed action shall also be given as provided in §§ 305 and 345 of this chapter. After the notice of noncompetitive leasing has been made as required in this subsection, notice of the subsequent issuance of a noncompetitive lease for the land involved shall be made by mail not less than 30 days before the issuance of the lease only to those who have requested the notice. (§ 1 art V ch 169 SLA 1959; am § 1 ch 30 SLA 1964; am § 1 ch 91 SLA 1967; am § 2 ch 71 SLA 1971; am § 10 ch 257 SLA 1976)

Effect of amendment. — The 1976 amendment added present subsection (b).

Cited in Moore v. State, Sup. Ct. Op. No. 1284 (File Nos. 2551, 2587), 553 P.2d 8 (1976).

Sec. 38.05.145. Leasing procedure.

Applied in Moore v. State, Sup. Ct. Op. No. 1284 (File Nos. 2551, 2587), 553 P.2d 8 (1976).

Sec. 38.05.180. Oil and gas.

Commissioner empowered to grant royalty reduction. — This section empowers the commissioner of the Department of Natural Resources, not the director, division of lands, to grant the specified royalty reduction. Union Oil Co. v. State Dep't of Natural Resources, Sup. Ct. Op. No. 1087 (File No. 2025), 526 P.2d 1357 (1974).

Sec. 38.05.181. Geothermal resources.

(b) *Land survey and classification.* (1) Because of the absence of detailed geothermal mapping and the limited geochemical, geological or geophysical knowledge of the state's geothermal resources that is available, a survey of geothermal resources shall be included in the complete geological survey of the state authorized by AS 41.08.020, and a statement of the progress of the geothermal resources survey shall be contained in the annual report required by that section.

(2) The classification of known geothermal resources areas, each of which shall contain at least one well capable of producing geothermal resources in commercial quantities, shall be made by the commissioner upon recommendations of the director, the state geologist or the United States Geological Survey under AS 41.08.040.

(3) Within 125 days after August 15, 1971, the commissioner shall publish a statement of all lands which were included within any known geothermal resources areas on August 15, 1971. He shall also publish from time to time his determination of other known geothermal resources areas specifying in each case the date the lands were included in the area.

A M E N D M E N T

Offered in the SENATE BY HUBER

TO: SENATE CONCURRENT RESOLUTION NO. 3

Page 1, line 29: After "approved" insert the following:

"on the condition that the contract be modified to provide that in the event that seller elects to terminate the contract in accordance with the provisions set out therein, buyer agrees not to use federal regulatory intervention to continue the contract in force, and that in the event that buyer breaches this provision and the contract is prevented from being terminated in accordance with the provisions through federal regulatory intervention, that buyer agrees to pay to seller as liquidated damages the amount of $2,000,000,000."

#3

A M E N D M E N T

Offered in the SENATE BY HUBER

TO: SENATE CONCURRENT RESOLUTION NO. 3

Page 1, line 23: After "contract" insert ", except as provided below,"

Page 1, line 29: After "approved" insert the following:
subject to the condition that the contract be modified to provide that the exercise of the Governor's authority under sections 11.4 and 11.5 to change the designated pipeline project or to terminate the agreement be subject to approval by the legislature by concurrent resolution

#

AMENDMENT #4

Offered in the SENATE BY HUBER

TO: SENATE CONCURRENT RESOLUTION NO. 3

Page 1, line 23: After "contract" insert ", except as provided below,"

Page 1, line 29: After "approved" insert the following:
subject to the condition that the contract be modified to reduce the percentage of the state's royalty gas allocated to the buyer under section 3.1 of the contract from 50 to 40 per cent

AMENDMENT #5

Offered in the SENATE By Huber

TO: SENATE CONCURRENT RESOLUTION NO. 3

Page 1, line 23: After "contract" insert ", except as provided below,"

Page 1, line 29: After "approved" insert the following:

subject to the condition that the contract be modified to include the agreement of the parties to the contract concerning the applicability of severence tax in computing the value to be received for the gas

AMENDMENT #6

Offered in the SENATE By Huber

TO: SENATE CONCURRENT RESOLUTION NO. 3

Page 1, line 23: After "contract" insert ", except as provided below,"

Page 1, line 29: After "approved" insert the following:

subject to the condition that the contract be modified to include a provision under which the buyer agrees that the contract is terminated should section 13(b) of the Alaska Natural Gas Transportation Act (15 U.S.C. 719(k)) be repealed or substantively amended to limit or eliminate the "Alaska exemption"

AMENDMENT 7

Offered in the SENATE BY HUBER

TO: SENATE CONCURRENT RESOLUTION NO. 3

Page 1, line 29: After "approved" insert the following:

"on the condition that the contract be modified to provide that in the event that seller elects to terminate the contract in accordance with the provisions set out therein, buyer agrees not to use federal regulatory intervention to continue the contract in force, and that in the event that buyer breaches this provision and the contract is prevented from being terminated in accordance with the provisions through federal regulatory intervention, that buyer agrees to pay to seller as liquidated damages the amount of $2,000,000,000."

3/5/

SCOMM

#21:2

RESOURCES

PACIFIC MARINE FISHERIES COMMISSION

*Richard Eliason, Sitka, term expiring October 3, 1980

*James Brooks, Juneau, term expiring October 3, 1980

*Chuck Powell, Kodiak, term expiring October 3, 1980

ALASKA SOIL CONSERVATION BOARD

Bruce Willard, Homer, term expiring, February 1, 1979

Charles Forck, Delta Junction, term expiring February 1, 1980

ROYALTY OIL AND GAS DEVELOPMENT ADVISORY BOARD

Andrew Warwick, Fairbanks, term expiring, March 14, 1979

The President stated that without objection the Senate would revert to reports of special committees. Without objection, the Senate reverted to:

SPECIAL COMMITTEE REPORTS

SCR 3 The Special Committee to Consider the Sale of Royalty Gas has had SENATE CONCURRENT RESOLUTION NO. 3 (disposal to Tenneco Alaska, Inc., of royalty gas taken in-kind) under consideration and a majority of the committee recommends it do pass. The report was signed by Senator Rader, Chairman, and concurred in by Senators Colletta and Tillion. Senator Huber signed "no recommendation."

SENATE CONCURRENT RESOLUTION NO. 3 was referred to the Resources Committee..

SCR 4 The Special Committee to Consider the Sale of Royalty Gas has had SENATE CONCURRENT RESOLUTION NO. 4 (disposal to El Paso Natural Gas Company of royalty natural gas taken in-kind under consideration and a majority of the committee recommends it do pass. The report was signed by Senator Rader, Chairman, and concurred in by Senators Colletta and Tillion. Senator Huber signed "no recommendation."

SENATE CONCURRENT RESOLUTION NO. 4 was referred to the Resources Committee.

The Special Committee to consider the Sale of Royalty Gas has had SENATE CONCURRENT RESOLUTION NO. 5 (disposal to Southern Natural Gas Company of royalty natural gas taken in-kind) under consideration and a majority of the committee recommends it do pass. The report was signed by Senator Rader, Chairman, and concurred in by Senators Colletta and Tillion. Senator Huber signed "no recommendation". SCR 5

SENATE CONCURRENT RESOLUTION NO. 5 was referred to the Resources Committee.

ENGROSSMENT AND ENROLLMENT

The following has been engrossed, signed by the President and Secretary and transmitted to the House for consideration:

SENATE BILL NO. 89

SENATE CONCURRENT RESOLUTION NO. 11 has been enrolled, signed by the President and Secretary, Speaker and Chief Clerk and the engrossed and enrolled copies transmitted to the Office of the Governor at 3:10 p.m., February 10, 1977. SCR 11

ANNOUNCEMENTS

Republican Caucus	Rm 207 Capitol	Upon adjourn.	2/11
HESS SB46, 122	Rm 106 Assembly	2:00 p.m.	2/11
Judiciary SB 90, 91	647 Court	3:30 p.m.	2/11
State Affairs Highway Maintenance Hearing	Community Hall Palmer	6:30 p.m.	2/11
	Supreme Court Rm Court House Anchorage	9:00 a.m. 9:00 a.m.	2/12 2/13
State Affairs Jt w/House New Capital Planning Comm. bills	Community Hall Palmer Supreme Court Rm Court House Anchorage	7:30 p.m. 10:00 a.m. 10:00 a.m.	2/11 2/12 2/13
Finance	Rm 423 Capitol	Cancelled	2/14
Judiciary SB 104	Rm 647 Court	3:30 p.m.	2/14

COMMITTEE REPORT

SENATE

1/11/77

_____ Date

Mr. President:

The Committee on SPECIAL COMMITTEE TO CONSIDER THE SALE OF RAYALTY GAS has had SCR 5 isposal to Southern Natural Gas Co. of royalty natural gas tanken in-kind under consideration. A majority of the members of the Committee

/_/ recommends it do pass

/_/ recommends it do not pass

/_/ recommends it do pass with attached amendment(s)

/_/ recommends it be replaced with CS for _____ and that CS for _____ do pass

/_/ (and) recommends it be referred to the _____ committee

/_/ reports it back without recommendation

/_/ AND attaches a report of its intent

/_/ (other) _____

MEMBERS SIGNING THE MAJORITY REPORT:

[signature]		
Collette	~~[illegible]~~	
Tillion		

MEMBERS NOT CONCURRING IN THE MAJORITY REPORT:

[signature] recommends: NO REC

_____ recommends: _____

_____ recommends: _____

_____
Chairman

S 60

COMMITTEE REPORT

SENATE

1/11/77

_____ Date

Mr. President:

The Committee on SPECIAL COMMITTEE TO CONSIDER THE SALE OF ROYALTY GAS has had LCR 3 ~~SBR#3~~ disposal to Tenneco Alaska, Inc., of royalty gas taken in-kind under consideration. A majority of the members of the Committee

/X/ recommends it do pass

/ / recommends it do not pass

/ / recommends it do pass with attached amendment(s)

/ / recommends it be replaced with CS for _____ and that CS for _____ do pass

/ / (and) recommends it be referred to the _____ committee

/ / reports it back without recommendation

/ / AND attaches a report of its intent

/ / (other) _____

MEMBERS SIGNING THE MAJORITY REPORT:

[signature]		
Galletta	[signature]	
Tillion		

MEMBERS NOT CONCURRING IN THE MAJORITY REPORT:

John Huber recommends: NO REC

_____ recommends: _____

_____ recommends: _____

_____
Chairman

S 60

COMMITTEE REPORT

SENATE

1/11/77

_____ Date

Mr. President:

The Committee on SPECIAL COMMITTEE TO CONSIDER THE SALE OF ROYALTY GAS has had SCR 4 disposal to El Paso Natural Gas Company of royalty natural gas taken in-kind under consideration. A majority of the members of the Committee

/X/ recommends it do pass

/ / recommends it do not pass

/ / recommends it do pass with attached amendment(s)

/ / recommends it be replaced with CS for _____ and that CS for _____ do pass

/ / (and) recommends it be referred to the _____ committee

/ / reports it back without recommendation

/ / AND attaches a report of its intent

/ / (other) _____

MEMBERS SIGNING THE MAJORITY REPORT:

Jal Wood		
Collette	Do Pass	
Fillion		

MEMBERS NOT CONCURRING IN THE MAJORITY REPORT:

John Hughes recommends: No REC

_____ recommends: _____

_____ recommends: _____

_____
Chairman

S 60

Alaska State Legislature

Final as amended

SPECIAL COMMITTEE ON
THE SALE OF
ROYALTY GAS

(907) 465-3873
POUCH V
JUNEAU, ALASKA 99811

MEMBERS
REP. CLARK GRUENING, CHMN.
REP. C. V. CHATTERTON
REP. JOE L. HAYES
REP. JOSEPH H. McKINNON
REP. CHARLES H. PARR

House of Representatives

February 21, 1977

SPECIAL COMMITTEE REPORT

on House Concurrent Resolutions 11, 12 and 13

Legislative approval of the Administration's proposed sale of the state's 1/8 royalty share from the Prudhoe Bay field should rest on a clear finding that a sale at this time would serve the best interests of present and future generations of Alaskans.

A threshold legal question must first be resolved as to whether the three contracts for which approval is sought in House Concurrent Resolutions 11, 12 and 13* are before the Legislature in compliance with all applicable statutes. This question requires examination of whether, under AS 38.05.183, competitive bidding was properly waived, whether there was a proper determination of what gas was surplus to the "present and projected intrastate domestic and industrial needs" of the state, and whether the required reporting of such needs was made in proper fashion to the Legislature.

*Identical to Senate Concurrent Resolutions 3, 4, and 5.

AS 38.05.183(d) requires the publication of a report to the Legislature. While a report was issued pursuant to the statute,* the report does not by itself squarely address the issue to be answered under subsection (d).** The Commissioner of Natural Resources, in explanation, stated that the report incorporated by reference a number of other publications which allegedly contain the required information. The information included by reference is, however, conflicting and does not make the report responsive to the statute.

The inadequacy of the report under AS 38.05.183(d) is also significant in view of the ambiguity of the contracts in establishing what future role this report will have in determining what is surplus gas when the state attempts to take back gas for in-state use.

* O'Connor, Kristina M., and Dobey, Patrick L., "Analysis of Prudhoe Bay Royalty Natural Gas Demand and the Proposed Royalty Natural Gas Sale," State of Alaska Department of Natural Resources, Division of Minerals and Energy Management, January, 1977.

** Sec. 38.05.183. SALE OF ROYALTY.
"(d) Oil or gas taken in kind by the state as its royalty share may not be sold or otherwise disposed of for export from the state until the commissioner with the approval of the Alaska Royalty Oil and Gas Development Advisory Board determines that the royalty-in-kind oil or gas is surplus to the present and projected intrastate domestic and industrial needs. The commissioner shall make public, in writing, the specific findings and reasons on which his determination is based and shall, within 10 days of the convening of a regular session of the legislature, submit a report showing the immediate and long-range domestic and industrial needs of the state for oil and gas and an analysis of how these needs are to be met." [emphasis added.]

Regardless of any procedural problems with the presentation of these contracts to the Legislature, it is incumbent on this committee to consider the provisions and purpose of these contracts on the merits.

Hearings were held by this committee on January 27, 1977 and joint hearings were held on January 31, February 1, 2, 3, 4, and 7, 1977. Throughout the varied and sometimes conflicting testimony of some 31 witnesses, there was no doubt what the primary purpose of these contracts is. The stated and singular purpose for selling the state's royalty share of natural gas from the Prudhoe Bay field at this time is to help secure a decision by the President and Congress for the all-Alaska pipeline route.

In the opinion of the committee, there has not yet appeared any other compelling reason for the sale of royalty gas at this time. There was testimony by the Administration and others that these contracts met other objectives, namely, flexible provisions for taking back royalty gas for in-state use and favorable pricing terms. Provisions for a good price and for taking back the gas are more correctly viewed as prerequisites to any sale of royalty gas of this magnitude, rather than as objectives of these contracts.

The policy question for the committee is, therefore, what is the likelihood that approval of these contracts will favorably affect the ultimate decision on gas pipeline routing and what does the state give up by entering into

these contracts. If in the opinion of individual legislators, the costs of the contracts or the uncertainty of the costs to the state of these contracts outweighs the likelihood of having the contracts win certification of the desired pipeline route, the contracts should not be approved.

There is clear agreement among nearly all witnesses before the committee and the stated views of Alaska's congressional delegation, that the internal problems of Canada in certifying and financing a pipeline route and resolving Canadian native land claims questions (before certification, financing or construction of a gas pipeline) are major impediments to timely Canadian certification of the Arctic Gas pipeline. Regardless of whether the State of Alaska enters into these proposed contracts at this time, these problems will continue to be substantial roadblocks to the construction of a Canadian gas pipeline to transport Prudhoe Bay gas. It is inconceivable that if the arguments of the congressional delegation, Dr. Tussing and the El Paso proponents are sound, that the President and the Congress will not give these internal Canadian problems just consideration in their decision on the gas pipeline route.

Nothing in the Alaska Natural Gas Transportation Act of 1976 (which sets out the timetable for F.P.C., Presidential and Congressional decisions on the gas pipeline route)

precludes the serious consideration of all of the above-mentioned Canadian route impediments. In fact, the Act of 1976 mandates the President, in making his decision, to "...inform himself ... of the views and objectives of the government of Canada and other governments with respect to those aspects of [his] decision that may involve intergovernmental and international cooperation among the government of the United States, the States, the government of Canada, and any other government." The factor of delay of pipeline completion is a critical one in the decision-making process by the President and Congress.

Obviously, the probability of delay works in favor of selection of the El Paso route and, to a lesser degree, the Alcan route. If these problems are to be given any consideration, they will be given weight regardless of what action Alaska's Legislature takes on the proposed gas sale. In the event these international considerations are determinative, commitment of the state's gas to the El Paso route is superfluous to the route decision.

At no time during the hearings was the nature or type of the lobbying activities of the three buyers (before federal agencies, the President and the Congress) made clear. However, the committee was informed by the Administration and representatives of the three buyers that in return for the sale of the state's royalty gas, El Paso, Tenneco and

Southern Natural Gas would mount effective lobbying efforts on behalf of the all-Alaska gas pipeline route. The same witnesses also indicated that the conditional promise of delivery of the royalty gas would help to build "constituencies" favorable to the state's cause.

In regard to "lobbying efforts", no standard exists in the contracts to measure suitable performance by the buyers. The contracts state only that the buyers must "actively support" an all-Alaska route or the route chosen by the State. Despite extensive questioning, no statement of projected lobbying expenditures or activities was ever provided. Even assuming that conditional commitment of the gas would provide sufficient incentive to Tenneco (buyer of 50 per cent of the state's royalty share) and Southern (buyer of 25 per cent) to pull all stops on behalf of the all-Alaska line, there is no basis for assuming that El Paso needs the additional incentive of 25 per cent of Alaska's royalty gas in order to work on behalf of its own proposal.

Moreover, the committee believes there is some risk that the political mood of the country towards the petroleum industry, of which our buyers are considered by the public to be a part, will make the "lobbying efforts" of the buyers more of a liability than an asset to the state's cause. In securing lobbying efforts, the committee is of the opinion that the better method by far is to support direct lobbying

efforts by Alaskans for an Alaskan cause, as was done during the Statehood battle and in securing passage of the Alaska Native Claims Settlement Act.

In weighing the claim of the buyers that conditional commitment of our royalty gas will build meaningful constituencies in 42 states, the committee compared the relative magnitude of the quantities of royalty gas sold to the respective buyers to the total 1975 annual gas consumption by the 42 states. Alaska's royalty share accounts for a miniscule percentage of the total needs of these 42 states. For example, Tenneco's annual share of Alaska's royalty gas would amount to only 3.5 per cent of Tenneco's total 1975 sales, and only 0.35 per cent of total 1975 consumption in Tenneco's 25-state market area.

Moreover, in view of the fact that federal legislation will control where gas flows in a time of gas shortage (as is the case presently in the gas-short areas of the United States), there is no reason to believe that commitment under these contracts will have anything to do with where gas flows in the event of future shortages.

In determining what the state gets for sure under these contracts, it is the opinion of the committee that at best,

the state receives an absentee lobbying effort having minimal impact, and at worst, a scheme which engenders general disfavor. Testimony before the committee suggested that the threat of withholding royalty gas will not be viewed as credible, but to the extent such a threat is taken seriously, it may prove harmful to our cause on this issue, and perhaps on others of equal or greater importance before Congress.

Legislators must in the final analysis draw their own conclusions as to the political impact of these contracts. Each legislator should, however, be aware of the costs of the contracts to the state.

One principal cost of these contracts to the state is the risk of not being able to take back our own royalty gas for in-state use once gas is flowing out of the state. Despite the artful drafting of the contracts, there is, in the opinion of the committee, a substantial ambiguity as to how surplus will be determined at the time the state desires to use the gas. An opinion by Legislative counsel (attached hereto) states that "... an argument could be made that the determination [of surplus] made to support this sale is the sole determination allowed." While this argument would probably not prevail, according to the opinion, "the con-

tract is not fully clear on this point leaving room for substantial disagreement at a future time." This ambiguity would not exist if the state were given sole discretion to determine at any time in the future what gas is surplus.

Under one provision of the contracts, the state is given sole discretion in determining whether the buyer can recoup from other Alaskan gas fields one-and-one-half times the amount of natural gas the state takes back for in-state use. The committee suggests that this same standard should also clearly apply to the initial decision by the state to take back its gas for in-state use.

At the very minimum, it should be made clear in these sales agreements that surplus must be determined solely on circumstances which exist at the time the state wishes to take the gas back and not by any estimates of state needs contained in state reports issued before the sale. As trustees of resources belonging to the people of Alaska, public officials should not take the chance of committing gas which is not surplus to the future needs of the state.

Another cost to the state is the loss of flexibility in dealing with other potential buyers of the state's royalty gas. Several other companies and the State of California submitted interesting offers, but were unwilling to include a provision for support of an all-Alaska gas pipeline. The state also loses the opportunity to secure future siting of

petrochemical industries based on present commitments of gas.

Recent F.P.C. decisions have disapproved the practice of charging gas customers for advance payments to gas producers for gas not yet produced. Nothing in these decisions rules out a cash advance payment made at the time of initial delivery from being charged to gas users. Moreover, advance payments made from surplus or borrowed capital would be chargeable to the end users of the gas at the time of delivery. The present contracts, however, rule out such cash advances.

In committing 100 per cent of the daily production of the state's royalty gas for up to 20 years, the state could lose the ability to leverage a higher price under these present contract provisions by sales to other buyers. Further, it has been calculated by assigning the state a discount factor of 10 per cent per year that the most profitable production period for the gas is from 1991 to 2010.*

Consultants Carl Swanson and Rush Moody conceded in their testimony that there is a possibility that under continued regulation by the F.P.C., contracts entered into at this time might be given unfavorable gas price treatment

* Interim Report and Testimony Submitted to Joint Gas Pipeline Committee, Public Hearings February 17 - 20, 1976, p. 79.

by the F.P.C. or Congress under a contract vintaging price regulation. This was one concern expressed by the producers of the 7/8's of the Prudhoe field and one of the reasons given by the producers to the F.P.C. for not entering into firm contracts for sale of their 7/8's share.

Another concern of the producers is that the gas bring a sufficient price under either regulation or deregulation to justify an early sale. If projected costs of whatever gas pipeline is certified were only half as inaccurate as those for the oil pipeline, a situation could evolve in which the well-head value of the gas would be so adversely affected that the state would derive little benefit from the inter-state sale of its gas under these contracts.

The uncertainty of the well-head price of the gas at the time of completion of the delivery system is predicted is probably a primary reason for reluctance of the producers to enter into contracts at this time. The contracts do allow the state the best price obtainable by the producers for the sale of their Prudhoe gas, but the strong possibility must be considered that the most economic use of the state's gas (and that of the producers) may be to continue, after completion of a gas line, to re-inject the gas into the reservoir to maximize recovery and daily flow of oil.

Recognizing that although there is reason to believe that under present conditions, some of the above-mentioned

contracts benefits were difficult to obtain, a future contract which does not have political support as its principal goal could contain some of these benefits.

The assumption that only the El Paso or Alcan proposals would give the state an opportunity for in-state use of the gas may be questionable. Present or future market prices may not reflect the full economic cost to the state of not having the gas. A line to carry the state's royalty share (and later perhaps a portion of producer gas) to Fairbanks or to tidewater has not yet been given the serious consideration it deserves.

The question of the effect of 2.0 to 2.4 billion cubic feet per day production of gas on the oil reservoir is one to which no satisfactory answer has been given. The committee does foresee some risk in committing on a daily flow basis 100 per cent of the state's royalty gas to a pipeline which even now is economic only under a daily flow of at least 2.0 billion cubic feet. If, after the financing and construction of that pipeline, the state must defend the decision of the Conservation Committee to curb or end gas production, these contracts may weaken the state's power to restrict the flow of gas from the state. It should be recognized, therefore, that the legal and political challenges to the Conservation Committee's decision by gas purchasers, transmission companies and the American consumer will be

formidable.* The commitment of gas under these contracts may prejudice the state's defense.

All of the foregoing cost considerations cast doubt on the advisability of committing gas for export from the state in order to gain marginal political leverage in the gas pipeline routing decision. If in the opinion of individual legislators, these cost considerations are outweighed by the likelihood that commitment of the gas will have some favorable effect, the committee strongly recommends that 100 per cent of the state's daily production of royalty gas not be committed. The sale of 25 per cent of the royalty share to El Paso makes little sense even under the political objectives of building "constituencies" and "lobbying efforts" for the El Paso line. In addition, approval of any or all of the proposed contracts should be done only after the method of determining what is surplus to the intra-state domestic and industrial needs of the State of Alaska is clarified in the contracts.

The entire basis for a sale under these contracts is the belief of the buyers and of the people these buyers are to lobby that the state really will have no significant in-state use for its gas. Despite the take-back provisions and protestations to the contrary, the state has weakened its case for taking back its royalty gas by committing all of

* The committee strongly urges revision of the conservation statutes to anticipate future challenges by defining economic as well as physical waste and assuring that procedural due process and accountability of the committee members are provided for.

it.

Dr. Tussing, Mr. Jefferson Barry and others have testified that regardless of the primary political objective of these contracts, it is advisable not to commit what amounts to 100 per cent of the production of royalty gas for at least 20 years. Reduction of the amount of production of royalty gas for export can be accomplished by amending the contracts or by ~~di~~approving ~~one~~ of the sales agreements.

The foregoing report does not attempt to list all possible costs of the gas sales agreements, but only those costs which are now apparent. Each legislator must make his or her own determination as to whether political support gained by these conditional sales constitutes a wise use of the state's natural resources.

Rep. Clark Gruening, Chairman
House Special Committee on the
Sale of Royalty Gas

STATE OF ALASKA
THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

POUCH Y - STATE CAPITOL
JUNEAU, ALASKA 99811
907-465-3800

MEMORANDUM February 15, 1977

SUBJECT: Gas Sales Agreement

TO: Representative Clark Gruening

FROM: Billy G. Berrier BGB
Director, Legal Services Division

You have requested that I review the Royalty Gas Sales Agreement for legal form and freedom from ambiguity. There are major areas that appear to be problems from this limited approach.

The pricing problem has been extensively dealt with in the opinion of Rush Moody, Jr. of the firm Vinson, Elkins, Searls, Connally & Smith.

I do find a substantial ambiguity in the gas reduction clauses. The material clause reads:

> "3.5 The reservation of gas by Seller by way of its exercising its rights of gas reductions pursuant to Sections 3.3 and 3.4 hereof shall be for the sole purpose of Seller meeting the intrastate domestic and industrial needs of the State of Alaska including the right to exchange reserved gas for other natural gas produced or delivered into Alaska, provided such exchanged gas is used for the sole purpose of meeting the intrastate domestic and industrial needs of the State of Alaska. However, this provision shall not limit the right to export from the State any products manufactured from said gas." (emphasis added)

This clause is controlled by Sec. 1.11 of definitions which reads:

> "1.11 The term "domestic and industrial needs of the State of Alaska" shall mean those present and projected residential, commercial and industrial uses for gas within Alaska as determined by the Alaska Royalty Oil and Gas Development Advisory Board in accordance with AS 38.05.183(d)."

However, in Sec. 3.7(a) relating to the buy-back rights of the Buyer a broader reference is apparently made. This section, in material part reads:

> "3.7(a) Should Seller, through the exercise of its rights under Sections 3.3 and 3.4, in fact diminish the volume of gas otherwise available to Buyer hereunder and should Seller during the term of this Agreement and five (5) years thereafter have additional royalty gas which in Seller's sole discretion is surplus to the intrastate domestic and industrial needs of the State of Alaska, and will be transported by the Pipeline, Seller shall offer to sell to Buyer under the provisions of this Agreement, except as to price and term, ratably with other eligible purchasers of Seller's royalty gas from the leases identified in Exhibit A such additional royalty gas equivalent to Seller's prior reductions under Sections 3.3 and 3.4." (emphasis added)

This language is also used in Sec. 3.7(b) with only a slight variant, that section reading:

> "3.7(b) In addition to the right granted Buyer under Subsection 3.7(a) and after all eligible purchasers of royalty gas from the leases identified in Exhibit A have had an opportunity to exercise such right, Seller grants to Buyer the right of first refusal to purchase additional royalty gas from Seller to the extent of one-half (1/2) times the volume that Seller's exercise of its rights under Sections 3.3 and 3.4 in fact diminishes the amount of gas Buyer otherwise would have purchased and received hereunder. Such right is granted during the term of this agreement and five (5) years thereafter. This right of first refusal shall apply to royalty gas which becomes available to Seller and which in Seller's sole discretion is determined to be surplus to the intrastate domestic and industrial needs of the State of Alaska. This right of first refusal applies only to gas which will be transported by the Pipeline." (emphasis added)

The net effect of Sec. 3.5 and definition 1.11 is that the gas reductions the state may order is that not found surplus to needs under AS 38.05.183(d) which reads:

> "(d) Oil or gas taken in kind by the state as its royalty share may not be sold or otherwise disposed of for export from the state until the commissioner with the approval of the Alaska Royalty Oil and Gas Development Advisory Board determines that the royalty in kind

> oil or gas is surplus to the present and projected intrastate domestic and industrial needs. The commissioner shall make public, in writing, the specific findings and reasons on which his determination is based and shall, within 10 days of the convening of a regular session of the legislature, submit a report showing the immediate and long-range domestice and industrial needs of the state for oil and gas and an analysis of how these needs are to be met."

It is my understanding that a determination required under this subsection has been made in connection with the sale.

Under Sec. 3.3 of the contract of the state is given the right to reduce the quantity of royalty gas available for sale and delivery by percentage varying with time but the reduction must be pursuant to the limitation in Sec. 3.5. I find the mechanics of this obscure.

Apparently a determination would be made that certain royalty in kind gas is surplus to the present and projected intrastate domestic and industrial need. All royalty gas remaining would be for domestic and industrial needs of the state and, subject to the percentages set out in the contract, the state would have the right to reduce the quantity of royalty gas available for sale and delivery by that amount.

This determination could apparently be made at least annually on a continuing basis but an argument could be made that the determination made to support this sale is the sole determination allowed. The argument would be that the reservation in Sec. 3.5 is deliberately narrow in order to limit the reservation of gas to that which the board initially determined to be not surplus to present and projected needs so that if the projected needs do in fact materialize a take-back can take place, while broader discretion was allowed in Sec. 3.7 to cover the possibility that projected needs may not materialize in the future.

In my opinion this argument even if fully developed would not prevail and that the contract would be construed to allow future determination since that interpretation is much more consistant with the entire contract. Unfortunately, the contract is not fully clear on this point leaving room for substantial disagreement at a future time.

BGB:smh

SENATE GAS SALE

NUMBER	ABBREVIATED TITLE	SPONSOR	REQUESTER	CURRENT STATUS	STATUS DATE	BILL ID.	JOURNAL PAGE	JOURNAL DATE	COMMITTEE RECOMMENDATIONS
SCR 3	GAS ROYALTY - TENNECO ALASKA INC	RULES	GOVERNOR	PASSD (H) ON RECONS	03/04/77		286	02/11/77	DP03, NR01.
SCR 4	GAS ROYALTY - EL PASO NATURAL GAS	RULES	GOVERNOR	PASSD (H) ON RECONS	03/04/77		286	02/11/77	DP03, NR01.
SCR 5	GAS ROYALTY - SOUTHERN NAT GAS CO	RULES	GOVERNOR	PASSD(H)-RECON.NTCE	03/03/77		287	02/11/77	DP03, NR01.

02/11/77 SUMMARY OF LEGISLATION REPORTED OUT OF COMMITTEE

SENATE GAS SALE

NUMBER	ABBREVIATED TITLE	SPONSOR	REQUESTER	CURRENT STATUS	STATUS DATE	BILL ID.	JOURNAL PAGE	JOURNAL DATE	COMMITTEE RECOMMENDATIONS
SCR 3	GAS ROYALTY - TENNECO ALASKA INC	RULES	GOVERNOR	IN (S) RESOURCES	02/11/77		286	02/11/77	DP03, NR01.
SCR 4	GAS ROYALTY - EL PASO NATURAL GAS	RULES	GOVERNOR	IN (S) RESOURCES	02/11/77		286	02/11/77	DP03, NR01.
SCR 5	GAS ROYALTY - SOUTHERN NAT GAS CO	RULES	GOVERNOR	IN (S) RESOURCES	02/11/77		287	02/11/77	DP03, NR01.

SCOMM

#21:3

HOUSE
JOURNAL SUPPLEMENT

February 22, 1977 No. 22

February 21, 1977

SPECIAL COMMITTEE ON THE SALE OF ROYALTY GAS

SPECIAL COMMITTEE REPORT

on House Concurrent Resolutions 11, 12 and 13

Legislative approval of the Administration's proposed sale of the state's 1/8 royalty share from the Prudhoe Bay field should rest on a clear finding that a sale at this time would serve the best interests of present and future generations of Alaskans.

A threshold legal question must first be resolved as to whether the three contracts for which approval is sought in House Concurrent Resolutions 11, 12 and 13* are before the Legislature in compliance with all applicable statutes. This question requires examination of whether, under AS 38.05.183, competitive bidding was properly waived, whether there was a proper determination of what gas was surplus to the "present and projected intrastate domestic and industrial needs" of the state, and whether the required reporting of such needs was made in proper fashion to the Legislature.

AS 38.05.183(d) requires the publication of a report to the Legislature. While a report was issued pursuant to the statute,** the report does not by itself squarely address the

*Identical to Senate Concurrent Resolutions 3, 4, and 5.

** O'Connor, Kristina M., and Dobey, Patrick L., "Analysis of Prudhoe Bay Royalty Natural Gas Demand and the Proposed Royalty Natural Gas Sale," State of Alaska Department of Natural Resources, Division of Minerals and Energy Management, January, 1977.

issue to be answered under subsection (d). * The Commissioner of Natural Resources, in explanation, stated that the report incorporated by reference a number of other publications which allegedly contain the required information. The information included by reference is, however, conflicting and does not make the report responsive to the statute.

The inadequacy of the report under AS 38.05.183(d) is also significant in view of the ambiguity of the contracts in establishing what future role this report will have in determining what is surplus gas when the state attempts to take back gas for in-state use.

Regardless of any procedural problems with the presentation of these contracts to the Legislature, it is incumbent on this committee to consider the provisions and purpose of these contracts on the merits.

Hearings were held by this committee on January 27, 1977 and joint hearings were held on January 31, February 1, 2, 3, 4, and 7, 1977. Throughout the varied and sometimes conflicting testimony of some 31 witnesses, there was no doubt what the primary purpose of these contracts is. The stated and singular purpose for selling the state's royalty share of natural gas from the Prudhoe Bay field at this time is to help secure a decision by the President and Congress for the all-Alaska pipeline route.

* Sec. 38.05.183. SALE OF ROYALTY.
"(d) Oil or gas taken in kind by the state as its royalty share may not be sold or otherwise disposed of for export from the state until the commissioner with the approval of the Alaska Royalty Oil and Gas Development Advisory Board determines that the royalty-in-kind oil or gas is surplus to the present and projected intrastate domestic and industrial needs. The commissioner shall make public, in writing, the specific findings and reasons on which his determination is based and shall, within 10 days of the convening of a regular session of the legislature, submit a report showing the immediate and long-range domestic and industrial needs of the state for oil and gas and an analysis of how these needs are to be met." [emphasis added.]

In the opinion of the committee, there has not yet appeared any other compelling reason for the sale of royalty gas at this time. There was testimony by the Administration and others that these contracts met other objectives, namely, flexible provisions for taking back royalty gas for in-state use and favorable pricing terms. Provisions for a good price and for taking back the gas are more correctly viewed as prerequisites to any sale of royalty gas of this magnitude, rather than as objectives of these contracts.

The policy question for the committee is, therefore, what is the likelihood that approval of these contracts will favorably affect the ultimate decision on gas pipeline routing and what does the state give up by entering into these contracts. If in the opinion of individual legislators, the costs of the contracts or the uncertainty of the costs to the state of these contracts outweighs the likelihood of having the contracts win certification of the desired pipeline route, the contracts should not be approved.

There is clear agreement among nearly all witnesses before the committee and the stated views of Alaska's congressional delegation, that the internal problems of Canada in certifying and financing a pipeline route and resolving Canadian native land claims questions (before certification, financing or construction of a gas pipeline) are major impediments to timely Canadian certification of the Arctic Gas pipeline. Regardless of whether the State of Alaska enters into these proposed contracts at this time, these problems will continue to be substantial roadblocks to the construction of a Canadian gas pipeline to transport Prudhoe Bay gas. It is inconceivable that if the arguments

of the congressional delegation, Dr. Tussing and the El Paso proponents are sound, that the President and the Congress will not give these internal Canadian problems just consideration in their decision on the gas pipeline route.

Nothing in the Alaska Natural Gas Transportation Act of 1976 (which sets out the timetable for F.P.C., Presidential and Congressional decisions on the gas pipeline route) precludes the serious consideration of all of the above-mentioned Canadian route impediments. In fact, the Act of 1976 mandates the President, in making his decision, to "...inform himself ... of the views and objectives of the government of Canada and other governments with respect to those aspects of [his] decision that may involve intergovernmental and international cooperation among the government of the United States, the States, the government of Canada, and any other government." The factor of delay of pipeline completion is a critical one in the decision-making process by the President and Congress.

Obviously, the probability of delay works in favor of selection of the El Paso route and, to a lesser degree, the Alcan route. If these problems are to be given any consideration, they will be given weight regardless of what action Alaska's Legislature takes on the proposed gas sale. In the event these international considerations are determinative, commitment of the state's gas to the El Paso route is superfluous to the route decision.

At no time during the hearings was the nature or type of the lobbying activities of the three buyers (before federal agencies, the President and the Congress) made clear. However, the committee was informed by the Administration and representatives of the three buyers that in return for the sale of the state's royalty gas, El Paso, Tenneco and

Southern Natural Gas would mount effective lobbying efforts on behalf of the all-Alaska gas pipeline route. The same witnesses also indicated that the conditional promise of delivery of the royalty gas would help to build "constituencies" favorable to the state's cause.

In regard to "lobbying efforts", no standard exists in the contracts to measure suitable performance by the buyers. The contracts state only that the buyers must "actively support" an all-Alaska route or the route chosen by the State. Despite extensive questioning, no statement of projected lobbying expenditures or activities was ever provided. Even assuming that conditional commitment of the gas would provide sufficient incentive to Tenneco (buyer of 50 per cent of the state's royalty share) and Southern (buyer of 25 per cent) to pull all stops on behalf of the all-Alaska line, there is no basis for assuming that El Paso needs the additional incentive of 25 per cent of Alaska's royalty gas in order to work on behalf of its own proposal.

Moreover, the committee believes there is some risk that the political mood of the country towards the petroleum industry, of which our buyers are considered by the public to be a part, will make the "lobbying efforts" of the buyers more of a liability than an asset to the state's cause. In securing lobbying efforts, the committee is of the opinion that the better method by far is to support direct lobbying efforts by Alaskans for an Alaskan cause, as was done during the Statehood battle and in securing passage of the Alaska Native Claims Settlement Act.

In weighing the claim of the buyers that conditional

commitment of our royalty gas will build meaningful constituencies in 42 states, the committee compared the relative magnitude of the quantities of royalty gas sold to the respective buyers to the total 1975 annual gas consumption by the 42 states. Alaska's royalty share accounts for a miniscule percentage of the total needs of these 42 states. For example, Tenneco's annual share of Alaska's royalty gas would amount to only 3.5 per cent of Tenneco's total 1975 sales, and only 0.35 per cent of total 1975 consumption in Tenneco's 25-state market area.

Moreover, in view of the fact that federal legislation will control where gas flows in a time of gas shortage (as is the case presently in the gas-short areas of the United States), there is no reason to believe that commitment under these contracts will have anything to do with where gas flows in the event of future shortages.

In determining what the state gets for sure under these contracts, it is the opinion of the committee that at best, the state receives an absentee lobbying effort having minimal impact, and at worst, a scheme which engenders general disfavor. Testimony before the committee suggested that the threat of withholding royalty gas will not be viewed as credible, but to the extent such a threat is taken seriously, it may prove harmful to our cause on this issue, and perhaps on others of equal or greater importance before Congress.

Legislators must in the final analysis draw their own conclusions as to the political impact of these contracts. Each legislator should, however, be aware of the costs of the contracts to the state.

One principal cost of these contracts to the state is

the risk of not being able to take back our own royalty gas for in-state use once gas is flowing out of the state. Despite the artful drafting of the contracts, there is, in the opinion of the committee, a substantial ambiguity as to how surplus will be determined at the time the state desires to use the gas. An opinion by Legislative counsel (attached hereto) states that "... an argument could be made that the determination [of surplus] made to support this sale is the sole determination allowed." While this argument would probably not prevail, according to the opinion, "the contract is not fully clear on this point leaving room for substantial disagreement at a future time." This ambiguity would not exist if the state were given sole discretion to determine at any time in the future what gas is surplus.

Under one provision of the contracts, the state is given sole discretion in determining whether the buyer can recoup from other Alaskan gas fields one-and-one-half times the amount of natural gas the state takes back for in-state use. The committee suggests that this same standard should also clearly apply to the initial decision by the state to take back its gas for in-state use.

At the very minimum, it should be made clear in these sales agreements that surplus must be determined solely on circumstances which exist at the time the state wishes to take the gas back and not by any estimates of state needs contained in state reports issued before the sale. As trustees of resources belonging to the people of Alaska, public officials should not take the chance of committing gas which is not surplus to the future needs of the state.

Another cost to the state is the loss of flexibility in dealing with other potential buyers of the state's royalty gas. Several other companies and the State of California

submitted interesting offers, but were unwilling to include a provision for support of an all-Alaska gas pipeline. The state also loses the opportunity to secure future siting of petrochemical industries based on present commitments of gas.

Recent F.P.C. decisions have disapproved the practice of charging gas customers for advance payments to gas producers for gas not yet produced. Nothing in these decisions rules out a cash advance payment made at the time of initial delivery from being charged to gas users. Moreover, advance payments made from surplus or borrowed capital would be chargeable to the end users of the gas at the time of delivery. The present contracts, however, rule out such cash advances.

In committing 100 per cent of the daily production of the state's royalty gas for up to 20 years, the state could lose the ability to leverage a higher price under these present contract provisions by sales to other buyers. Further, it has been calculated by assigning the state a discount factor of 10 per cent per year that the most profitable production period for the gas is from 1991 to 2010.*

Consultants Carl Swanson and Rush Moody conceded in their testimony that there is a possibility that under continued regulation by the F.P.C., contracts entered into at this time might be given unfavorable gas price treatment by the F.P.C. or Congress under a contract vintaging price regulation. This was one concern expressed by the producers

* Interim Report and Testimony Submitted to Joint Gas Pipeline Committee, Public Hearings February 17 - 20, 1976, p. 79.

of the 7/8's of the Prudhoe field and one of the reasons given by the producers to the F.P.C. for not entering into firm contracts for sale of their 7/8's share.

Another concern of the producers is that the gas bring a sufficient price under either regulation or deregulation to justify an early sale. If projected costs of whatever gas pipeline is certified were only half as inaccurate as those for the oil pipeline, a situation could evolve in which the well-head value of the gas would be so adversely affected that the state would derive little benefit from the inter-state sale of its gas under these contracts.

The uncertainty of the well-head price of the gas at the time of completion of the delivery system is predicted is probably a primary reason for reluctance of the producers to enter into contracts at this time. The contracts do allow the state the best price obtainable by the producers for the sale of their Prudhoe gas, but the strong possibility must be considered that the most economic use of the state's gas (and that of the producers) may be to continue, after completion of a gas line, to re-inject the gas into the reservoir to maximize recovery and daily flow of oil.

Recognizing that although there is reason to believe that under present conditions, some of the above-mentioned contracts benefits were difficult to obtain, a future contract which does not have political support as its principal goal could contain some of these benefits.

The assumption that only the El Paso or Alcan proposals would give the state an opportunity for in-state use of the gas may be questionable. Present or future market prices may not reflect the full economic cost to the state of not having the gas. A line to carry the state's royalty share (and later perhaps a portion of producer gas) to Fairbanks

or to tidewater has not yet been given the serious consideration it deserves.

The question of the effect of 2.0 to 2.4 billion cubic feet per day production of gas on the oil reservoir is one to which no satisfactory answer has been given. The committee does foresee some risk in committing on a daily flow basis 100 per cent of the state's royalty gas to a pipeline which even now is economic only under a daily flow of at least 2.0 billion cubic feet. If, after the financing and construction of that pipeline, the state must defend the decision of the Conservation Committee to curb or end gas production, these contracts may weaken the state's power to restrict the flow of gas from the state. It should be recognized, therefore, that the legal and political challenges to the Conservation Committee's decision by gas purchasers, transmission companies and the American consumer will be formidable.* The commitment of gas under these contracts may prejudice the state's defense.

All of the foregoing cost considerations cast doubt on the advisability of committing gas for export from the state in order to gain marginal political leverage in the gas pipeline routing decision. If in the opinion of individual legislators, these cost considerations are outweighed by the likelihood that commitment of the gas will have some favorable effect, the committee strongly recommends that 100 per cent of the state's daily production of royalty gas not be committed. The sale of 25 per cent of the royalty share to El Paso makes little

* The committee strongly urges revision of the conservation statutes to anticipate future challenges by defining economic as well as physical waste and assuring that procedural due process and accountability of the committee members are provided for.

sense even under the political objectives of building "constituencies" and "lobbying efforts" for the El Paso line. In addition, approval of any or all of the proposed contracts should be done only after the method of determining what is surplus to the intra-state domestic and industrial needs of the State of Alaska is clarified in the contracts.

The entire basis for a sale under these contracts is the belief of the buyers and of the people these buyers are to lobby that the state really will have no significant in-state use for its gas. Despite the take-back provisions and protestations to the contrary, the state has weakened its case for taking back its royalty gas by committing all of it.

Dr. Tussing, Mr. Jefferson Barry and others have testified that regardless of the primary political objectives of these contracts, it is advisable not to commit what amounts to 100 per cent of the production of royalty gas for at least 20 years. Reduction of the amount of production of royalty gas for export can be accomplished by amending the contracts or by disapproving one of the sales agreements.

The foregoing report does not attempt to list all possible costs of the gas sales agreements, but only those costs which are now apparent. Each legislator must make his or her own determination as to whether political support gained by these conditional sales constitutes a wise use of the state's natural resources.

Clark Gruening

Rep. Clark Gruening, Chairman
House Special Committee on the
Sale of Royalty Gas

Charles H Parr

C. V. Patterson

Joe McKinnon

Joe L Hayes — NOT CONCURRING

LEGISLATIVE AFFAIRS AGENCY

MEMORANDUM February 16, 1977

SUBJECT: Gas Sales Agreement

TO: Representative Clark Gruening

FROM: Billy G. Berrier
Director, Legal Services Division

You have requested that I review the Royalty Gas Sales Agreement for legal form and freedom from ambiguity. There are major areas that appear to be problems from this limited approach.

The pricing problem has been extensively dealt with in the opinion of Rush Moody, Jr. of the firm Vinson, Elkins, Searls, Connally & Smith.

I do find a substantial ambiguity in the gas reduction clauses. The material clause reads:

> "3.5 The reservation of gas by Seller by way of its exercising its rights of gas reductions pursuant to Sections 3.3 and 3.4 hereof shall be for the sole purpose of Seller meeting the intrastate domestic and industrial needs of the State of Alaska including the right to exchange reserved gas for other natural gas produced or delivered into Alaska, provided such exchanged gas is used for the sole purpose of meeting the intrastate domestic and industrial needs of the State of Alaska. However, this provision shall not limit the right to export from the State any products manufactured from said gas." (emphasis added)

This clause is controlled by Sec. 1.11 of definitions which reads:

> "1.11 The term "domestic and industrial needs of the State of Alaska" shall mean those present and projected residential, commercial and industrial uses for gas within Alaska as determined by the Alaska Royalty Oil and Gas Development Advisory Board in accordance with AS 38.05.183(d)."

However, in Sec. 3.7(a) relating to the buy-back rights of the Buyer a broader reference is apparently made. This section, in material part reads:

> "3.7(a) Should Seller, through the exercise of its rights under Sections 3.3 and 3.4, in fact diminish the volume of gas otherwise available to Buyer hereunder and should Seller during the term of this Agreement and five (5) years thereafter have additional royalty gas which in Seller's sole discretion is surplus to the intrastate domestic and industrial needs of the State of Alaska, and will be transported by the Pipeline, Seller shall offer to sell to Buyer under the provisions

of this Agreement, except as to price and term, ratably with other eligible purchasers of Seller's royalty gas from the leases identified in Exhibit A such additional royalty gas equivalent to Seller's prior reductions under Sections 3.3 and 3.4." (emphasis added)

This language is also used in Sec. 3.7(b) with only a slight variant, that section reading:

"3.7(b) In addition to the right granted Buyer under Subsection 3.7(a) and after all eligible purchasers of royalty gas from the leases identified in Exhibit A have had an opportunity to exercise such right, Seller grants to Buyer the right of first refusal to purchase additional royalty gas from Seller to the extent of one-half (1/2) times the volume that Seller's exercise of its rights under Sections 3.3 and 3.4 in fact diminishes the amount of gas Buyer otherwise would have purchased and received hereunder. Such right is granted during the term of this agreement and five (5) years thereafter. This right of first refusal shall apply to royalty gas which becomes available to Seller and which in Seller's sole discretion is determined to be surplus to the intrastate domestic and industrial needs of the State of Alaska. This right of first refusal applies only to gas which will be transported by the Pipeline." (emphasis added)

The net effect of Sec. 3.5 and definition 1.11 is that the gas reductions the state may order is that not found surplus to needs under AS 38.05.183(d) which reads:

"(d) Oil or gas taken in kind by the state as its royalty share may not be sold or otherwise disposed of for export from the state until the commissioner with the approval of the Alaska Royalty Oil and Gas Development Advisory Board determines that the royalty in kind oil or gas is surplus to the present and projected intrastate domestic and industrial needs. The commissioner shall make public, in writing, the specific findings and reasons on which his determination is based and shall, within 10 days of the convening of a regular session of the legislature, submit a report showing the immediate and long-range domestic and industrial needs of the state for oil and gas and an analysis of how these needs are to be met."

It is my understanding that a determination required under this subsection has been made in connection with the sale.

Under Sec. 3.3 of the contract of the state is given the right to reduce the quantity of royalty gas available for sale and delivery by percentage varying with time but the reduction must be pursuant to the limitation in Sec. 3.5. I find the mechanics of this obscure.

Apparently a determination would be made that certain royalty in kind gas is surplus to the present and projected intrastate domestic and industrial need. All royalty gas remaining would be for domestic and industrial needs of the state and, subject to the percentages set out in the contract, the state would have the right to reduce the quantity of royalty gas available for sale and delivery by that amount.

This determination could apparently be made at least annually on a continuing basis but an argument could be made that the determination made to support this sale is the sole determination allowed. The argument would be that the reservation in Sec. 3.5 is deliberately narrow in order to limit the reservation of gas to that which the board initially determined to be not surplus to present and projected needs so that if the projected needs do in fact materialize a take-back can take place, while broader discretion was allowed in Sec. 3.7 to cover the possibility that projected needs may not materialize in the future.

In my opinion this argument even if fully developed would not prevail and that the contract would be construed to allow future determination since that interpretation is much more consistant with the entire contract. Unfortunately, the contract is not fully clear on this point leaving room for substantial disagreement at a future time."

HJR 21

FISCAL NOTE

I. REQUEST
Bill/Resolution No. HJR 21
Title Requesting establishment of a branch in Alaska of the federal Reserve Bank of San Francisco
Requested by House Commerce Committee Date 2/16/77

II. FISCAL DETAIL
Agency Affected Department of Commerce & Economic Development
Program Category Affected Division of Banking & Securities
Budget Request Unit(s) Affected

EXPENDITURES (Thousands of Dollars)

	FY 77	FY 78	FY 79	FY 80	FY 81	FY 82
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -

FUNDING (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify)						
	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -

POSITIONS

FULL TIME	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -
PART TIME	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -
TEMPORARY	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)
1. The Division of Banking & Securities within the Department of Commerce & Economic Development is responsible for the regulation of state-chartered banks, and financial institutions as provided in AS 06.
2. The Federal Reserve Bank is an institution established by federal law and is not subject to regulation by the State of Alaska.
3. The activities of the FRB will then not have a direct fiscal impact on the regulatory duties of the department.

IV. DATE 2/16/77 PREPARED BY Julius J. Brecht, Director
AGENCY Division of Banking & Securities
PHONE 465-2521

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

HB
124

FISCAL NOTE

I. REQUEST
Bill/Resolution No. HB 124
Title To comparative fault
Requested by H. Commerce Committee Date 1/31/77

II. FISCAL DETAIL
Agency Affected Commerce & Economic Development
Program Category Affected Protection
Budget Request Unit(s) Affected Division of Insurance

EXPENDITURES (Thousands of Dollars) NONE

	FY 77	FY 78	FY 79	FY 80	FY 81	FY 82
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL						

FUNDING (Thousands of Dollars) NONE

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify)						

POSITIONS NONE

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

NO FISCAL IMPACT

2/2/77 Richard L. Block

HB
246

FISCAL NOTE

I. REQUEST
Bill/Resolution No. HOUSE BILL NO. 246
Title An act relating to the regulation of Lobbists and providing for an effective date
Requested by the Governor Date 2/18/77

II. FISCAL DETAIL
Agency Affected Public Offices Commission, Office of the Governor
Program Category Affected General Government
Budget Request Unit(s) Affected Public Offices Commission

EXPENDITURES (Thousands of Dollars)

	FY 77	FY 78	FY 79	FY 80	FY 81	FY 82
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL	0	0	0	0	0	0

FUNDING (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

IV. DATE February 18, 1977 PREPARED BY Richard I. Pegues, Admin. Officer
AGENCY Department of Law
PHONE 465-3695

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

HB
247

FISCAL NOTE

I. REQUEST
Bill/Resolution No. HOUSE BILL NO. 247
Title An act authorizing State land to be made available as homesites
Requested by Natural Resources/Division of Lands Date

II. FISCAL DETAIL
Agency Affected
Program Category Affected
Budget Request Unit(s) Affected

EXPENDITURES

	FY 77	FY 78	FY 79	FY 80	FY 81	FY 82
100 PERSONAL SERVICES			47,415	50,760	71,865	
200 TRAVEL			10,000	15,000	20,000	
300 CONTRACTUAL			46,154	46,154	46,154	
400 COMMODITIES			250	250	250	
500 EQUIPMENT			1,000		500	
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL			104,819	112,164	138,769	

FUNDING

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify)						

POSITIONS

FULL TIME		2	2	3		
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)
This fiscal note assumes that the State will only need front end money for surveying the property.

This front end money will be returned to State by homesite recipients for use in additional site surveys. Additional analysis and explanation of the fiscal note is attached. (See attached for assumptions regarding program size under this fiscal note.)

*Note that the value of the land committed to the program is not included. Its value will depend on later estimates. Rough estimates are provided on the attached sheet.

IV. DATE 2/14/77 PREPARED BY DNR-ADL
AGENCY
PHONE

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

Guy Martin

HB 247

FISCAL NOTE ASSUMPTIONS FOR
AN ACT AUTHORIZING STATE LAND TO BE
MADE AVAILABLE AS HOMESITES
(ADMINISTRATION BILL)

The following information is intended to outline the principal fiscal assumptions which were made in order to estimate the costs involved with a possible homesite program. The information will list positions by year, the number of lots and areas covered, and approximate value of the land transferred by the State.

SIZE OF PROGRAM

	Settled Areas		Remote Areas	
Year	# Lots	# Areas	# Remote Lots	# of Remote Areas
1978	64	1 or 2	10	1 or 2
1979	128	2 - 4	20	2 - 4
1980	192	5 - 8	30	5 - 8

PERSONAL SERVICES

Year	Positions Required	Salary
1978	1 Associate Planner	$ 21,048.00
	1 Land Management Officer I	16,884.00
Total	2	37,932.00
1979	1 Associate Planner	21,048.00
	1 Land Management Officer II	19,560.00
Total	2	40,608.00
1980	1 Associate Planner	21,048.00
	1 Land Management Officer II	19,560.00
	1 Land Management Officer I	16,884.00
Total	3	57,492.00

ESTIMATED SURVEY COSTS FOR A STATE HOMESITE PROGRAM

(Settled Area Lots)

Year	# Lots	Cost per lot	Total	Actual Total
1978	64	436.00	27904	27904
1979	128	436.00	55808	27904
1980	192	436.00	83712	27904

ESTIMATED SURVEY COSTS FOR A STATE HOMESITE PROGRAM

(Remote Area Lots)

Year	# Lots	Cost per lot	Total	Actual Total
1978	10	1825	18250	18250
1979	20	1825	36500	18250
1980	30	1825	54750	18250

Total estimated survey costs per year for a Homesite Program - 46,154

NOTE: The survey costs remain the same because it is assumed that the survey costs for the previous year will be repaid to the State. When the program ends it is assumed that there will be no survey cost to the State.

HB
247

APPROXIMATE UNDEVELOPED LAND VALUE OF STATE RURAL HOMESITE LAND
(LAND VALUES NOT FIGURED IN FISCAL NOTE)

Year	Cost per acre	# Acres needed	Total Land Value
1978	2000 - 2500	80	160,000 - 200,000
1979	2000 - 2500	160	320,000 - 400,000
1980	2000 - 2500	320	640,000 - 800,000

APPROXIMATE UNDEVELOPED LAND VALUE OF STATE REMOTE HOMESITE LAND

Year	Cost per acre	# Acres needed	Total Land Value
1978	500 - 2000	25	12,500 - 50,000
1979	500 - 2000	50	25,000 - 100,000
1980	500 - 2000	75	37,500 - 150,000

FISCAL NOTE

HB 248

I. REQUEST HOUSE BILL NO. 248
Bill/Resolution No.
Title An Act relating to the Alaska Pipeline Commission
Requested by Office of the Governor Date 2/17/77

II. FISCAL DETAIL
Agency Affected Commerce and Economic Development
Program Category Affected Protection
Budget Request Unit(s) Affected Alaska Pipeline Commission

EXPENDITURES (Thousands of Dollars)

		HOUSE					
		FY 77	FY 78	FY 79	FY 80	FY 81	FY 82
100	PERSONAL SERVICES						
200	TRAVEL						
300	CONTRACTUAL						
400	COMMODITIES						
500	EQUIPMENT						
600	LAND & STRUCTURES						
700	GRANTS, CLAIMS, ETC.						
	TOTAL						

FUNDING (Thousands of Dollars)

	HOUSE					
GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify)						

POSITIONS

	HOUSE					
FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

The proposed amendments will not have fiscal impact on the Alaska Pipeline Commission

Thomas Cook by ark

IV. DATE 2/17/77 PREPARED BY Thomas Cook, Executive Director
AGENCY Alaska Pipeline Commission
PHONE 279-0581

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

Senate Copy

MEETING Jan. 27, 1977

HOUSE SPECIAL COMMITTEE

ON THE SALE OF ROYALTY GAS

REPRESENTATIVE CLARK GRUENING:

We will come to order. This is going to be rather informal. This is the first meeting of the House Special Committee to Consider the Sale of Royalty Gas. We have with us tonight Commissioner Guy Martin, who, I think, has been following us longer than anybody, in this room anyway. He is eminently involved in negotiations and what it is to sell this natural resource. With him is Easy Gilbreth who is now head of a new division called the Division of Minerals and Energy Management. And he still has his fingers in the Division of Oil and Gas and knows a lot about the technical aspects of extracting gas and moving it. We also have Fred Boness who is with the Attorney General's office and, as I understand it, is the resident legal expert on the sale of royalty gas and oil.

I think the committee will have some questions, particularly of you first, but we have just received... First let me preface this, that we have lost one of our experts in the House, Willard Bowman, who initially started the interest of the Legislature in this area with his proposal bill which became law. That created the joint gas pipeline committee. With the exception of myself, I don't think any of these committee members have served on that committee although I think they have followed the issue, so tonight I want to cover some of the basics so that we're, maybe, better prepared for the hearings that start on the 31st.

The resolutions just arrived from the Governor and he mentions in them that he wants prompt action on them and that they were introduced on the House side later to expedite the action. Can you tell us, Commissioner Martin, what in particular would require us to speed it up? Is there anything we should know in terms of time limitations and such? It may be our first consideration.

MARTIN: Well, first, Mr. Chairman, I'd say, first of all, I think we've tried to make it clear, when asking for prompt action, that we don't want that in any way to suggest that you ought to act any more quickly than you think you ought to responsibly, pursuant to your responsibilities under the Statute. So we put the matter before the legislature very early in the session. I think either the first or second day, all the materials were delivered and, hopefully, a lot of it was in your hands by various means before the session started. I don't think we mean to at all, pressure the legislature to act more quickly than they think they have to to look at these things closely.

In terms of the need to act on them as quickly as reasonably possible in that constraint. I think it is a series of factors. Let me just put it very bluntly -- the train is leaving the station on the decision on the gasline in Washington. And the timing of the Federal decision is underway now. Now whether that decision is made for practical purposes, in June or July, or September, or at the end of this year, is something that, quite frankly, I don't know. But there is going to be a critical time when the Federal decision comes together and it's going to be a combination of factors that has to do with the ability of the Canadians to really show us whether they have any capability at all, or any willingness to agree to a pipeline through their country. And it is going to have to do with the agency reports, the FPC report followed by the Federal agency reports, and then by the emerging position of the Carter Administration. I don't think we really know when that will be. But we know, now, with some certainty, it will be during 1977. My own view -- I think I can say that I have some acquaintance with what is going on in Washington -- is that it will be earlier, rather than later in 1977 that most of the key decisions are at least forming in a way that will limit Alaska's alternatives.

My major concern is this: That these contracts -- and we can argue endlessly whether they come in response to legislative initiatives last year, public initiatives, or whether they are an immaculate conception of the Administration, which the legislature has just discovered for the first time. But the point is that these things are here, really I think, as a function of the cumulative desire to see this alternative developed. And that's what we've done. So long as it's proposed, and before the legislature, but undecided upon one way or the other, Alaska is in a kind of a limbo with regard to the Federal decision. Our position is clear. We have a strong position of advocacy in favor of the Trans-Alaska route in Washington at the FPC. And the Administration is going to advocate that route so long as our analysis holds up and there is no contrary assertion by the legislature or the Alaska public.

But these contracts are looked upon as something as a watershed, I think, for the pipeline decision. If they are pending for a long period of time, to some extent, I thing that immobilizence, the perception of Alaska's position back East, they are waiting to see how we are going to decide. So I think our preference is the Administration -- is to get a decision on it. Is this alternative something we want to do -- get going on it. Assert ourselves in the fight. Essentially bring on

board a full measure of the support of these buyers and their constituencies in the United States. Is it something we don't want to do because the contracts are a bad idea. Because the terms of the contracts are offensive or there is something in the policy that we don't want to do, or don't really want to do them because we now have changed our minds and want to support another route. Any of those decisions, in my view, would be preferable to a lengthy period of indecision while the proposal was before us. And so that, I guess, is the summary of our position.

GRUENING: Okay. Maybe I will be more specific. If there is a need to get into more information, to hold further hearings, do you see any -- In other words, the session could go 90 days and at the end of 90 days, is there anything that is crucial, of crucial importance that we, say within 90 days from now as opposed to something that is going to happen after that 90 day period, later this summer. When you say, "they", these contracts are going to have some affect on "they". I'm trying to determine who "they" might be, and are those persons more likely to be affected later in the year or is it something that requires prompt action?

MARTIN: Clark, that judgement, like a great deal have to do with these contracts, I think has to be made by what I call accumulative subjective judgement. My own view is that every day is important. I was, as you know, the State's representative in Washington during the oil line debate, and you simply can't afford to lose very many days if your position is clear during the decision making process. I honestly can't tell you what days will be the critical days. But I can tell you that if our position is to support the Trans-Alaska pipeline, the gasline route, and our decision is that these contracts are a good idea, the best possible situation would be to have decision right now and start immediately. If there is legitimate doubt, and that is borne out by legislative investigation, we should take whatever time it takes to get there. I know what you are looking for. You are looking for guidelines. Is there something that happens in April or March or June that's very important that you're going to be up against. And the answer is -- I don't think you can go by those guidelines. I think you should ask a lot of people that question and get their view. I think you should start with the delegation in Washington. But I will give you my own views -- that I think the decision ought to be made as soon as possible, one way or the other.

GRUENING: Representative Cotten?

COTTEN: Okay. I have a quick question. It came to my mind that we've got kind of an odd situation here. But if it is the legislature's final decision, as it will be, is it going to bind the Administration's decision? Are you going to do whatever we decide is best, as far as legislation?

MARTIN: Sure. The royalty statute really gives the legislature really two options at this point. That is to approve or disapprove the lease contracts. The way the procedure works: they are put together by the administration; they are approved or disapproved by the Royalty Board; and they must be then approved by the legislature before they are valid.

COTTEN: It is a statutory requirement?

MARTIN: Statutory requirement. If they're disapproved, what I would hope is that the legislature speaks with a very clear voice and a unified voice. Not a series of individuals all indicating what their problems are, but a clear, unified voice as to what the problem is. And then the Administration will undoubtedly seek to be responsive to that. If it is approval, of course we will be guided by that. If it is disapproval, and spoken with a clear voice, we'll have to do whatever is possible to accommodate that. If the disapproval is clearly stated and it has to do with an individual term in the contract, we would then have to go back, renegotiate that term, resubmit it to the Royalty Board, and bring it back to the legislature again. And that's simply a statutory imperative in this case. And that's a -- I suppose it could be done expeditiously but it's probably a one month process, depending on what term it is and what the negotiations are. There are some terms that have been suggested for renegotiation that, in my view, simply could not be renegotiated. Others could be but would take time. Others would probably be reasonable.

GRUENING: Representative Chatterton?

CHATTERTON: Thank you, Mr. Chairman. Commissioner, I have just, hurridly, scanned Public Law 94.586. In trying to help you answer a target date when something must be finalized, and knowing, I guess, by law we cannot lobby the Federal Power Commission -- it's against our statutes -- they've got up until May 1, 1977 before they put it before the President, is that right? And that would be the earliest date that we could start lobbying actions?

MARTIN: Well, that would be a very late date as a matter of fact. Because one of the things that would be most important to influence in that decision would be the Federal agencies

which are preparing the recommendations that go to the President. There is a number of targets that Alaska's going to have to look toward. And Congress is the last of them. The most important early target will be the various agencies that will be making recommendations, the Department of Interior, FEA, Transportation, etc. And quite frankly, because many believe, and I subscribe to this view, that ultimately I doubt if the President will send a recommendation to Congress on this issue, that he doesn't know the answer to. I don't think the President would be in the position of sending a recommendation up there wondering what will happen. So I think that our influence is going to be best utilized at the time that they are making the administrative legislative accommodations.

GRUENING: Commissioner, will there be any holding back by these agencies until the FPC makes a decision?

MARTIN: No. So far as I know we are still very early, just in the first week or so of the new Administration, but my information and my belief is that the agencies are going to go all out to try to deal with this issue. The FPC decision is going to be influential, but let me say that my expectation with regard to that decision is that it will be extremely lengthy, it will be a decision which is filled with a number of conditions and a number of conditional statements, and a number of maybe's, in the sense that it will give a number of conditions that must be met for one not to be satisfactory or another. And the agencies will have guides from the FPC but a lot of clear field for themselves to investigate.

GRUENING: Representative Chatterton?

CHATTERTON: Thank you, Mr. Chairman. Commissioner, Guy, help me here. The reason why I ask this question. Now I am looking for when (quote unquote) your lobbying effort wants to start. Actually, these other agencies of the government can only give testimony to the Federal Power Commission, isn't that correct? They can't...

MARTIN: The Federal Power Commission procedure is effectively over with one exception. The decision on it is going to be rendered probably on the first of next month. And following that there will be a brief period during which briefs will be filed and that will terminate at least the hearing at the Administrative Law Judge's part of the proceeding. How the commission acts, the full commission acts pursuant to that is still an open question. And there are a number of theorys as to what they will do. Whether or not they will engage a whole commission proceeding. Whether or not they will defer to the Judge's decision. Whether or not they simply won't render a

decision at all and will wait the direction pursuant to that. They are all open possibilities. So I just don't think you can emphasize enough -- and you don't have to have a position on the route to say this -- that Alaska ought to be in the game, pretty fully armed on one side or the other at the earliest possible time. And if what you are looking for from me is some way to tell you how much latitude you have in terms of time, the answer is it would be better if it were done today. I'm saying that the legislature ought to take the full amount of time it needs to responsibly deal with the issue. But you can't carve out a period time and say, "this is a safe time to deal with it." We ought to be going now.

GRUENING: Any questions on timing? Just one on the FPC role. Commissioner, do you think the State is losing any flexibility by not waiting to see what the decision from the FPC is. Or is that decision so insignificant in the total process that it really doesn't make any difference?

MARTIN: No. The Attorney General, in his transmittal letter of our gasline task force to the Governor, made it very clear and with my concurrence, that there were a series of extremely important facts, or actions, or mileposts, that had to be acknowledged. One of them is going to be the decision of the Administrative Law Judge. Now, that is an important decision. Before the passage of the procedure bill in Congress last session, it would have been a crucial decision. But with the passage of that bill, it has significantly diminished in importance compared to the findings of the agencies and the Presidential finding and the Congressional action.

GRUENING: Could I ask you how the procedural act -- you're referring to the Alaska Natural Gas Transportation Act? How does that lessen the importance?

MARTIN: Basically, under the standard procedure that they use in a situation like this -- the Hearing Judge's opinion would simply refer directly to the Federal Power Commission, the five member commission, and they would then make a decision on it and that would be it. The proceeding would basically be over at that point. Under this circumstance they have done what they did, really, in the oil line situation, and expanded it to make it a full blown national decision involving both the President and Congress, which would not be required by ordinary law. So I would say that the FPC decision and the Hearing Judge's opinion becomes one of many factors, nevertheless an important one, but one of many factors that will influence this, whereas before, it would have been probably the major background factor.

GRUENING: Any questions on that? Will the FPC actually, if this contract is concluded, finally approved before their decision, will they make any certification or approval, or take any note of it? Will they officially take any action to certify or approve or otherwise pass judgement on this contract?

MARTIN: Let me make sure that... Clark, what will happen is that they have two roles under the new bill. First will be, produced the Administrative Law Judge's opinion, next week. Then the FPC will take some action on that, which will be one of many inputs into the national decision process that the President and Congress will make. It will be one of many. Then at the end of the entire process, when the decision has been made by Congress ratifying the President's recommendation, the FPC will come back again at the end and effectively "rubber stamp" the decision by issuing a formal certification. But that will be an administerial act.

GRUENING: Will that administerial act have -- this should maybe be addressed to Fred -- have any legal affect in terms of, say, strengthening our ability to take back gas later, or is that covered in some other aspect?

MARTIN: Yes. I'm not sure we're going to that question, Clark, but our ability to take back would have to be approved beyond any appealable state at the federal level for these contracts to ever be valid. Let me give you a case in point: We could conceivably enter into these contracts and gain the support of the buyers, proceed into the fight, and win the fight, and upon winning the fight for the route that we wanted, achieve the route that we wanted, and if the contracts were not ultimately approved, the take off provision, the ability for the State to take back, if they were not approved and we could not have that take back, the contracts would still be void. So that we could conceivably get it both ways in that situation, although you can tell whether or not that is going to happen. But these contracts will not bind us unless the take back provision is ultimately validated by the Federal approvals.

GRUENING: Commissioner, if the Section 13(b) of the Transportation Act is repealed, as we've heard rumored, would that void the contract?

MARTIN: Not necessarily. Let me talk about that for a second. The best way to look at it, Mr. Chairman, is to go back to the situation that existed before 13(b) was in effect. Under that situation, we would have had to have either gone to the FPC for approval of the take back provision

directly. And this was one of the main reasons, quite frankly, that I was very luke warm about these contracts for a long period of time because I felt that the chances of the FPC approving that take back provision, without a Congressional action, was just extraordinarily slim. So I thought there was something illusory and unrealistic about these contracts. Nevertheless, let's say we had a slim chance of getting them approved by the FPC but they would have had to have been approved there in order for the provision to be valid. Once Section 13(b) was passed, which was something we pursued fairly diligently. It gave a Congressional mandate that such provisions be approved by the FPC. Now, if 13(b) survives we should be in good shape. If 13(b) doesn't survive, we are back where we were before. We still have a slim chance of them being approved but still no risk of loss of the gas if they are not approved because the contracts would fail of their own terms if they are not.

GRUENING: So, if I understand what you are saying then. They are not void, per se, if this is repealed, even before, let's say, approval of a route.

MARTIN: Because we would still be able to pursue the approval of that term that we would have pursued before, and that is direct approval of the FPC, without the Congressional mandate.

GRUENING: But your reading of the contract is that if this should occur then anything less than a clear declaration by the FPC that we had full rights of take back, under the contract, would void the contract.

MARTIN: Yes. That is my reading. And I think you probably ought to follow up that line of inquiry with the buyers as well.

GRUENING: We will. Are there any questions, now that we are just touching on this special provision? I would just like to read into the record the Section 13(b) that we are referring to. It seems remarkable for legislation because it is so clear. It says, "The State of Alaska is authorized to ship its royalty gas on the approved transportation system for use within Alaska and to the extent its contracts for sale of royalty gas so provide, to withdraw such gas from interstate market for use within Alaska. The Federal Power Commission shall issue all authorizations necessary to effectuate such shipment and withdrawal subject to review by the Commission only of the justness and reasonableness of the rates charged for transportation." It seems to me an unusual provision. Is there any other state in the Union that has anything equivalent to it?

MARTIN: It is unprecedented. Mr. Chairman? May I make just a short comment on that. There is a lot of speculation about whether or not an attempt will be made to overturn that. Let me put myself on the record on that by saying that it is just very unclear whether that will be the case. I don't doubt that an attempt will be made. There is just no doubt in my mind that individual Congressmen have made it clear that they are going to do that. John Dingell of Michigan said, "I'm going to try to get rid of that." I don't want to sell the committee or the legislature on the idea that they should act in fear of that repeal. I do think, however, that when people talk about what we get with this contract in addition to what we think is a good price provision for the gas and whatever support people believe will come as a result of it, we also get probably our best attempt to deal, or to take advange of that at this time. And I will tell you just very briefly why.

What we are really doing -- and I think this has been misconstrued a great deal -- is we're telling people, by this contract, in the lower 48, how it is, the terms by which our royalty gas might be made available to them. And we are telling them which system for that to be in, and we are telling them what kind of notice they would get if we were going to take it back. We are being reasonably honest with the people, given the fact that we do want to retain the right to take it back. Really, when you are sitting in Cleveland, Ohio, tonight and you don't have any gas or your thermometer is at 62°, or the gas company can't supply you gas, and you hear the State of Alaska wants the right to take all its gas back to make plastic, it is a difficult case to make. But the only way that you can make it reasonably, is to say, "Alaska has aspirations like any other state and we would like to try to fulfill those aspirations with our share of our natural resources." So what we have done is laid out for them the terms on which we want to do that, without simply being arbitrary and saying, "We want it all and we're going to take it all." We've said, "We will sell it and commit it to these companies in these states, but under these terms -- to take it back at a later time on fair notice." And I think that is the essence of that provision that can be attractive to Congress. And I think can serve as a positive argument that Stevens and Gravel and Young can make, that we've made an attempt to tell them how we've taken advantage of this thing.

GRUENING: Representive Parr?

PARR: You are expressing an argument. This is the fact that the contracts are a positive thing _____. I think that most of us have heard that these contracts are likely to expedite the deal. Those sections are in there -- are supposedly because we need this gas here. _____ _____. I guess _____ _____ in giving it to some other people is that we say that we need the gas in Alaska. We've got an Arctic climate, we have real heating problems and all sorts of things. So we need to have _____(indiscernible)

MARTIN: I think that... I don't accept your characterization of the motive for why it passed. The thing passed, I think somewhat along the motives that you indicate, but it is really along the motive that Alaska asked for this, that the distance problem is quite extraordinary. In other words, don't make resources leave Alaska because of the tremendous amount they have to travel and the amount to return them if we need them. The people who voted for it trust that Alaska will treat that provision reasonably. But I would think that if I were a Congressman from Ohio and I were looking at that, I would rather have the terms of that withdrawal that Alaska might make, including the one and two years notice provisions that we have. And being out front with that, I would rather have those, preferably to having that provision, 13(b), exist, kind of in a vaccuum, not really knowing when it was or how it was that Alaska would exercise that. Under the terms of this contract we at least set some boundaries as to how we would exercise it and we can talk about it to individuals down there. Whereas if we didn't exercise it, it would simply exist and they would _____ some uncertainty as to how we would ultimately do it, and if we would have a full right to do it anyway.

GRUENING: I kind of share some of Representative Parr's questions in the sense that, aren't we telling them that what we are going to do is take 100% of the gas back if we want to? And there is no other criteria for that event? And the reason we are doing that is because you passed this amendment which allows us to do that. Doesn't that kind of challenge them, directly throw it in their faces?

MARTIN: No. I think the only answer I could make is I'm not sure what they would think if we didn't do this. If we didn't do it we would still have clear right to take the 100% back under the terms of the amendment, and to do it without any notice, one year or two years or anything else. We simply have the right to do it. So what we've done is give definition to a right that we have. And in the other case there is no definition, it simply exists without any definition.

GRUENING: Well, my point is that some Congressmen may feel that that right only exists by virtue of the amendment.

MARTIN: Certainly. I think they are correct if they say that it exists substantially because of that amendment. There is no question about it. I think they would know that one way or the other.

GRUENING: You mentioned that certain Congressmen had announced a desire to seek repeal. On what grounds?

MARTIN: They opposed it to begin with. Most of the ones who now say they will try to repeal it, were Congressmen who opposed it in the...

GRUENING: I mean, what were their grounds for opposing it?

MARTIN: Their grounds for opposing were basically that Alaska had no right to deprive the rest of the nation of this gas, whether or not it was royalty gas or not.

GRUENING: Representative Hayes?

HAYES: Just to follow up on that. If one or more Congressmen pursue that idea of rescinding that particular part of the agreement that we can withdraw our royalty gas, what is the timetable on that? How long would it take. Do you have any idea of that?

MARTIN: To repeal the amendment?

HAYES: Yes.

MARTIN: Well, it could go as quickly as it could go through Congress. There is no timetable established.

HAYES: About?

MARTIN: Oh, I'd say that it would be difficult to do something like that in any less than a month. But it could be done at a more reasonable timetable -- a couple, three months. It would depend on whether or not it was taken on as an individual issue, which is somewhat unlikely, or whether or not it would take it on as a part of the gas debate itself, and only happened at the end of the debate. My guess would be the latter would be most likely.

GRUENING: The Governor has mentioned, I think it was in his speech and correct me if I am wrong, his speech announcing the conclusion in the contracts, that one of the considerations for prompt action was that this repeal might occur. The inference being that if we approve these contracts before

repeal we would somehow be in a better position. Maybe this goes to Fred Boness as an attorney, but I'm questioning -- as a legal matter, is that true? Is there any doctrine or any precedent for being in a better position if they repeal it? After we have concluded these contracts?

MARTIN: Fred should answer that detailed part, but just let me say that just as a policy matter, that the Governor did not mean to infer that we got absolute protection by acting early. He was really speaking of the answer that I just gave you. And that is that we think that we take the best advantage of the existence of that amendment by acting on it _____. Really, with the thought that if it is challenged successfully, it's lost and we have missed the opportunity to do that. So that shows the thrust of that remark. Let me ask Fred to answer the legal aspect of it.

BONESS: No. I do not believe that it is a legal matter. The contracts passed while the statute existed -- we'd have some sort of grandfather rights if the statute were repealed.

GRUENING: Are there any question on that? Representative Cotten?

COTTEN: Can I have you clarify something? It was a question asked earlier, and now it comes back to mind. You said that some people were of the opinion that... You mentioned the word _____ in regard to the contract and the repeal and our ability to take back even if it is repealed. You said there was still a possibility. If 13(b) is repealed, you seemed to indicate that there was still a chance that we could take the gas back.

MARTIN: If 13(b) is in place, we stand an excellent chance of getting the contracts approved for the take back provisions. If 13(b) is repealed, I think it reduces the substantial chance that it will be approved to a slim chance that it will be approved at the FPC.

COTTEN: I don't mean the contracts, I mean the take back provision.

MARTIN: That's what I mean. I mean the take back provision in the contracts.

COTTEN: The FPC would still have the ability to...

MARTIN: If the legislature approved the contracts, and 13(b) were subsequently repealed, we would then attempt to get the same take back provision okayed, but we'd do it through the FPC. And we would do it without the benefit of 13(b).

COTTEN: So the FPC can do it without the statute?

MARTIN: They still could do it. And we think we have, if our argument is reasonable for keeping some of this resource in Alaska, we think it might be the case. If I could, let me elaborate on that a little bit. Let me tell you what might happen in that situation. If we go to the FPC and we say, "We want a total take back pursuant to the terms of this contract," I've always thought the chance that they would approve that are low. So this term may not survive. But putting this contract aside for a second, what is it that we might be able to slide by the FPC? What the most reasonable grounds would probably be is a provision where we maintain some kind of a right to keep resources in Alaska, gas resources in Alaska, for certain priority uses. For instance, we might be able to protect ourselves for the future for things like municipal gas supplies, domestic uses, and so on. But they would draw the line at the point that you're making maybe petrochemicals or something that would be secondary use in the lower 48.

COTTEN: In other words, they might let us keep some of it.

MARTIN: That's right. That would be our...

COTTEN: Where would that take place? At the end of the Congressional decision?

MARTIN: Well, it depends on what happens to 13(b). But it would take place at the end of the Congressional decision.

COTTEN: What happens if the FPC got in there before and had...

MARTIN: It would take place at the end.

COTTEN: So then they would be conducting more than an administerial function, is that _____?

MARTIN: Yes. But if 13(b) were in place, it would probably be administerial, if it weren't, that's right, it would be a very very difficult procedure.

GRUENING: Representative Chatterton?

CHATTERTON: Are we still on the contracts or are we ready to proceed to another question?

GRUENING: I think we will shortly, but I had one question. Representative Meekins?

MEEKINS: Commissioner, in following up what Sam talked about, I don't know the inner workings of these things but it

seems to me the FPC would be a little reluctant to grant us what the Congress, just a month before, repealed. I know they don't take direct orders from them, but it would be a pretty strong move on their part.

GRUENING: I understand that the State has intervened in a case called the Pacific Alaska LNG, and another case that involves the Public Service Commission of North Carolina and Texas, is that right? And is it one of the purposes of the intervention to establish take back rights involved in those contracts?

BONESS: Not in this contract.

GRUENING: No, I understand that. But those contracts involved.

BONESS: That's correct. Pacific Alaska LNG proceeding would involve certifications of the contracts entered into between the producers and purchasers in Southern California. One of the things we wanted to make sure of was that the producers, their purchasers, the FPC and the public in general, is put on notice that the provisions in our lease which allow us take royalty either in kind or in value. As it stands now, the producers are selling (indiscernible).

We wanted to make certain that they were aware of our recent provision in that the FPC and everybody had notice of it and that we might switch back. That no decision, particularly we are concerned by the decision that would be made on the assumption that all of the gas that is committed and then if the State took its royalty in kind, that somehow or other that would seriously affect, say the economics or viability _____. In which case you might then run into serious federal preemption type questions. We felt that if we give them notice at an early date, the chances of preemption issues being raised would be substantially minimal.

GRUENING: Representative Parr?

PARR: Yes, I guess I got lost there. Would you mind going over that in layman's terms. _____ was going to sell 8/8s of the gas they were getting out of the Prudhoe Bay area to somebody else. And we felt it necessary to go (indiscernible)

BONESS: Yes. At the time we intervened, there was a case that had been decided by the FPC and was on appeal to the Circuit Court of Appeals. In that case the FPC had held that reversionary interests, the person who leased the land to the oil companies, the land came back to the oil companies. The lease was back in the 20's. The land

came back to the owner of the land. The FPC said that even though he had not been involved in any of the sales by the oil companies, gas to purchasers in other states, even though he hadn't been involved in any of those sales, when the lease came back to him, his gas was committed to the interstate market. And he said, "Now, wait a minute. I wasn't involved in that. I want my gas. The lease is over, it is my land, and I want it." The FPC said no. He was committed. We were concerned that the same thing might happen to us if we didn't make known that our lease allowed us to take back our 8/8s and the producers, that is, our leasees, the oil companies that we issued the leases to, who are producing the gas, sold all of the gas, because at this time we were taking in value. The FPC at some later date, would say, "Now, we certified all of that gas to move in the interstate market and we are not going to let the producer comply with this lease. We are not going to let him comply with your notice."

PARR: Isn't it against the law to sell something that doesn't belong to you?

MARTIN: The confusion here is -- that may be right -- but under oil and gas leases the producers, the people who you sell your leases to, under ordinary circumstances, take the royalty 1/8 in addition to their 7/8, and sell it all and simply give you the money back. So what we are dealing with here is a circumstance where, if they do that (cough) under whatever circumstances, and then we decide that we don't want them to sell our 1/8 anymore, but we take it back and use it some other way, that we were afraid that these cases colored our right to do that. So what we are doing is intervening in every case where what we think our rights might be are colored and attempting to make our point.

GRUENING: The situation then would really describe the problem that the State would have without a Congressional take back authorization without FPC approval. In other words, we could have 8/8s of our gas if we hadn't used it in the beginning when the lease was used, chances are we would lose that 1/8. Isn't that the purpose of your intervention? Is to prevent that situation from happening?

MARTIN: Our purpose is to prevent other cases from coloring that decision. There doesn't appear to be a decision that's exactly on point, but we are intervening in all the cases that would appear to create prejudice against what we might want to do.

BONESS: Right. Our purpose for intervening in Pacific Alaska was to protect the gas that was there, involved, that was Cook Inlet gas, leases that are issued for Cook Inlet. Our purpose for intervening in the Public Service Commission of North Carolina was because that was a case which was not identical but quite similar to the situation which could exist either in Cook Inlet or which does exist on the North Slope. There, Texas is attempting to, under one of its leases, to take some gas, in kind, which in the past it had been receiving royalty payments for, and sell that to the Public Service Commission of North Carolina and transport it by contract over the pipeline that connects Texas with North Carolina. Texas is arguing that it is a state and not subject to the natural gas act. We intervened in that case because that argument will be relevent to the State of Alaska in arguing that our sale of gas is not subject to the Federal Power Commission's jurisdiction. The problem with the take back provision, and the reason why we need Section 13(b) does not come about as a result of the FPC potential power to regulate the sale of the State. Rather, it comes about by virtue of its power to regulate the pipeline, the transportation service in which the pipeline engages in. The Federal Power Commission could and has in other cases, said, "We are not going to allow you to transport that gas because we don't like what the person who wants to transport it is going to do with it." That is the reason for Section 13(b) and the take back provisions in the contracts.

GRUENING: Well, is there any practical difference -- unless you can take it out any other way than the pipeline?

BONESS: There is no practical difference. The importance of the difference is in sort of the chances of winning the case. One, I think, with respect to beating the FPC at their ability to regulate the pipeline, the chances are much weaker.

GRUENING: What I think I was aiming for, Mr. Boness, was if you get a favorable decision in the Pacific Alaska Case, will that give us some precedent in terms of Prudhoe Bay contracts. In other words, do you recall Russ Moody's advice -- earlier advice to the legislature -- prior to any amendment being passed by Congress, his suggestion, if I understand it correctly, if you have knowledge of that, is that we should sell in interstate commerce in order to get an approval of the sale by the FPC in order to establish a take back right. In other words, sell some portion of it. Is this more or less what you hope to arrive at in a favorable decision in the Pacific LNG case?

BONESS: Clark, let me say, harkening back to last year's discussion with Russ Moody. You are right. I think the answer to your question is yes. That that is what you would hope to accomplish. At that time I think we expressed the same reservations we are expressing now. And that is, he made it clear that that does not buy you protection. He made it clear, on the other hand, that that was probably the best course that he thought you could take to attempt to do that. So that what we think we've done with the royalty contracts is to combine that idea with the idea of gaining whatever additional support for the route we want, plus gaining utilization of 13(b) at an appropriate time. So we are really proceeding sort of on all three theorys. But to be perfectly honest with you, we've always had reservations about the ability of the theory that Mr. Moody advanced to help us a great deal. In other words, it is the weakest link in the things that we get. But sort of about fourth down the list. Yes. We're taking advantage of that and think that it is something worth pursuing.

GRUENING: Could we accomplish that Moody theory or the Moody -- or let's say the approval theory -- just as well with the cases that you're intervening in, by doing it in a direct sale as proposed before, in terms of the Prudhoe Bay sale. And take out of that the amendment. Do you understand the question?

BONESS: Would we benefit by simply having one of those cases win and not need to do anything ourselves?

GRUENING: Yes. I mean, do you see any added benefit, assuming there were no 13(b), of trying to make a sale?

BONESS: I understand what you are asking, Clark. I think, first of all, none of those cases are related to 13(b). None of those cases, even though they are influential, are on point with our situation. I guess our statement would be -- we really don't think we can afford to lose any of those, very many of them. But we don't think that we are the direct beneficiary of any of them winning. We would not gain certainty from victory in any of those cases. But we would gain certainly from getting our contract approved.

GRUENING: Even without 13(b)? The question is...

BONESS: If our contract were approved all the way through the FPC...

GRUENING: I guess what I'm saying is, would you recommend a gas sale of this magnitude... (end of tape)

...matter of just establishing our right to take it back.

BONESS: I wouldn't recommend it only for that purpose. I would recommend it if you could make a sale of that type that had other advantages for the state. But I didn't recommend it last year and I wouldn't recommend it now, necessarily, only for that purpose.

MARTIN: Fred makes a point that I think sort of brings out what I just said would be one of the problems. Again you go back to the fact that what the FPC regulates is the transportation. So that if you made a big sale like this based on the Moody theory which we didn't agree with, particularly, last year, every transportation arrangement that grows out of that contract would have to be approved. It may not be that everyone of them would be decided uniformly, so that you'd just have to, I guess, face the fact that you are swimming in fairly uncertain waters on a great deal of this. But I would not necessarily recommend, in fact I wouldn't recommend, a sale of this magnitude only for that purpose.

GRUENING: Representative Chatterton?

CHATTERTON: Mr. Chairman, I will make a statement, and somebody around here tell me if I am halfway right. By virtue of the State of Alaska entering into these contracts here, we have them, and they are all signed and everything is happy, we are a year from today, these contracts are in force -- we have then taken our 1/8 gas in kind -- we have opted to do that instead of taking it in value, therefore, I see no similarity between our situation a year from today, these having been signed, and the North Carolina case. Is that a factual statement?

MARTIN: The North Carolina case deals with a question of whether Texas as a state, the owner of royalty gas, must get approval of the FPC to make the sale. The Federal Power Commission -- everytime the owner of gas wishes to sell that gas in interstate commerce resale -- in other words, if he is selling to interstate pipelines, he is going to sell it to somebody else at the other end who in turn is going to sell it to somebody else, and that is the way the whole business operates. The _____ pipeline sells to a distribution company that sells to people who consume it. So everytime you make a sale like that you have to go to the Federal Power Commission to get approval of that sale. The way the definitions are set up in the natural gas act, it appears states do not have to do that. They can sell gas without getting Federal Power Commission approval. That is what the issue is in the Texas case. If Texas wins, there will be no question but that this contract for sale, this contract does not have

to be approved insofar as the State making the sale of the gas concerned. If we lose that, this contract must be approved. If Texas loses that and we are unable to distinguish ourselves from Texas, and there are some grounds for doing so, if Texas loses and we end up in the same bag, then this contract will have to be submitted to the Federal Power Commission for approval.

PARR: Mr. Chairman. I'm just a poor old dumb country boy and I have to take this a little slow. Alright, we are contracting to -- if I hear what you just told me -- we are in the process to sign a contract to sell 1/8 of the natural gas existing in the Prudhoe Bay oil pool. There is no contract that I know of for the sale of the remaining 7/8s. Your concern is, if I am hearing you right, that if we lose this North Carlina case, why it's going to be a matter of -- the 1/8 tail does not wag the 7/8s of the dog. Is that it, as far as the FPC is concerned?

MARTIN: Okay. When you jumped from the 7/8 to the 1/8, I think you may be confusing the Pacific Alaska case...

PARR: I don't even know about it so I can't confuse it.

MARTIN: Okay. Let me come at it this way. What happened in Texas was, Texas leased the land and they discovered gas. The oil company sold all the gas...

PARR: Yes, the landowner chose -- if I can help along here, so I am understanding and we get it across -- the landowner there chose to take his royalty share of gas in value. He already exercised his election with his lease, to take it in value. Now, I can readily see where he gave up his option there, at that point in time. I can readily see that we have elected our option to take in kind before the first cubic inch of gas is moved, is that right?

MARTIN: Okay. But the problem from the point of view of the FPC is that every sale -- it doesn't matter whether you make it on the first day that gas is produced or you wait two or three years and then take your royalty in kind. Every sale in interstate commerce for resale must be approved by the FPC. There is one exception to that which we believe exists. And that is states do not have to have their sales approved. That is what is being argued in Texas, and that is what we are arguing here.

GRUENING: I want to mention one thing that if we have any questions of Commissioner Martin -- I didn't want to keep him here too late, he has another commitment. He was gracious enough to come, even with the conflict. We will get him back again. Charley?

PARR: My question -- I thought I heard Mr. Martin or Mr. Boness say, a while ago, something that may make this whole thing about Texas academic. I believe he said that even if the case _____ that they don't require FPC approval, that state doesn't, that the FPC still controls all the transportation mechanisms. So unless they were keeping it within Texas it wouldn't make much difference anyway. Is that correct? So if it is transferrable to our case, if we are not distinguishable, then even if we got the right that, okay, they don't control our sale but we still couldn't ship it anywhere without FPC approval. We would have to use it all instate. So it's kind of an academic thing in a way.

MARTIN: That's right. That's the follow up statement to Representative Chatterton's statement.

PARR: Could I ask one more question? The FPC controls all the shipments in interstate commerce. That's where they would have a stranglehold on us even if they couldn't control the sales. And they also control all the shipments that go outside the country without going through another state. Suppose we were to decide to put the stuff in liquefied form and sell it to Japan. Do they have that stranglehold too?

MARTIN: Yes, they do. And there are two reasons for that. One is, that you cannot export gas from the United States without approval of the FPC. And the second is, even though the pipeline would be located all within Alaska, they still control that transportation. So even if we didn't have to get an export certificate, they could prevent you from moving it from Prudhoe Bay to...

PARR: They control intrastate pipeline and they would also _____ export license. Is that what you are saying?

MARTIN: I am concerned by your use of the word "intrastate" pipeline.

PARR: The pipeline began in Alaska, it ends in Alaska, it is intrastate.

MARTIN: But that isn't the way the statute reads. The statute says somebody transporting gas in interstate commerce. So even though the pipeline is all located in Alaska, because the gas ends up in the lower 48, that pipeline was transporting gas.

PARR: I said it went to Japan. So you would cover that by the export license.

MARTIN: If anybody's gas goes to the lower 48, then they get control of the pipeline.

PARR: The point is, unless we used all that gas in the State Alaska, then the Texas case, even if it is won, doesn't really mean too much to us. We could have the authorit if the Texas case is won, we could sell it to anybody w wanted to...

MARTIN: Let me just say this. I don't think you can say that i doesn't mean anything to us. But it doesn't solve all our problems. It would be bad to lose it. It would be better to win it. But it certainly doesn't solve all o problems. There are other hurdles to be cleared even i we won it.

GRUENING: Representative Hayes?

HAYES: Recognizing that Commissioner Martin has to leave, I ju want to make the comment that there are some questions that I wanted to ask that are not related to what we ar talking about now, so I will defer to a later opportuni

GRUENING: Well, I intend to go on unless there are more questions in this area, on the FPC.

HAYES: I just wanted to ask one question regarding what we hav been discussing so far. Just a little bit of backgroun since you were in the last legislature -- apparently there was legislation passed prior to now that essentia directed the Governor to enter into or to pursue sellin our royalty gas. Was the thinking behind that legislat essentially what we are talking about right now? To tr to preserve the right? What was the motive in asking t Governor to pursue this? To confirm our ability to sel it or were there other motives? I'm getting the feelin so far -- up to this point you get the feeling that the only reason we have a contract before us is because we are trying to preserve the integrity of our right to se our royalty gas. Is that a true statement? Is that wh this was all about before? Is that what we're...

GRUENING: I can't speak for the other 59 members. There was an appropriation of $50,000 made to the Department of Natu Resources to negotiate a contract. But, no, in my opin that appropriation was not made for the sole purpose of entering a contract so we could secure before the FPC a right to take back, no. But I think there were a lot o motives for people voting for it and maybe it is appro ate now if we have questions for Commissioner Martin, t ask him. What was your understanding of what you were supposed to do with that $50,000?

MARTIN: It's one of those provisions amd it's really one of the reasons I reacted very strongly to statements where each individual legislator or administration official attempts to say what the motive was. It was a mix of motives. There is no question in my mind that many of the legislators believed that we should undertake these contracts specifically to support the Trans-Alaska pipeline. Others believed that the Moody theory was a theory worth pursuing. Others I think, believed that we should move forward and simply take our gas in kind and see we what we could do with it. It think it was a mix. And what everyone has now is the freedom to deny whatever motive they may have felt or expressed at the time. But I personally think that it is undenyable that there was a very strong direction established to, (1) negotiate, (2) seek support for the gasline, and (3) see what we could do to carry out the Moody theory. The fact that Section 13(b) came along is basically an added plus which we were able to take advantage of possibly by these contracts. I think that misses the point of this whole debate though, actually, and it's one that we tried to avoid very early in the Governor's statement and my own, and simply get on with the business of trying to figure out whether these contracts make any sense to us.

GRUENING: I agree with you there. Representative Meekins?

MEEKINS: Mr. Chairman. I have one question. The language in 13(b), doesn't that -- assuming that everything works right and we prevail, our interests are prevalent in the Texas case -- that's not sufficient because we still have to get authorization for the shipment of gas in interstate commerce. But doesn't this language mandate that they allow us to do that? If we are over that hurdle of the sale and 13(b) is not repealed, then it is sort of sufficient...

MARTIN: That's right. If you assume 13(b) is there forever, then this contract may take advantage of it.

MEEKINS: And the FPC can't say anything about the sale because of Texas or other reasons.

MARTIN: That's right. 13(b) -- we agree with the Chairman. It's about as clear as you can write a provision.

GRUENING: Any other questions? Representative McKinnon?

McKINNON: When we are talking about the repeal of 13(b) -- I just ran across it in my notes -- I am wondering what percentage, assuming the contracts are approved, what portion of these companies reserves will our royalty gas represent? I realize it will be 1/8 of the gas coming out of Prudhoe. But what portion of the reserves of these companies, nation wide, will our gas represent?

MARTIN: I can't give you those figures off the top of my head. We can supply them to the committee.

McKINNON: The point I was thinking about was considering if they do represent a substantial portion of their reserves, how reasonable one and two year notice provisions are going to be seen by Chicago...

MARTIN: I do understand your question. Clearly, you could make the attempt to essentially take advantage of the terms of 13(b) as more reasonable and more reasonable. For instance, the most reasonable way to make it would be to lengthen out the notice provision to a great length, five or six years, and then allow the State take back provisions only for certain specified priority uses omitting heavy industrialization and so on in Alaska. There is no question in my mind that it would make it more attractive.

GRUENING: By reserves, I think you were referring to, Joe, the amount of gas they had committed under sales or commitment to sell.

_____: Mr. Chairman, for clarification. Joe, are you thinking of the companies who owned the 7/8s of the gas?

McKINNON: No.

MARTIN: You are asking, for instance, if Southern Natural Gas buys a quarter of our gas, how does that compare with what they had. Is that half of their gas or more? The answer in broad terms is -- in a company like Southern Natural Gas, it represents a very substantial amount of their reserves, not half by any means but in the case of both Tenneco and El Paso, it represents a much smaller percentage.

Incidentally, I might just say that I don't know if anyone here is familiar with the advance gas contract and procedures but, it was a way that people bought gas during the past few years until it was finally outlawed at the federal level. What it did was, it took to the ultimate extreme, the sort of ripping off of gas companies by the gas owners, by making them pay huge cash sums in advance of the time they got any gas. And in some extreme cases they paid in advance for gas that wasn't even produced yet and they didn't get their money back if they didn't hit gas. That's how bad it got before they struck the contracts down. So compared to some of the arrangements that have been in effect in the United States over the past years, ours is not exactly the level of reasonableness, but it is very reasonable in comparison to some of them.

GRUENING: Is that FPC decision -- I think it was an FPC decision that said no advance payments...

MARTIN: It was a federal court decision which then mandated the FPC to not allow any more advance payments.

GRUENING: Does that have any relation on the State's ability to get, say, bonus payments for gas sales in the future?

MARTIN: It precludes it at the present time.

GRUENING: Absolutely? There's no way...

MARTIN: Not absolutely. But it precludes advance contracts which would be the most likely way to get a...

BONESS: What it actually precludes is a company putting it in the rate base.

GRUENING: I understand that. But does that, as a practical matter, preclude cash bonuses. Generally, you would think if you sell something now, commit it now as opposed to the future, even though you are getting what the price is in the future, that usually, in other commodities, is worth something. But you are saying in the gas business now, that it...

MARTIN: It would be worth something, but it would be unlikely that in the event that they can't pass it through that it would be very substantial. And largely, as a practical matter, it does preclude _____.

GRUENING: Representative Parr?

PARR: Were you talking about the same thing that I've heard discussed in _____.

QUESTION: (Indiscernible)

BONESS: The Court of Appeals sent its act to the FPC to reconsider that. Said that the FPC hadn't looked at certain factors. And then they reconsidered it and decided that it was no longer allowed.

GRUENING: Representative Meekins?

MEEKINS: Commissioner, I don't know if Joe meant this, but from what I got out of what Joe asked you and what you said before -- right now, because of the cold weather and the gas shortages, there's is a lot of talk of -- and I don't think they have done it yet -- but there is a lot of talk of even violating the contracts that are already legally made. And some people have paid premium prices for gas

and their users are being supplied. In other areas the distributers have not paid those prices and therefore do not have gas available. But in order for sort of an equity where everybody has gas, there's sort of a movement to take it away from where it is already contracted to and distribute it to where it is needed. So that is just this situation now, and if we can expect, I think, in years to come, still to be those kinds of problems, I think if you extend that logic out, if they do that, set that precedent -- and then, as you indicated, it is a very tenuous and insecure situation to say, "Well, you are using our gas and we are going to take it back." And regardless of contractual provisions or anything we may think we have legally, I think those might be over-ridden. If we try to take our gas back at some future date when it is already sort of committed or at least needed in a certain area, I think it would be, just as a practical matter, it might not...

MARTIN: I can't resist a really obnoxious pun -- that the climate for what the State wants to do is very bad.

GRUENING: Representative Cotten?

COTTEN: Well, just on that point, I heard on the radio that they are asking the President to declare a national disaster area. So under that, if he does declare it, then they can _____ it I suppose something like that would have to happen before they could ever do it.

MARTIN: I don't think that is the necessary prerequisite but that is the kind of situation we'd have to be in.

GRUENING: Is it possible, Commissioner, that these companies that have these contracts -- the three contracts in question -- as soon as we approve this contract, turn around and sell that gas to another company? There is no prohibition in the contract is there, any of them, to prohibit that, is there?

MARTIN: They are under curtailment which would act as an effective prohibition against that.

GRUENING: I don't understand.

BONESS: Curtailment is where the pipeline company doesn't have enough gas to meet all the contractual obligations that have already occurred. When you hear that gas is being cut off at factories and people are getting laid off, that is the result of curtailment. There is a priority category set up in the FPC which involves a section of four categories.

GRUENING: Well what... Maybe you are getting to that, but my question really is, can't... I mean, the FPC would say they couldn't sell their gas?

BONESS: If your're a pipeline under curtailment then you can't sell gas to a new customer until you've supplied all your old customers. Which means, effectively, that this gas, the amount we are selling, isn't going to allow anybody to come out of curtailment.

GRUENING: You are assuming that these companies all have pipelines under curtailment?

BONESS: They do.

GRUENING: Then there's no way that the FPC would approve -- first of all, it wouldn't have to approve any sale if they want to make one tomorrow, for example?

RESPONSE: (Indiscernible)

GRUENING: Mr. Hayes?

HAYES: Are we going to -- are we just asking him questions from random? I don't see any particular line. Before he leaves I want to ask him a question.

GRUENING: Please, if you have any questions of Commissioner Martin, ask them now. I wanted to get into some of the technical aspects later. I don't want to go too late tonight, but as long as you're... Why don't you ask your questions?

CHATTERTON: I want to stay a little bit on the subject that we're just about to take off on, with a question if I may. That is referring back to (quote-unquote) the front end money and exploration costs, interests cost and _____ _____ going to the rate base, and that having, FPC having seen the _____ before they change their mind. Now there is a case in point on the Arctic Slope. What is the situation... I will put it this way, I'll give you the lead anyway, and you tell me where I have been told wrong. I have been told that there is one -- because it was indirect -- one front end payment, if you like, or a loan I guess is a better term, made by Columbia Gas that still is valid. Is that correct?

RESPONSE: Yes.

CHATTERTON: That means that Columbia Gas now has the right to 52% of 7/8 of that gas, is that right?

BONESS: I can't verify that. That sounds much larger than it is.

CHATTERTON: That is my recollection... (indiscernible)

BONESS: I'd have to check that but that sounds...

CHATTERTON: _____ is still legal, whatever amount it is. It survived all this. I'm through with the question on those points. I've got three more on different subjects.

GRUENING: Okay. We will be shifting here... Senator Hayes?

HAYES: Inasmuch as I think maybe one of the three is going to be what I'm going to ask, I will defer to Chatterton to ask his three questions.

CHATTERTON: I bet it will not be one of the questions. First of all, I have read the contracts, Commissioner Guy, and I think considerable other people have read it, and I am getting a little bit of difference of opinion on this one particular subject, and I would like clarification for it. Let's say that we have gotten all through this mish-mash procedure, the all-Alaska pipeline is approved and these gas sales contracts are approved, and everything else. So let's say it is January 1, 1978 and everything has been taken care of back in Washington -- Do we have any right under this contract to terminate or back out of it? Is there any clause in the contract which permits us from then on til the end of 20 years to back out of it? Let's say we don't want to do business with them. Is there anyway we can do that?

ANSWER: (Indiscernible)

CHATTERTON: The next question that I have, real quickly, is that as I remember, and I couldn't spot it as I ran through here, but there is a little bit of dialogue on whether or not the FPC will include in the rate base the cost of cleaning the gas for transmission. Could you refresh my memory on that. What exposure do we have under that situation, and if there is cost that cannot be passed on because the FPC will not include it in the rate base?

BONESS: If it is a cost which we would not have borne had we taken in value, then our purchasers are obligated to bear that cost, even if the FPC will not allow them to put it in their rate base.

CHATTERTON: Thank you.

MARTIN: Let me just say that this term is one of probably five or six in the contract that were absolutely most hotly negotiated.

CHATTERTON: I'm sure of it. The last question, and I here again apologize, but it sticks in my mind that some while back where Statute 30.05 used to read anyway, that the State to, by law, to sell any hydrocarbons...(indiscernible) Is that still factual?

MARTIN: No sir. The royalty statute specifically provides a procedure by selling by negotiation, and quite frankly, when the legislature appropriated $50,000 last year to negotiate, we were pretty sure they meant negotiate.

CHATTERTON: Okay. Alright. So we don't have to ever worry about it?

BONESS: Our interpretation of the word "negotiate" was to negotiate.

CHATTERTON: That's all the questions I have.

GRUENING: Do you have any questions? Representative Hayes?

HAYES: We're talking about -- the subject before us is the contract to sell 1/8 of our royalty gas. And going along with that we are talking about what is tied in with that is selection of a gas line route. And the public is generally projecting that such and such a pipeline route is _____. We could be under construction by 1978-80-85, whatever, but sometime in the near future. And the thing that I would like to get clear in my own mind before I can really get into it -- you know, I have to clear that up before I can get to the merits of the contract -- is, has the State determined beyond a reasonable doubt that it is in the State's best interests to sell our royalty gas or allow the other 7/8 to flow south, in consideration of the other resources?

MARTIN: Do you mean as opposed to preventing the flowing somehow?

HAYES: Yes.

MARTIN: I think the answer to that might -- I think later this evening Mr. Gilbreth probably will touch on that -- basically the answer is a combination of things. But our powers to prevent it from flowing are not complete. In fact, maybe saying it the other way, they're limited. The conservation statute, which will certainly be a controlling factor in this situation, it will control possibly and probably over our desire to do other things. It is a fairly definitive statute and it will be a controlling statute. That would certainly enable us to do that, if it is consistent with the purposes of the conservation statute and the way that those statutes have been interpreted by legal cases. Other than that, we effectively, have sold the gas pursuant to the leases

that we held, and the owners of that gas have certain rights with respect to it, including the right to attempt to build a pipeline to move it. And our rights to negate that contract, or say that we don't want it moved now, are limited by that prior commitment that we made. So to some extent, the State's determination is limited and within those constraints, yes, we think that this is the best approach.

HAYES: Well, I have been under the impression, perhaps erroneously, that the State had absolute power to determine when gas would flow, so that if we needed it _____, reinjection in that field or adjacent fields...

MARTIN: There is really a difference, Representative Hayes, between absolute power to determine it and the second statement you made about reinjecting it in the field, which really alludes to the conservation statute. The statutes have been upheld, in juristictions, have been upheld for the purpose of achieving the maximum efficient production of a very important resource, oil and gas. And the courts have allowed states to have very important powers over the production of oil and gas where it can be shown that your public objective is to ensure that you don't waste oil and gas. That you produce it in a way that maximizes the amount you produce. But where it simply -- an arbitrary judgement by the State for some other purpose, then the State's powers start being limited fairly drastically and you run into what is called inter-state commerce problems. So absolute powers are pretty much intrastate.

HAYES: Well, yes. We probably would not be in a position to determine, absolutely, for a number of years. Is that right?

MARTIN: Well, this is one of the things that Mr. Gilbreth is going to talk about but let me say that the determinations under the conservation statute, which is our greatest extension of power _____, are based now on modeling, computer modeling, and we believe we will make additional decisions based on that, will be based subsequently on the early production history of the field, which will give us a better idea. And it will be adjusted from time to time during the life of the field as appropriate, based on what is happening with the reservoir.

GRUENING: Representative Meekins?

MEEKINS: On the other side of that, perhaps this is better asked of Mr. Gilbreth, but at the same time that in order to maximize the recovery of the reserve by reinjection... _____ want to reinject the gas in order to

maximize efficiency in production, and at the same time, there is some sort of a constraint, some sort of limit as to how long you can reinject, also, is there not?

MARTIN: In some cases there is. I'll let Mr. Gilbreth give more details to this but I think it is a safe conclusion now that in the case of this field we have determined that there is no practical limit to how long you could reinject, so at least the problem is not that there is some time at which you are doing damage to the reservoir by reinjecting.

MEEKINS: In other words, if there is a delay of some sort, is what I am getting at, in the building of a gas pipeline, we're not...

MARTIN: We are not doing that type of damage, at least...

GRUENING: Before Commissioner Martin leaves, I wanted to ask -- on terms of the comparative analysis and the merits of the three routes, would we be safe to assume that the administration is relying on all the information contained in the comparative analysis of November 76, that was prepared -- it was kind of a summary of November 1976 by the Pipeline Task Force.

MARTIN: I think that is right.

GRUENING: So all the information in that document is... In other words, that contains all the information that you relied upon, that there is no outside input...

MARTIN: I'm not sure that -- that is a garden path statement, Clark. I think that's true. Fred?

BONESS: I think that's a summary of all the information. We've relied upon all the evidence that the FPC... The various kinds of assessments, environmental considerations. We ran into 26 boxes of material stored over at the Historical Library.

MARTIN: The decision ultimately made by the Governor and the recommendation of the Task Force was a balance of a lot of factors and I'm not sure how you indicate how each individual made his recommendation or so on. You can regard the summary as the total -- it is certainly not the total background that the Governor had, but it is intended to be a summary of that information and I think it can be relied on for that purpose.

GRUENING: Well, in terms of the finding that the highest net economic benefit to the State was El Paso, is that all the information that you need consider on that issue, that you know of, is contained in that document?

MARTIN: I'm going to defer on the question for this reason, Mr. Chairman. Both Bob LeResche, Director of the Division of Policy and Planning and Av Gross, who is Chairman of the Pipeline Task Force, and Sterling Gallagher are going to be at the hearings on Monday to talk about just that subject. And I'm not certain the answer to that is absolutely yes. Generally speaking, it is yes. That represents the summary of the information we used.

GRUENING: These gentlemen might supplement that?

MARTIN: I'm sure they will be able to tell you if there is something that they would want to add or that they thought was particularly persuasive.

GRUENING: But you don't know of anything beyond that?

MARTIN: No. And there have been assertions of items like, for instance, the tanker subsidy idea, or something. But in the case of that one, for instance, the decision and the analysis was made absent that. In other words, that wasn't figured in the decision and then left out of the summary. It would have been an additional backup and included. It was sort of a hypothetical additional case, that wasn't put in the summary. We thought that -- in other words, we concluded that the summary justified the result even without that thing included.

CHATTERTON: Mr. Chairman, I'd like to help the Commissioner out, for his information. There was an addendum to the November 1976 report. I have it here at hand. I believe it came out quite some time after the decision was made to have the... (indiscernible)

MARTIN: It wasn't taken into consideration at the time, but when I speak of the document, I include that being in it. The Governor made it clear that our work on the thing is ongoing. For instance, we take the letter of transmittal from Attorney General Gross and both the Governor's speech and my statements have made it clear that the way our royalty statute works, you have to make certain decisions are locked in time. One would wonder what would be the political climate in the state if these contracts had not been put before the legislature on the first day and we were taking the line that you're essentially taking -- that we are just not sure, and we just want to keep looking at it for a little while. I suspect that we...

GRUENING: I don't think anyone has taken a position. We have a duty to look at the contracts. The appropriation of $50,000 did not require us to approve the contracts. It only required negotiations and now that they are here we

look at the results of the negotiations. I don't think anyone on this committee has taken a position.

MARTIN: I'm not saying that. I don't mean to. What I am saying is that the way that the royalty statute works, it requires that at a certain point in time decisions be made and that then they be advanced through the process so that they can arrive on the legislative doorstep for approval. And it would be obviously desireable for us to be able to continue to remain flexible but we felt we had to offer the alternative. So it is a way of really addressing that question. But if additional information comes along, or for instance, additional actions like the Administrative Audit Judge's decision, we are going to consider those things and try to judge our actions pursuant to them.

GRUENING: Representative Parr?

PARR: A very simple question. Is it correct that the 7/8 of the non-royalty gas has not yet been committed? Or has it been committed _____?

MARTIN: There were attempts to commit it through advance sales contracts which were then negated by the decision that we discussed earlier in the evening.

PARR: I thought you said that you couldn't make them pay for it in advance. But you didn't say you couldn't commit it advance?

MARTIN: That was one of the terms of those advance contracts, so the contracts failed by virtue of that term being included.

PARR: It is true that there _____ against crude oil which is transferred (indiscernible)?

MARTIN: (Indiscernible)

PARR: _____ as of now the 7/8, which belongs to the producers, is not committed to any distribution companies like _____ Chemical, Southern and so forth? That is not committed to anybody at this point?

MARTIN: With the exception of the Columbia contract that he...

PARR: _____... that is 50... (indiscernible) (several people speaking at once)

MARTIN: Columbia, El Paso, and Tenneco are always among the top five of the gas companies.

GRUENING: Despite the fact that the contracts were negotiated, it still is a statutory requirement, isn't it, or did we find that there is a surplus before the sale is made? Is that correct?

MARTIN: Yes. We attempted to deal with the surplus question. I think we have dealt with it, in the terms of the contract. There are two ways to approach it. It would take a long time to talk about the surplus issue. I won't do that here. One way to do it is to attempt to predict what the surplus would be and then try to match what you sell against what you predict and then see if everyone agrees with your prediction. What we've done is simply provided flat out that we have a right to take back whatever we need. So we have, essentially, a legal surplus. We have a surplus which is protected by the terms of the contract rather than trying to identify it by some quantity.

GRUENING: There are no studies to your knowledge? There are studies?

MARTIN: Yes. We are going to be prepared to advance and have advanced at prior hearings before legislative committees, our work on surplus gas and what it consists of basically is projections of various low, medium and high growth scenarios that indicate what might happen. Because ultimately all surplus is, is whatever you believe will happen in the State, minus whatever we'll produce. And if you believe we will build a petrochemical plant then the surplus is one thing, if you don't, it is another.

GRUENING: Is that a completed study or one to be done?

MARTIN: It is complete. It is completed and it will be ready to be advanced. But it is one that changes constantly, Mr. Chairman, because you learn more about what the reliability of your predictions are. But it is completed and we will be prepared to advance it.

GRUENING: Is it in a form that we could look at?

MARTIN: We will submit it to the committee.

GRUENING: Okay. I think we would all like to look at that. Representative Chatterton?

CHATTERTON: Mr. Chairman, Mr. Commissioner, on the subject of surplus I have this question. First let me read from the transcript of the Royalty Oil and Gas Advisory Board Hearing. It says, "at that time you define surplus" the word surplus, or the Board did, "as the volume of gas available in excess of residential and commercial needs of the state." Now, my question is -- when we speak of surplus in the context of our contract here, is it still by that definition?

MARTIN: I would have to look at the context of the remarks, but I don't I need to to answer your question. In the terms of the contract, if this provision is approved, we have a right to take gas back for any purpose whatever. So the surplus is defined in the broadest conceivable terms. There is only one thing that is not included. And I think I can say this very thoroughly. The only thing that is not an instate use is liquefaction for export. That is the only thing that is not an instate use. So liquefaction even for transporting around the Alaska coast to another community is instate use. Anything else is instate use. So a surplus would only be that which is left over after we call it back.

Let me give you the example I gave Representative Meekins the other day in terms of what you can do with this contract. If everything is locked up, and the trans-Alaska pipelines are approved and every term in this contract is executed and we're in great shape. And that happens in the middle of 1978, and we are expecting that the first gas will flow on the first day of 1982. Using our two year notice provision, we can discover that we have a use -- now we have to have a use, we can't make one up -- but if we have a use that would be available for every cubic foot of our royalty gas on the first day that the pipeline would flow, we simply have to give two years of notice to the buyers and they would never take a cubic foot under this contract. So that the contract enables us to take every single cubic foot back with that notice and they would never take a cubic foot. On the other hand, if we never do develop the instate uses, then they would be buying pretty substantial amounts of gas simply because we don't really need what we sometimes projected.

CHATTERTON: So coming full around why our election to terminate...(end of tape)

MARTIN: ...In this case, what is surplus under this contract is determined purely by the will of the State.

CHATTERTON: And also instate use, is only determined by the will of the State?

MARTIN: By the will of the State. Let me say one quick thing about the one and two year notice provisions. The two year notice provision is the one to focus on because it is the one that gives us the total right to take back everything. We simply rewrite the contract and take it back. The one year notice provision was written because we felt that there might be some circumstances were we'd want to act on a shorter time frame. Most people conclude that one year or two years is adequate lead time for any

large scale project that would come forward. We will try to demonstrate this in the hearings but one year notice periods built on this schedule, this 25%, 50%, 75%, that curve that is drawn by that 25%, 50%, 75% thing each five years, roughly corresponds in a kind of a stair step fashion to what we would call the moderate growth expectation. It makes certain assumptions in regard to what might happen, so what we have done there is just provided a secondary take back term that roughly follows it. But it is the two year term that is really important.

CHATTERTON: Okay. This is vitally important to me Guy, and I'm serious gentlemen, if I could just hold you up for a minute. You can almost make or break me as to how I feel about this contract. So it is important to me, personally. Do I hear you right, that in effect, we only are giving a two year contract that I can give some type of a notice and two years after the giving of that notice, I can stop the flow of gas through that pipeline and convert it to an existing instate use. And you are telling me that I am sole judge of what the instate use is?

MARTIN: Not you, Representative Chatterton. That's is right. The criteria for that must be that the use exists.

CHATTERTON: If I suddenly decide, then, that I want to use that gas to maximize the recovery of black oil from reservoir X, to geographically remove it from Prudhoe Bay, that is an instate use by the definition that you are saying, and I can just quit selling gas?

MARTIN: That's right.

GRUENING: Any more questions of Commissioner Martin? Representative Meekins?

MEEKINS: Commissioner, just on the exact line of questioning, have you not pointed out that even though that's what's in the contract, there are two considerations, one being the possibility of some sort of emergency gas problem, veto of that provision if there was something going on that if we were trying to take back a large portion of our gas...

MARTIN: Yes, I doubt if it is possible. Assuming that this provision is approved and we begin to operate pursuant to it, I doubt if we can get anything that's more reliable.

MEEKINS: I understand that, but I don't understand...

MARTIN: There are imponderable problems. And you can't foreclose the possibility of a simple national emergency.

GRUENING: Representative Parr?

PARR: The term used in the contracts, meeting the intrastate industrial needs of the State of Alaska (indiscernible)

GRUENING: Are there any more questions of Commissioner Martin? I want to thank you for showing up tonight and I think we are going to have a lot more questions of you. This is just touching the surface really.

MARTIN: I appreciate it. Let me say that I think that this kind of format is exactly the way to do it. Looking at two offers, I'm perfectly willing to come in any amount of time it takes to have meetings like this, largely informal, and just do it because these are very serious and important questions. The second thing is that I have determined in talking to a number of legislators that there are a lot of misconceptions, people have firm and vivid beliefs that the contract does something that - we just want to try to show you that it doesn't or that it's different. I've had some very successful conversations with some of the people at this table and others and I'm perfectly willing to spend any amount of personal time just, policy aside, explaining what we think the thing does. Don't hesitate to call me or have other collegues call me or just come over and talk for a while. Because it has really been useful to do it and we don't want anyone to vote based on an assumption or a...

GRUENING: Representative Parr?

PARR: Mr. Chairman, I appreciate Mr. Martin's willingness to do this, but I want to say one thing that I said to somebody who came in and told me _____. And that is a lot of these questions should be raised and answered on record at a public hearing.

GRUENING: I agree fully.

MARTIN: I would not hesitate to answer the same questions at a public hearing.

GRUENING: Thank you and I'd like to call a short recess and we will carry on with the remaining later.

(BREAK)

GRUENING: We will come to order here. Mr. Gilbreth has offered to give us a real short course in some of the technical aspects of oil and gas, particularly natural gas and maybe that will help us direct questions.

GILBRETH: Mr. Chairman, I'm sure most of these people here are not too familiar with what happens in an oil and gas field and oil and gas reservoirs. I will take just a few minutes and start in on some of the basics and work up on it.

Of course a lot of you have heard that we have a big field of crude oil. It is a large field... (end of tape)

We have other pays at Prudhoe also. The main pay that you all hear about, the big pay, is the one that contains 9+ billion barrels. That occurs around 8,000 or 9,000 feet. Then we have a shallower series of sand stones, Nika Park River Pay. They are characterized by high productive wells. They flow real easily to start with but expected to drop off very rapidly. Those go to the west of the main portion of the Prudhoe Bay field and could extend as far as 20 or 30 miles out to the west.

Lying underneath the main pay vents to the east side, we have the Lisbourn Pool. And the Lisbourn had been tested in many, many wells, but not found to be commercially productive in very many. It covers a large area and if it should ultimately be economic and give up enough oil in commercial form, it could be a sizeable field, but at this stage it doesn't look like it is a sizeable field. So what we are generally talking about is the main Prudhoe reservoir, the big reservoir. And the operators are trying to unitize the reservoir now so that, in effect, the entire reservoir will be operated by two operators on behalf of everybody else. They would operate the whole field so that you would get advantage of the economies of operation, you don't have competitive forces operating and _____. Now the operators have submitted preliminary draft agreements to us and we have gone over them and they have proposed a unit outline of what area this unit is to cover. The outline has not been or the boundary around the unit has not been decided yet. There are some wells that still fall within the confidential status under our two year confidential statute and the operators themselves are not even trading information on these. So we find ourselves in a sort of a touchy position where we can talk to one operator and we can't talk to another operator across the table because they don't want to exchange information.

So we don't know at this stage just exactly what the unit area is going to be around this unit. It will be decided sometime in the next couple, three months probably. But the gas contract had been written so that it will correspond to that area, whatever it finally turns out to be. So we're talking about gas that will fall under the ultimate unit area for the main reservoir only. I wanted to point

that out because in later testimony we will tell you that there are other reserves that are not committed to this contract and these are the reserves in some of the sands up above, reserves in other pays that are out away from the main reservoir.

In the Prudhoe Bay field, of course, we have oil and we have gas on top, and then water on the bottom. Within the oil zone, very near the bottom of the oil zone, there is a big, very heavy, oil accumulation. We loosely refer to it as a tar matt sometimes. And this can be 60 to 80 to 100 feet thick. It is fairly impervious. Now to produce oil out of the well, you have to have energy or pressure to force it into the well bore and up to the surface. And in Prudhoe Bay, because it is buried under several thousand feet of sediments, they have a weight or pressure forcing down on the oil. The reservoirs originally under a certain pressure. And the free gas then, or the gas cap which is free gas, is also under that pressure and this is around 4500 pounds, depending upon where you are in the reservoir. The oil itself, also has gas in solution within. Just like you popped the cap off a Cocoa Cola and it bubbles. The carbon dioxide comes out of solution. And we have gas in solution at Prudhoe the same way. We have free gas, solution gas, and then we have oil. And under that we have a salt water area and this underlies nearly all oil fields. I don't know of one anywhere in the world that doesn't have salt water at the base of it. The water reservoir or aquavoir if you please, as a lot of people call it, extends out over many, many miles and we have mapped it as far away as 65 miles from Prudhoe Bay.

Now to get the energy to force the oil up to the surface we have the pressure from the gas cap, the original pressure in the oil zone, and the water zone is originally under the same pressure. So something has to push fluids to the well bore, and the ease with which the fluid goes through the formation is a technical term we call permeability. And the higher the permeability, the easier it will go over to the producing well. The lower it is or the tighter it is, the greater resistance it is, the less likely you are to get good float. You'll have a horizontal characteristic in your permeability and a vertical characteristic. Obviously, from gravity forces, fluids and pressures can act down, they can also act horizontal. And our characteristics at Prudhoe are such that we have very good vertical permeability characteristics and particularly so on the gas. So that the reservoir simulation work that we have done leads us to believe that the gravity drainage system or the effectiveness to (cough) will be very effective.

And just some ball park figures -- Mr. Chairman, let me point out that any figures I throw out here tonight about recoveries and rates and so forth, are subject to later correction and refinement by Hoyle Hamilton, the Director of the Division of Oil and Gas. He is in Denver now doing simulation work to try to bring our figures up to date based on the latest plan the operators have told us about. Some of our earlier work, I'm sure, will be changed somewhat but not significantly. But we are trying to get a refined position now to try to determine what the production rates in Prudhoe are likely to be. Up until this time, we in the Department have taken a very firm stand in not committing to any production rate because we have not had enough information to tell what would be a good rate. We have had some ballpark figures based on early data but we didn't know what the operators were going to do. Now, along with the unit, the operator is required to submit a plan of operation, what he plans to do in the way of drilling additional wells, and putting in projects or increased oil recovery pools. So the operators have filed information with us, we have gone back and requested more information on a couple of occasions. We have had several meetings. We have had meetings with our engineers, with their engineers, and I will say this, that the operators have very graciously, if you please, given us proprietary data to help us in our analysis. We now have enough information that we can put into the computer and get some sort of a reasonable prediction on what probably will happen with what the operators plan.

Because of these characteristics that I mentioned, the permeability characteristics, the recovery that we anticipate based on what we see right now, without anything, would be probably in the order of 30% to 32% to 33% of the original oil that's in the reservoir. Now to give you an idea as to how this might compare in the Cook Inlet field, some of those which do not have gas caps, do not have _____ water drive, we are looking at recoveries in the order of 14% to 16% to 18%. So without doing anything at Prudhoe Bay, we will have a fairly efficient recovery mechanism. Now this recovery is achieved by the gas pressing down or working on the oil, if you please, furnishing pressure energy there and also by the water furnishing pressure energy on the bottom side in an upward direction. Now with the good vertical communication we have, the gas cap looks like it will do an excellent job. But with the permeability that we have and the tar matt that we have, or the heavy oil zones that we have, there is quite a bit of question about how effective the existing water drive will be and how much the operators are going to have to supplement this water drive. Therein is where most of the discussions are being held now days.

Just some ballpark figures -- if we take the reservoir and produce it just as it is, we'd have in the order of 30%, 32%, 34% recovery. If the operators during the life of the field, would return all the water that is produced back into the reservoir, we could probably increase that by 2%. If the operators put in an efficient secondary recovery program, they might increase the oil recovery from 5% to 7%. So we could get up somewhere from 37% to 39% to 43% ultimate recovery out of the reservoir depending upon how its ultimately produced.

Now our latest runs, they are still analyzing them, and I talked to Mr. Hamilton by phone to see if I could get any advance information, and up to this point the only thing he can tell me is that it doesn't look like, on first analysis of what he got out, that there would be any advantage to requiring gas to be returned to the reservoir indefinitely. There is no increase recovery as a result of this. But there are other variables from there back. So that is all I can tell you about that one thing and then he will have to tell you how some of these variations work.

The water injection program could be small or it could be very large. We anticipate that it would require the injection of a very large volume of water over the life of the field. And the water, in all probability, would have to be obtained from the Arctic Ocean to furnish a volume of this kind. Tests have been run. It looks like the water is compatible with the oil at Prudhoe Bay.

The type of project that would be required would be, as you can imagine, the largest in the world. And it is not a cheap project. I haven't talked to the operators, I don't know what kind of cost they'd be looking at but I would say it would easily exceed a billion dollars. It is a large project. Something that can't be done overnight. Now the scale and direction such a project would take, would depend on how the reservoir performs under actual production operations. And all we can do right now is look at the computer output and it says, well, weighing one factor against another, this looks like it is probably the best way to go right now. But then as we get actual data from the field and feed into the program and start refining it and try to line the two up, we may get slightly different answers. So it is going to take, probably, two to three years of production operations in the field, actual operations, before you can, with any degree of accuracy, define a water injection program for that field. You can have some ideas and you can make estimates, but when you start spending money of that type, you've got to know pretty well what kind of _____. So to get water in the field, we are looking at something

that is going to take a couple of years to figure out what kind of a program we really need. And then it is going to take two or three years to design it, finance it, install it and put it into operation. So from the standpoint of water injection, we're probably looking at something four, five or six years down the road before an effective water injection program can be installed in the field. We are incorporating timing of this type into the computer program, in terms of ultimate oil recovery, to see what the effects are of delaying water injection. What could we do if we started now. And what could we do with large volumes, small volumes, and intermediate volumes, and so forth.

So about the most I could tell you in terms of rates are that the operators are planning to start out, and in the not too distant future, get up the rates in the order of 1.6 million barrels of oil a day. These, with the gas production in the field -- there would be gas available to sell as much as two billion cubic feet a day. Now we don't have a gas line. We don't have a gas line authorized. And we don't have facilities in the field to process the gas to get it in to _____. So it is going to take quite some time and as Commissioner Martin said a while ago, we are looking at least to 1982, we think, before a line could even be constructed to take the gas. So during this interim then, we have a tremendous volume of gas that is going to be produced on a daily basis that something has to be done with.

So the operators have designed an injection plant or program to return this gas to the reservoir during the interim period, until such time as they are permitted to sell gas from the reservoir. Let me reiterate again a point that Commissioner Martin made. Under AS 31, we have a waste prevention statute which says that you can't waste oil or gas in the state, and the Division of Oil and Gas Conservation has authority, under that statute, to regulate the flow of oil or gas or both for conservation purposes to achieve maximum recovery. Nothing in this contract that we know of, and we have been very particular to see that nothing _____, would interfere with that or in any way relinquish any of the State's authority to make that determination. That determination will be made exclusively under AS 31, and regardless of what this contract says, the field will be operated at the MER or most efficient rate of production. Now this contract is set up to sell any gas that is produced and sold. If the Conservation Committee permits them to produce at such rates that they could sell gas, then whatever that rate is, then we are committed that volume. If they could only sell 100 mcf a day, then that's what we sell under this contract. It is only what can be produced under this section at the MER.

GRUENING: If the committee members have any questions that they don't want to slip by, please ask them. You mentioned 1982, as the date the gas pipeline would be completed or started or what?

GILBRETH: No. That is about the earliest that we could expect any deliveries from a gas pipeline. If you go into all the approvals that are necessary, the lead times to order, the contracts that the companies have to go through, the right of ways, the clearing, the studies, and so forth, about the earliest that we can see would be 1982, to have one completed to take gas.

GRUENING: Representative Chatterton?

CHATTERTON: Thank you Mr. Chairman. So we all understand, here is the same thing. If you say that by the earliest that you can see we can start selling gas in 1982, that is based upon how long a construction period? I guess what I am asking is, how long prior to 1982 would a private enterprise have to make an economic determination and put cash on the line to start the procedure for the permits and so forth and so on in the ultimate construction of the line? How far do we back down...?

GILBRETH: I don't know just how the overall timing would fit in on that. Some conversations that I have had would indicate that -- and here Mr. Chairman, you will have to talk to maybe El Paso or someone else on that but -- I am led to believe that if the approval finally comes from the federal government late this next fall or early winter, that the earliest that they could do anything would be a little bit the following summer. Now, I am assuming that they are not going to be able to arrange financing or anything else until approval is given. And I don't know what the time is, between that point and the time they actually start construction. You know, from the standpoint of getting financing and so forth. But if you consider some reasonable time in there considering the seasonal effects and logistics and everything else, you will be running into pretty close to 1982. Any reasonable set of assumptions you make regarding financing and ordering and starting construction and then construction time.

GRUENING: Representative Hayes?

HAYES: If I understood you correctly, it is going to take a little while to determine what kind of a commitment can be made for the sale of gas?

GILBRETH: Yes, sir.

HAYES: What I don't understand is -- how can a prospective owner and constructor of a gasline get financing to start construction when he doesn't know until the time he knows what he is going to be able to get? Nobody is going to loan him the money.

GILBRETH: That is true. This is a real problem in the area. What we hope will come out of this, we hope that there will be some clear cut information what will say to us and, of course, we are going to have hearings on this and make a determination but, we are hoping that something can come out that we can say, alright, based on the best information we have -- and I am going to use two billion a day as purely an example, I don't want to write that in concrete -- but let's just say that we hope that our information will show us that if you sell 1.75 to 2.25 billion cubic feet a day, you are not really going much difference in the reservoir, at least within the experimental error or engineering error that we can see in our model, in our data, and our figures. And we will be in a position to say to the operator, if they so request, if they want to produce enough to sell 2 billion a day, say, alright, we will give you a temporary authority to produce for two years, or three years, depending receipt of reservoir data to confirm it. And the first time that we get reservoir data that says that is too high, we are going to have to cut it back. And this is going to make it rough on financing because nobody can guarantee that we are going to let them produce two billion or three billion or four billion cubic feet a day for the 15 or 20 or whatever years that they need to finance the loan.

GRUENING: Representative Parr? And then Mr. Meekins.

PARR: (Indiscernible) ...Well, what I am leading up to Mr. Chairman, is in the contract _____ maximum use would be committed for, one trillion, 300 billion. Was that... (indiscernible)

GILBRETH: No. It is. What we are committing through all three contracts is 2.6 million. And the one you happen to be looking at is one that -- that company gets 50% of our royalty gas, so they get the maximum of 1.3 billion.

PARR: Okay, that's ... So we are actually committing everything we would reasonably expect to be produced according to (indiscernible)

GILBRETH: No, this is from the 1/8. This is not the...

PARR: I understand that. I'm sorry I _____.

GILBRETH: Okay. But the 2 billion a day is 8/8 of the gas. It is not our 1/8.

PARR: No. It is 250 million of ours.

GILBRETH: Yes. And there is also a time limit on it that's 1.6 trillion over a certain number of years. It is not the whole life of the reservoir.

MEEKINS: I have a question back on the geology. The reason it is important, I understand, is because these questions are yet to be resolved as to what kind of recovery you are going to get and how much gas we are going to need to reinject. As I understand it you have a water drive but you also have gas drive. Say that the horizontal and the vertical permeability is good, so what you are really concerned about is the water drive is really a function then of the _____ of the oil or something like that?

GILBRETH: Yes. The permeability of the reservoir and the _____ of the oil. There are a bunch of factors that go into it, but those are two of them.

MEEKINS: The question is really how much the tar matt going to impede the water drive, right? And if it impedes it a great deal then we have to reinject a lot more water in order...

GILBRETH: Our computer runs lead us to believe that the reservoir is rate sensitive, by that you can very ultimate recovery depending upon the rate that you take it out. But they do not indicate to us that it is very rate sensitive on gas withdrawals. It is more sensitive to the amount of water to be injected, to determine the maximum efficient rate of production. Here again, Mr. Hamilton will have to give you more detail later, but we think that the rate of gas production is not nearly as critical on the ultimate recovery as the rate of water injection. And that the rate of water injection is what is going to really ultimately determine the rate of production _____. I am talking about the rate of oil production.

Now, I didn't talk about the oil and the gas as it comes out. As our oil and gas comes to the surface, of course the gas comes out of solution with the oil when you release the pressure, you get it on the surface and you have vessels there to release the pressure and the gas is taken off the top and the oil goes on the bottom. The gas that is taken off, it has a lot of other hydrocarbons in it, referred to in many cases as liquids. These gases can go through other types of containers which condensates or liquids are settled out and called condensates. These are generally fairly stable and in most cases will be put right back in with the crude stream right there and go on down and be sold as crude oil. The remaining gas that

comes off after the condensates drop out, still have liquids in them, and they are liquids that you have heard of -- propane, butane, penthane, ethane, hexane -- and the composition will depend on the separation characteristics as you go through each of these steps down the way. Initially, the plans are -- and I didn't tell you that Prudhoe Bay gas has about 10% or 12% carbon dioxide in solution with it, it is there, and it is an impurity, and it can't be burned, it is a pain in the neck. It has to be removed before it gets to your kitchen for fuel. But initially, until a pipeline and other cleaning systems are installed, the plans of the operators are to go through the separation stages, take out the impurities, and anything that is not stable and then just recompress the gases and reinject them right back down into the reservoir. This would include what we call natural gas liquids or ngl. The condensates will be taken off and sold as crude oil during the interim period. And anything that can't be dropped out.

Now, once a pipeline goes in, however, it is a little different story. The condensates will still be taken out, but there will be some additional equipment installed and as of this morning the operators have not designed the equipment and not ordered it and not installed it. It is gas conditioning equipment to take care of the natural gas liquids, or to extract these liquids out of the gas stream. Their intent at this stage is to take out as much as they can that is stable enough to go down the crude line and meet pipeline specs, and then any of the other products that come out during the stabilization and cleaning process, where they take out the carbon dioxide and the water and so forth to make it of pipeline quality. Anything that can't go down the crude stream, at least initially until there is some market for it or some need or some way to use it, will be pumped back into the reservoir. It will go into the reservoir as a liquid and will obviously revaporize. It will go in under high pressure and will be there for ultimate recovery later. But at this stage there is not a plan to take all of those liquids out and try to send them down a third pipeline or try to do something else with them. They are unstable. It is not feasible to put a lot of gas down the oil line and it is not feasible to put too many of these down the gas line. It can be done, and under the right conditions, might well be done. But I just wanted to point this out to you that the plans right now are very indefinite on what to do. Some of the operators propose to have their purchaser extract these products. Some of the others do not.

In the contract before you, provision has been made that the State will reserve the right to take those out wherever _____.

GRUENING: Mr. Parr?

PARR: Mr. Gilbreth, what is a gas cleaning plant? Now is that the first kind of thing you referred to where the condensates drop out or is that where you take out the liquids and the...

GILBRETH: This is where you would take out the liquid that won't fall out under just the ordinary means.

PARR: So you'd take out the liquids, the last one you were talking about?

GILBRETH: Yes.

PARR: I guess they are talking about the plant costing them a billion dollars in 1975 and in four to six years from the time of design and construction. And further than that, they can't even start the design until they know the characteristics of the pipeline. And further that the characteristics of the proposed Arctic, Alcan and El Paso pipelines were different. So that decision has to be made first before they can start designing the gasoline plant which is going to take them four to six years.

GILBRETH: That's right.

PARR: In general, this is a very general question because the circumstances may change it. Are the liquids as valuable as, less valuable than, more valuable than, the gas itself?

GILBRETH: It depends upon what you want?

PARR: You mentioned a lot of names a while ago. Like hexane. I've never even heard hexane. I'm not kidding.

GILBRETH: Your strain of liquids go all the way from aviation gas, automotive gas, butanes and propanes and on down to your oils and asphalts. You have got a whole ray and in some cases you can bury the recovery of them. But, generally, you get your gasolines and your napthas, and your diesels from the oil. You get your propanes and butanes from your gas.

PARR: The propanes and butanes then are a part of this natural gas liquid that you were talking about?

GILBRETH: Right.

PARR: Okay. Presumably these are valuable because the State retained the right to receive them. If they weren't worth a thing, we wouldn't want that right. I have somebody who is supposed to know something about this subject, which I don't, and who felt this contract was very deficient because it didn't refer to residue gas. If I understood him correctly, residue gas was the gas after the liquids were taken out, and that we should have been in the contract only agreeing to sell residue gas, still the one thousand btu. Only residue gas -- it is important is it not -- why...?

GILBRETH: Okay. Let me go back just a second if I may to our original lease and Fred may have to help me here, but our original lease, we sell the right to an operator to explore for, drill for, produce, sell, and market, oil and gas produced on the property. And as a consideration for that, he gives us a 1/8 royalty when it is produced at the surface and so forth. Now our rights are to take that at the wellhead on our lease. Which can mean the hole coming out of the ground. We are talking about gas sales here that are occuring through many millions and billions of dollars worth of equipment. There is a question -- well if we don't sell our royalty gas, it goes through the separation process and the condensates are knocked out, and it goes ultimately through the conditioning plant and then the tail gas, or the output of that plant is what would be going in to the pipeline, after those liquids are knocked out. Now, there is a long step between the wellhead and wherever that point is going to be. And we don't know at this stage, where it is going to be and the operators don't know. We have written the operators to please tell us and they say, we don't even know yet where the delivery point is going to be. Whether they will deliver it to us back at the wellhead or after it goes through one of these separation facilities. We want it where it is free to us. We don't want to have to pay anything. Now if we get it, ultimately, at the wellhead and we sell it to somebody as tail gas out here, we are going to have to pay for the processing going on through all these plants. So what we did here to insure that we didn't get stuck with some of that, was to say that we're going to reserve the liquids, wherever they are taken out. If they are taken out in the field, if they are taken out at Fairbanks, or if they are taken out at Valdez or if they are taken out in California, the State of Alaska wants to reserve those liquids. And the gas purchaser is going to pay the price of taking those liquids out wherever it is. That is something that we would have gotten had we not taken it in kind. If it is something that we would have had to pay for anyhow, then that is a different story. So what I am saying is, in essence, selling the tail gas, we are not calling it tail gas. We are selling the gas and reserving the right to take the liquids out of it. Am I confusing everybody?

GRUENING: Mr. Chatterton?

CHATTERTON: I am going to try to help him. Very simply, this contract -- we are going _____ energy out of our 1/8. Now I can promise you that. The contract is beautiful from that standpoint. As the liquids drop out, we get 1/8 of all the liquids that drop out, wherever they drop out. We get 1/8 of all the pretty _____ units that pass from the wellhead. And we don't have to pay to get it. The processing is going to be paid for by the summation of these three companies.

GRUENING: Yes. Maybe you can help the question -- get out what you are saying -- but I'm not too sure -- if there is no use that the State has, let's say, at the wellhead for... The likelihood, is it not, that these liquids will go with the gas, wherever the gas happens to go. And if there is some market along the way that the people that are purchasing it will probably try to sell it, which point, if I understand it, we could say we want to claim it in kind at that portion. But don't we have to pay for any costs that are incidental to that?

BONESS: First of all, there are two separate provisions in the contract which I have gotten a lot of questions back that apparently confuse people about what we did reserve. Article 9, Section 9 refers to propanes, butanes, ethanes and things like that.

Gas, as it moves through the pipeline, once it goes through all the cleaning processes and separating processes that Easy has explained, it comes out of that last plant, the cleaning plant and is put into the pipeline, it will still have some propanes, butanes, ethanes, maybe a few higher but not very much beyond that.

GRUENING: Most of it will be left behind?

BONESS: Most of it will have been left behind and will either be reinjected into the reservoir, put into the oil stream...

GILBRETH: But the basic plant we are talking about is going to take out most of this in the field.

GRUENING: The reason this is going to be done is because it is not practical to ship this in the gasline?

GILBRETH: No. There are certain specs in the pipeline -- the requirements of the pipeline itself -- to transport the gas down. You are limited on the type of liquids that you can have in it. Well, you've got dew point measurements to take water and impurities out, to keep it from freezing in the line. And if you don't take these other products out, every low place you go in, in real cold

weather, why the liquids will drop out in low places. They are called the sludging of the fluid in the line and the gas and so forth. So the gas companies require that you put the gas into the line with a certain quality. And the gas conditioning plant that we are talking about that's going to take four or so years to construct, that plant will take out everything that is required to get it to pipeline quality. Most of these liquids that we are talking about will be taken out in that plant and the ones that are not stable enough to go down the oil line, if there is not a market for them, will be pumped back into the reservoir.

GRUENING: And the cost of this cleaning is borne by the people that are buying this gas, is that right?

BONESS: I would like to interject something here. Our lease says that if we take royalty in value, the lease is silent with respect to cleaning and dehydrating the gas, either oil or gas. But it says if we take royalty in kind, we agree to pay actual value or actual cost of cleaning and dehydrating the gas. There is some question as to first of all, whether that term can be in the lease at all. Whether it exceeds statutory authority of the Commissioner in terms of issuing the lease and even if it does, whether therefore it can bind us. There is also a question of what it means by actual cost. These were debated in the oil pricing case in Cook Inlet and that case was settled. We don't have a legal judgement on those. That question with respect to three of the people in the Cook Inlet case is still open. And we may get some litigation. We may get a court decision on what that means or not.

If we incur that cost solely as a result of taking in kind, and would not have incurred it had we taken in value, then our purchasers would pick up that cost. If it turns out that we must pay that cost, even if we take in value, the lease is silent in that matter, then our purchasers are not obliged to pay that cost. And the reason for it is, we didn't want to be in a position where we would have gotten less revenue by virtue of having taken in kind than we would have gotten had we taken in value.

GRUENING: In other words, the uncertainty in the lease is in the contract as well?

BONESS: That is right. There was no way to contract out uncertainly in the lease.

GRUENING: Why is that? Because they wouldn't buy it?

BONESS: They essentially did buy it. They are going to pay the costs if it would have been put upon us.

GRUENING: Well, couldn't you have stated in the contracts that they will pick it up regardless? In other words, we announce by contracting, do we not, that we are taking in kind? In other words, the contract assumes that we are taking all this in kind? Okay, can't we say that whatever costs...

BONESS: We tried that.

GRUENING: But they wouldn't buy it?

BONESS: No.

GRUENING: Okay. So we might have to end up picking up this billion dollar cleaning plant, in other words? Is that correct?

GILBRETH: The actual cost of cleaning and dehydration, if we were ultimately liable for it, we would have to pay 1/8 of that.

BONESS: Yes. The answer is if we are going to end up doing it, we are going to end up doing it whether we take it in kind or in value. The contract doesn't affect whether we have to do it. I might add that nobody believes we have to do it. It is our legal judgement and the legal judgement of other people that have looked at it, that we cannot be held liable for that. But if, indeed, we are, we are going to be whether we take in kind or in value.

GRUENING: Mr. Parr?

PARR: I don't want beat this to death... (indiscernible)

What part of the contract is it that says we get the liquids regardless of where and when they take them out and so forth?

BONESS: Both of those terms in fact say it. 4.4 says it with respect to...

PARR: 4.4 says it but 9.1 doesn't unless I read it wrong. It says the right to process the gas and have the gas processed, is not exactly the same as saying you can get it after (indiscernible)

BONESS: It means that you get the liquids. If you process the gas, once it has been delivered to the pipeline, the only thing you get by processing the gas is the liquids, is the propanes and butanes out of the gas. That is what it means to process the gas.

PARR: (Indiscernible)

BONESS: Yes.

PARR: Mr. Gilbreth never really answered my question exactly a while ago, and I guess I didn't state it clearly. I said somebody who is an employee knows something about this and he said that the contract was wrong because it _____ say residue gas. You didn't answer that (indiscernible)

GILBRETH: I'm sorry. I don't feel that it is important because I think we have covered it in essence in the wording by saying that we have the right to take the liquids out of the gas. And that is all that happens between the time that you initially separate it and it goes to the pipeline, you take the liquids out of it. You can call it -- there would be no problem...

PARR: Residue gas, I assume, is a standard term. What does it mean?

GILBRETH: It means the gas that comes out of the gas conditioning plant. In essence. Residue gas generally is a term that is applied when you put gas into some sort of a treating plant. And it doesn't have to be a conditioning plant like we have. It is just the gas -- the residue after the treatment. It is a fairly well understood term. If you come out to any plant, you can have the residue gas.

QUESTION: (Indiscernible)

GILBRETH: In this case, yes. The gas coming out of the gas conditioning plant, the residue out of that, would be what goes into the pipeline. But the residue out of one of the other plants, the injection plant or something like that might not be the gas that goes down the pipeline.

GRUENING: Mr. Meekins?

MEEKINS: I just have a technical question, as I understand it, the names for these different things are related to the number of hydrogens associated with the carbon atoms. Is that correct? Like hexane would be six hydrogen, right? Which ones are which? Does propane mean one and butane mean two?

GILBRETH: Methane, ethane, butane, propane, penthane, exane, and haptane. Methane and ethane are your two very lightest ones. And then as you go down, they get heavier.

MEEKINS: And all those are gas, right? And then octane would be oil, right?

GILBRETH: No. Not necessarily. I don't know the real character of octane, whether it is oil...

MEEKINS: But as you get heavier then you get into...

GILBRETH: Yes. But your lightest ones are methane and ethane are what you generally run in your stoves in your house...

MEEKINS: So you've taken out the heavier ones like propane (end of tape)

GILBRETH: ...they are taking out everything, taking out about 96% of the butane and propane. I believe it is 98% of the propanes and 96% of the butanes. And then leaving the methane and ethane. And it will depend on the design of the plant up there, whatever they take out.

GRUENING: Mr. Gilbreth. What percentage -- you say that not all the propanes and butanes will be cleaned out if this thing goes as according to plan -- what percentage will go with the gas and what percentage will be in...

GILBRETH: That is the point I just made. I don't know. It will depend on the design of plant that the operator puts in. They may take...

GRUENING: But your earlier point was that they are trying to take as much out as possible?

GILBRETH: I'm sorry. I might have misled you there. What I was saying is that they will take out as many of the heavy hydrocarbons as they can to go down the crude stream, those that are stable. And they will take out the others that will make it of pipeline quality, whatever that turns out to be. And they may have to take out 95% of all the propanes and heavier or 98% or 91%. I don't know at this stage what the design of the plant will be. But they will be taking out most of the liquids, leaving, basically, ethane and methane, and some small fractions of some liquids.

GRUENING: Now, what determines what is of pipeline quality? It depends upon pipeline design, does it not?

GILBRETH: And the quality of the gas.

GRUENING: Okay. Well, that's fixed someplace. But the pipeline...

GILBRETH: Wait a minute. Gas can be of a different quality, from everywhere, from every field...

GRUENING: But within the Prudhoe field, it is likely to be of the same quality, right?

GILBRETH: Yes.

GRUENING: Okay. The question I want to get at...

BONESS: Mr. Chairman, I think I can answer your question. Each pipeline by tariff says what the gas has to be, sets the pipeline specifications. And they will say you can have so much propane, butane, ethane in the gas. And you cannot have a higher percentage than they tell you. They will determine that by engineering characteristics.

GRUENING: Right. What is the relationship - If you examined the three proposed routes. And what can you tell us about the different characteristics in terms of gas quality that they can take. Is there a substantial difference between those three lines? I only say this...

GILBRETH: I have not examined that myself.

BONESS: I have examined it slightly, but not having Easy's background, cannot tell you very much. But I can tell you that because the El Paso and Arctic Gas pipelines are higher pressure, they are able to carry a higher percentage of propane, butane, ethane, than the Alcan, which operates at a lower pressure and therefore is not able to carry as large an amount. I believe I could supply you with the pipeline specifications that were submitted in the tariff if you are interested.

GRUENING: Yes. The question is, why the difference -- as a result of pressure? Is that...?

BONESS: Easy could explain to you, but it has to do with the dew point. If there is greater pressure the heavy hydrocarbons will not come out to form a liquid as easily as if...

_____: I understand that, but why is there pressure differences between Alcan and those...

BONESS: The Alcan proposal makes use of existing pipeline facilities in Canada, whereas the other two build all their own facilities. So, those in Canada are low pressure and they have to be compatible.

GRUENING: Mr. Chatterton?

CHATTERTON: Mr. Chairman, because this may be important in the lives of some people, I'm not too sure what is important, I would like to have Easy and I caucus but I guess we can't do that. But I have a hunch, if my memory serves me, and so I guess it is a question to Easy -- is that generally liquids will vaporize more easily at lower

pressures than at higher pressures, therefore, a lower pressure line -- and I am asking this as a question, as to whether it is right or wrong -- lower pressure lines will carry more of the heavier hydrocarbons in the gaseous stage than a higher pressure line would.

GILBRETH: As long as you have ample pressure and temperature, but...

CHATTERTON: Constant temperature, yes.

GILBRETH: But under the pressure conditions you can keep more liquids in that phase at the high pressure.

CHATTERTON: In which phase?

GILBRETH: The gaseous phase. As you flash your pressure, the liquids drop out.

GRUENING: In terms of, let's say, the tariff on the pipeline -- is the fact that it has got more liquids in it likely to result in a lower tariff? In other words, having liquids in there, is that an advantage to the pipeline owners?

GILBRETH: No. They want to keep the liquids out.

BONESS: I believe the tariff is set up on a price per mcf, so that wouldn't have any significance.

GRUENING: But don't they charge for taking the liquids through?

BONESS: No. They charge for the space in the line.

GILBRETH: They are interested in transporting mcf of gas. They don't want to transport liquids if they can keep from it.

GRUENING: Unless they own some -- have a chance to sell those liquids at the other end.

GILBRETH: Well, that could be then.

BONESS: Having the liquids in, of course, increases the btu content of the gas. And if the tariff were set up on a btu basis, that might have some effect, but I don't believe the tariffs are set up that way. There is also a minimum btu requirement in the tariff, which I believe is a thousand btu.

GRUENING: Well, in terms of the people who are buying -- or are contracting to buy this gas from us -- wouldn't they prefer to have a situation in which they could have the liquids? At least available for shipment through the line? And they could, in other words, as I understand it

under the contract, unless we chose to take them out at some point, I mean, they have the right. They pay us for it, but they have the right to sell those liquids. Right?

BONESS: Yes. If nobody takes the liquids out of the gas, the liquids will just be burned as part of the gas stream. You will have a higher btu content gas stream. If somebody choses to take the liquids out, and we don't chose... The one way that this is very likely to occur or at least could occur, is all of the different people who own the gas may get together and decide to build a processing plant and take the liquids out. They will share in the cost and share in the percentage of the liquids that come out. We elected not to do that, but if the purchasers of our gas did elect to do that, yes, then they would own the liquids.

GRUENING: Are you aware of any plans on the part of the purchasers to do that?

BONESS: No. There are no purchasers for the other 7/8, with the one exception of Columbia Gas.

GRUENING: Which constitutes over 50% of the 7/8? Right?

GILBRETH: I heard that 50% figure...

(All talking at once)

GRUENING: 37% of the 7/8. What is the percentage?

_____: May I answer for you because I was the one who made the statement. And I find that I did not know there are two participating areas. One is for crude oil and one is for natural gas. So on the basis we are now told that about 37% of 7/8 is committed. (indiscernible)

GRUENING: Well, was it Commissioner Martin's statement that that was his understanding of the amount of gas committed?

_____: I thought that Commissioner Martin said that he was aware that some had been committed but he didn't know what the percent was.

GRUENING: Any questions?

_____: I have a question, Mr. Chairman. (Indiscernible)

GRUENING: Do you have any more questions right along this line?

PARR: You were talking a while ago about, when you were going through and explaining to us _____ about the use of gas and water and so forth, furnish the pressure to get the oil out. If I understand you correctly, they use either gas or the water, obviously they prefer to use water in some cases because they can sell the gas. And they are apparently considering, not just produced water that comes out of the well, but also source water and you said the Arctic Ocean, to be specific.

GILBRETH: Yes, sir.

PARR: I assume that the Department of Environmental Conservation or somebody like that is looking at this to see if this is going to be environmentally feasible so that (indiscernible).

GILBRETH: No, it is not possible to use gas for this. It has to be water or ethane water.

PARR: (Indiscernible)

GILBRETH: No, not for the area that we are talking. I made a mistake when I said there is water in ethane. That's not quite true. But it in all likelihood will be more efficient to use some sort of a liquid mechanism.

PARR: Why is DEC looking at this business of taking that whole Arctic Ocean up there -- that ocean is very very shallow for quite a long ways out. And if they take a large volume of water out, there might be environmental considerations. Is the DEC looking at that now?

GILBRETH: I am not aware of it right now. Right now the studies under way are to see if the water could even be used. And, of course, they are obviously going to have to meet all the environmental criteria and everything else to use the kind of volumes that we are talking about here, we obviously would have to lay a source line to deep water somewhere. They couldn't do it within the island area there except in a few limited places, because of the shallow water depth and it freezes in the winter.

PARR: _____ the amount of gas that is going to be used for reinjection or something, anyway,...

GILBRETH: No. At least our tentative runs show us that recovery due to the water are almost independent of the gas part itself. The gas stands fairly well on its own and you have to put the water in to supplement the energy...

GRUENING: Mr. Hayes?

HAYES: I have a question of a non-technical nature. Maybe this should have been directed to Commissioner Martin. Does or would the FPC allow, it is on your royalty gas, or its selling gas to a purchaser, do they allow unusual restraints against getting a premium, selling the rights? If we had found a willing -- if people had been so inclined -- would it have been possible to get everything -- what we have in this contract is they are going to buy this gas at the best rates and there other considerations which support the all Alaska line. Could we have, also or instead of, got a billion dollars _____? Are these the figures? Are these the only figures around here? Is it a consideration?

GILBRETH: Let me take one shot and then let Fred take one. I know some of the discussions that were had on it. The purchasers pointed out that any payment that they made would not be recoverable through their rate structure and it would have to come out of their own back pockets. And they could pay something, but it would be relatively small because it would come out of their pocket. Fred?

BONESS: To my knowledge, there would be nothing unlawful about that.

HAYES: We do sell oil and gas leases. And we get a premium and that comes out of profits. _____ we could sell... You'd finally have something in your hands... we could have done it if we could have found somebody willing to do it?

GILBRETH: Well, you are talking about two different types of companies, now. You are talking about selling oil and gas leases. Those people are in the drilling exploration and they are not controlled, whereas the purchase is our control on their properties.

GRUENING: As I understand it though, nobody was ever asked to bid on the gas on a cash bonus or premium basis. Is that correct? To your knowledge? Either of you.

BONESS: There were some early discussions. The very early offers. These offers were made actually before the price, or advance payment ruling came down. There were offers to put up front end money. I believe all of those were withdrawn after the advance payment ruling. There was no other bidding...

GRUENING: There have been no... any bids invited?

BONESS: That is what I mean. That's right.

GRUENING: Mr. Meekins?

MEEKINS: I hate to go over this again but that advance payment -- how did that relate to that, I mean... Was there some way that, before that was prohibited that they could take it not out of profits, or something? Is that somehow easier for them to do it?

BONESS: Right. They would have been allowed to pay the money and put it immediately in their rate base.

MEEKINS: Oh, I see. Right.

_____: What kind of profits would they (indiscernible)

BONESS: The rate of return is regulated by the Federal Power Commission. I don't know what...

GRUENING: On the pipeline but not on the other end of it. Well, that isn't true either, but. You do distinguish between the rate of profit that the owners of the pipeline can make and that that these purchasers could make. That is two different ball games, isn't it?

BONESS: Well, perhaps you ought to explore that with them, more than me, but let me... Pipeline companies, gas transmission companies, the companies we sold the gas to, makes no money on the purchase of the gas. That is just given. They buy gas for a dollar an mcf or 20¢ an mcf, but they sell the gas for the same price. Where their profit comes is on the capital investment, the pipeline they own. They are allowed certain rates of return on that capital investment.

GRUENING: But there is no law that requires them to sell it for the same price they buy it from us?

BONESS: Yes, there is. The FPC regulates them so that they don't make any money on that. They make money by moving gas, not by buying and selling gas.

GRUENING: But they could sell to somebody else and make money on that, couldn't they? Or not?

BONESS: Not for resale. Interstate commerce. They could sell the gas to a direct consumer.

GRUENING: Well, that's what they are going to do, aren't they?

BONESS: The principle customers of all of the major transmission companies are distribution companies. Those are all regulated sales.

_____: The people who are buying royalty gas (indiscernible)

BONESS: They are pipeline companies. They make money by having -- the only way they make money. And you ought to explore this with them in greater detail. But the only way they make money is by owning a pipeline and moving gas through the pipeline.

GRUENING: Mr. Meekins?

MEEKINS: And for doing that they receive a certain return on their rate base because the cost of building that pipeline or whatever?

BONESS: That's right. All of the sales in the natural gas industry except direct sales in interstate commerce, are regulated, either by the Federal Power Commission or by State commissions.

_____: (Indiscernible)

GILBRETH: Their ownership in the pipeline, percentage, would be greater than...

BONESS: If you were moving one cubic foot through a pipeline, that means you'd have to distribute all of the fixed capital investment over that one cubic foot. And you wouldn't be able to sell that one cubic foot for the hundred million dollars or whatever it was that it cost to build the pipeline. So you have got to have gas in the pipeline in order to distribute it. A lot of gas in the pipeline, to distribute the cost.

GRUENING: I think what everyone is struggling with is trying to find out what is the probable value of what we are selling here. And along that line, can't these gas companies that we are proposing to sell gas to, they can sell it to someone else, not for resale, can't they, and get whatever price they can, that the market bears at that time? How does that relate to the price we get?

BONESS: I believe if they were not in curtailment they would probably be able to do that. In the curtailment situation that they are in, I don't believe they can do that.

GRUENING: Yes, but, we are talking about seven or eight years from now. With deregulation there may be no curtailments. Is that a safe assumption?

BONESS: That is a possibility. I'm not sure if it is likely.

GRUENING: Mr. McKinnon?

McKINNON: Curtailment _____. What is it based on?

BONESS: Basically it is based on the fact that they don't have enough on the average, I believe, to supply the customers, their firm customers. It is based on firm customers.

HAYES: Well, some way or another they -- there is a value that can be put out on the front end for their right to our royalty gas in addition to what the FPC might allow because under the terms of this contract these companies are going to spend a lot of money just lobbying. A tremendous amount of money is going to be spent so right there - there is some money there, so there is room for additional value for the sale of our royalty gas, whatever that might be. In addition to the terms of this contract which generally have to do with whatever regulations allow.

BONESS: Although the question may hinge on whether -- the value may be related to whether it can be put in the rate base or not. The cost associated with the lobbying that may be associated with this contract may be included in the rate base, and if that is so, then they could put the money out.

GRUENING: Let's just forget about the pipeline for a second and if the State just sold it today -- I don't know if you can do that -- but what value does Administration put on the -- present value -- does it put on the 26 trillion cubic feet? Is there any figure there? How do we even approach this unless we've got some idea of what the value is? If we should ship it out today?

BONESS: Let me try and give you some ideas. I don't think I can really answer your question.

GRUENING: Is there somebody who is in the Administration who has looked at that?

BONESS: Well, one way of looking at -- If resources weren't what you could sell it for, nobody has come in and offered to give us a fixed sum for all of the gas. So I mean to that extent I don't believe anybody can put a number on it saying, today it is worth half a billion, or two billion dollars. No one has offered to buy the gas that way. The FPC regulates the price of gas in the lower 48 that's sold for interstate, in the interstate market for resale. That price was, a year ago, I believe 51¢. The new order, I believe, said a $1.51. That's the wellhead price of the gas. That is on one basis. Something you might explore to see how that relates to... That price, by the way, does not apply to Alaska, it applies only to exploration in the lower 48 states. Another thing you might be interested in is unregulated gas. That is, gas sold in the intrastate market. In Texas and Louisiana

and places like that, it is selling anywhere from $1.75, $2.00, maybe even a little bit more than $2.00 mcf contract. There is something called emergency sales. Which means for a short period of time, or under certain other kinds of conditions, gas can be sold in the interstate market, in an essentially non-regulated fashion. It is not completely unregulated, but it doesn't come between the price that is otherwise applicable. I believe contracts there were going for about $1.50, $1.60, before the new rate took place. I don't know if that really answers your question, but maybe it is some help.

GRUENING: Mr. Gilbreth?

GILBRETH: Also, I believe that the volumes of gas that we're talking about here are significant volumes without a known use for it now in Alaska, necessitates that it go to the south 48. All of the companies who have talked about it, to the best of my knowledge, would be regulated by the Federal Power Commission and they are regulated on what they can pay for it. So you are talking about FPC regulation, whatever that turns out to be.

GRUENING: If we are not a person -- you might want to follow this up - if we are not a person under the natural gas act, and we sell to somebody who isn't going to resell, say an industrial user is going to turn it into something or do something with it right there, what kind of price could we expect to get? Do we get a premium price for that?

BONESS: If there would be no FPC restriction on them paying the premium price, whether we could or not, I can't answer you.

GRUENING: Okay. Has that question been explored in terms of...

BONESS: The Royalty Board made a number of solicitations that you may be aware. I don't believe any responses came in from direct purchasers.

GILBRETH: Commissioner Martin would probably have to answer that.

GRUENING: Mr. Meekins and then Mr. Hayes.

MEEKINS: I just have a short question. What is the total volume of gas included in the sale in the contract?

GILBRETH: 2.6 trillion for the three contracts.

HAYES: I'm just trying to get a handle on this value. What the value _____. The value of having the opportunity to buy the gas. I think there was testimony here to the effect that if Columbia loaned Sohio somewhere around $300 million, in a tight money market, which was interest free, for what periods of time I don't know, for the opportunity of buying 37% of the gas at some price.

GRUENING: That is a good line of inquiry. I'd like to follow that up. Maybe not tonight. Mr. Boness?

BONESS: I think that is a good observation but you do have to realize that that has to be discounted by the fact that it can be put in the rate base. Because they came in before the advance payment decision.

HAYES: The point I am trying to explore is what are we giving up in potential dollars for lobbying effort for a line _____ what we read about?

GRUENING: Does anyone want to answer that? No comment?

GILBRETH: We'll let the Commissioner take a shot at it. There's as many evaluations that can be made there as there are people to look at it.

GRUENING: Yes, but is there a stab at it?

GILBRETH: Not to my knowledge.

GRUENING: I don't want to go too late. I think we are getting a little tired. Maybe we could follow this up. Mr. Meekins?

MEEKINS: Yes. I'm trying to do this calculation right. When you talk about $1.50 per mcf, are you talking about million cubic feet? Is that what that stands for?

GILBRETH: Thousand.

MEEKINS: Good.

GRUENING: Mr. Chatterton?

CHATTERTON: Several people have made various estimates of what the wellhead value might be and there are some figures thrown around. I don't know what the validity of them are, but we're going to need a wellhead value in the order of 55¢ mcf for the operators to obtain an adequate return on their investment. I wonder if there is some information on that around. (Indiscernible)

GRUENING: Somebody outside Administration?

CHATTERTON: I think so.

GRUENING: Does that appear correct to you or...

GILBRETH: _____ says _____, Department of Interior.

GRUENING: Mr. Meekins?

MEEKINS: Mr. Chairman, if you say the new rate if $1.50 -- just assuming that, I think the logical assumption is that the price is going to go up, simply because there is a possibility of deregulation, there is a scarcity, all sorts of combinations like that. But if you don't even take in all the things you should consider and just multiplied volume times the price, you get four billion dollars and that is not considering increases or discounted value of it for the future and all that kind of stuff. But just how much it is worth sitting there, I guess. Right now the current price is four billion at _____.

GRUENING: Mr. Chatterton?

CHATTERTON: Mr. Chairman. I have a series of questions that would be completely within Mr. Gilbreth's discipline. And depending on time, why I can ask them to my satisfaction now or, I don't know what his schedule is...

GRUENING: Let me ask the committee -- What are your wishes? It is quarter after ten, now. There are going to be long hearings next week and we've been told by all these gentlemen that they will be happy to appear. Mr. Gilbreth are you going to be staying through til Monday?

GILBRETH: I have to go back for a meeting tomorrow and one on Saturday. I will be back Sunday.

GRUENING: I think it is kind of late. Are there some immediate questions that are left hanging that you want to cover? If anyone wants to stay and talk to Mr. Gilbreth, and he wants to stay, that is fine. Mr. Gilbreth?

GILBRETH: Mr. Chairman, I'd like to say that in our little discussion between Mr. Chatterton and I about the pressures, I will do some checking. I think we are talking about two different things and we both may be right.

GRUENING: Mr. Parr?

PARR: Let me ask one very quick question. Mr. Boness, something has been said about the possibility that the State of California might want to buy the gas from us _____, they're not regulated by FPC either. (indiscernible)

BONESS: Probably Commissioner Martin is the person you ought to... I don't think I know really any more than any of

you do. I know that there was some discussion in California introducing legislation to create a gas purchasing authority. The thought was that the purchasing authority could then purchase the Alaskan gas and other gas, resell it to the utilities of California. Beyond that, I'm afraid I really don't have any additional...

PARR: Such a sale, though, even if _____ and California is not subject to the regulations and we are not subject to the regulations, transportation is still a problem?

BONESS: That is right.

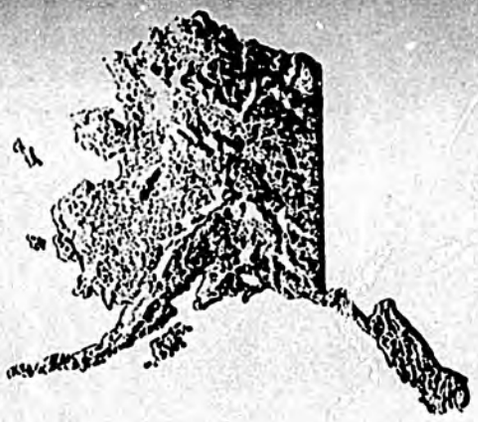
CRUENING: Would it be fair to assume from our recent comments -- from a little while ago -- that one of the things we are giving up, perhaps, is the difference between the regulated and unregulated price for selling... Under this contract we're going to receive the regulated price. And a sale to California, as Charlie mentioned, or a sale to some hypothetical industrial user, could bring a higher price?

BONESS: I would agree with that with one _____. And that is if you are talking about a sale outside of Alaska, you still have the problem of the FPC regulating the transportation of that sale and prohibiting that sale. In fact, that would be almost exactly the facts in the Transco case which is the leading for the proposition that the FPC can regulate...

GRUENING: That is the one you have intervened in?

BONESS: No. The Transco case is a 1960 case which really establishes the doctrine that they can get at the wellhead price by virtue of the authority to regulate the transportation. A little bit earlier you said, as long as we are not a person, we can get this sale. Actually you can get that sale even if you are a person. Direct sales in interstate commerce are not regulated. If A sells to B and B is going to use all of the gas himself, that is not a regulated sale, even if they're in different states. The problem is, if you want to move that gas, you've got to go through an interstate pipeline, and the FPC can then regulate the sale and decide yes or no whether they are going to let you go through it. The Transco case was a case where the FPC said, you have exactly those facts, they wanted to move the gas from Texas to, I believe, New Jersey. And the FPC said, no, we don't like what you are going to do with the gas, we don't like the price it is being sold at, and we are not going allow it. You would always have that problem if you are talking about direct sale in the lower 48 states.

GRUENING: Any questions you want to hit tonight? I want to thank you both Mr. Gilbreth and Mr. Boness, for sticking with us tonight and we thank Commissioner Martin for being here for a short time. Thank you.



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February 10, 1977

Representative Clark Gruening, Chairman
Special Committee to Consider Sale of Royalty Gas
Alaska State Legislature

Dear Representative Gruening:

Per your request, my comments follow regarding the salient points which I was able to gather from the recent public hearings regarding the proposed Royalty Gas Sales Contracts.

Given assurance under present Federal statute and regulation, that wellhead price for natural gas at prudhoe Bay will be a constant figure; that availability of a marketplace for Prudhoe Bay natural gas is equally equivalent regardless of route, there is little question but what a trans-Alaska transmission system for movement of the Prudhoe Bay natural gas is in the best interest of Alaska. And for as long as the foregoing premises remain constant, the best interest of Alaskans will continue to be best served by a trans-Alaska routing.

Testimony was strongly suggestive that present Federal statutes and regulations regarding the establishment of a wellhead price for natural gas at Prudhoe Bay will continue to be in existence for several years to come. In fact, our own retained expert testified that he saw little chance for relaxation of current regulations establishing wellhead price in less than ten years.

With possible relaxation of Federal regulatory statutes some ten-plus years from now, it could very well be that the wellhead price of Prudhoe Bay gas will be a function of the total capital outlay and operating expense required for a transmission system from Prudhoe Bay to a marketplace in the South 48. Under such relaxation of regulations wellhead price at Prudhoe Bay might be substantially lower for a transmission system to the South 48 which was substantially higher in cost to construct and operate than a less expensive alternate. Such a potential lowering in wellhead price might indeed result in a negative financial offset for Alaskans

than Alaskans might gain from the construction and operation of an All-Alaska system.

I further gathered from testimony that the Alaska Pipeline Act requires the Federal Government to make a binding decision upon the routing of a transmission system within the forthcoming year. Because of the short time fuse on the Federal decision as to route selection we cannot worry about what may or may not happen to FPC regulations ten years from now. Rather, we are forced to base our decisions upon facts as they exist today. And conditions today certainly favor the All-Alaska transmission route as being in the best interest of Alaskans.

Testimony, although quite varied as to degree, was strongly suggestive that legislative approval of the proposed Gas Sales Contract would, at least provide minuscule strengthening of Alaska's hand on the Federal level with respect to encouraging a final decision in favor of the Alaska route.

Testimony was also introduced that indicated, on the basis of all predicted reservoir performance, that with an operating and produciton program calling for 1.2 million barrels per day of oil, early gas sales in the amount of 2 billion cubic feet per day, or more, would sacrifice ultimate recovery of hydrocarbons (or energy) from the Prudhoe Bay reservoir. And testimony generally stated that the economic threshold, with respect to a daily throughput, was approximately 2 billion cubic feet per day of natural gas in order to make the transmission system a viable economic venture. Further, testimony indicated that at best, reservoir predictions were relative and not absolute. Only by close monitor and observance of actual reservoir performance after production is initiated and continued over a long time period can we gain, beyond all reasonable doubt, sufficient knowledge to make a determination as to what amounts of gas, if any, is indeed surplus to the needs to insure maximum ultimate recovery of hydrocarbons from the reservoir.

The best interest of we Alaskans and those who follow can only be served by maximizing ultimate hydrocarbon recovery from that field. This is one point that in our deliberations we should never overlook. Nor should we overlook the fact that we are dealing at Prudhoe Bay with a reserve of crude oil with associated gas. Crude oil is the prime resource by several fold with respect to both volume and value of the hydrocarbon reserve that nature saw fit to place in the Prudhoe Bay reservoir. Retaining gas within the reservoir will assure that we will always be able to maximize the recovery of crude

oil from the reservoir. By retaining associated gas in the reservoir until the maximum ultimate recovery of black oil is achieved assures us that we still have remaining in that reservoir the associated gas which some two or three decades from now will have increased value over that of today. Once black oil is fully recovered, we still have an economic reserve within the reservoir of salable gas that will continue for several years to come, one or two decades to yield a non-renewable income for the State of Alaska.

Testimony indicated that, had a transmission system from the Prudhoe gas cap to the South 48 been in existence a week ago, the President of the United States would have had the full authority to call upon the production of that natural gas to meet the South 48 needs, even though it could be extremely detrimental to the welfare of we Alaskans by materially affecting ultimate recovery from our Alaskan oil field. Such national emergency needs can well develop again and again. So long as we have no transmission system to the South 48 to move natural gas, we Alaskans can rest assured that the maximum benefit will continue to be achieved from the Prudhoe Bay reservoir. Only when we are assured, beyond all reasonable doubt, that the associated gas is indeed surplus to our needs should we permit the construction of a transmission system from Prudhoe Bay to the South 48.

However, testimony was strongly suggestive that our state's 1/8th Royalty Gas was merley a 1/8th tail attempting to wag a 7/8ths dog. In otherwords, contractual sale or commitment of Alaska's 1/8th associated gas today would in no way aide or abet the early construction of a transmission system to the South 48. The other 7/8ths of the dog is needed before sufficient volumes are realized to make a gas transmission system economically viable. As of this date, according to testimony, the other 7/8ths of the associated gas has not been commited for sale.

Testimony further was suggestive that in view of the control exercised under statute by our Alaska Oil & Gas Conservation committee, it would be doubtful if sufficient financing could be obtained for the construction of a gas transmission system until the Conservation Committee can first assure the financial centers that 2 billion cubic feet a day of associated gas or more would be available day after day on an uniterrruptable basis for approximately a twenty year period.* And it is my conviction that so long as our Oil & Gas Conservation Committee is isolated from political and economic pressures, they will continue to act with utmost prudency to insure the maximum benefit to Alaskans from our

* Solution gas from 1.2 MM Bbls/Day oil production is less than 1 billion cu ft/Day

natural resources within the State. In short, it may well be ten to twenty years before the Conservation Committee can with any degree of certainty assure that associated gas is surplus to our needs, and can be exported at an uninterruptable 2 billion cubic foot daily rate for a twenty year period.

Based principally upon the foregoing, it is my determination that the approval of the Royalty Gas Sales Contract by the Legislature will have a plus value in the selection by the Federal Government for the routing of a gas transmission system from Prudhoe Bay to the South 48. Further, it is now my conviction that approval of the Royalty Gas Sales Contracts by the Legislature will not aide or abet early construction of a gas outlet for Prudhoe Bay's associated natural gas. I say this because it is my strong belief that the overriding consideration governing the availability of finance for a transmission system is the Oil & Gas Conservation Committee's ability to "turn-off the valve" at any point in time; whenever they believe that continued gas production is deleterious to overall reservoir performance with resulting loss in ultimate recovery.

Should public money enter into the picture, of course, the premise upon which I base my position no longer is valid. But in no way do I see public funds being made available at this point in time for assistance in the financing of a transmission system.

Accordingly, it is my recommendation that the Legislature approve the Royalty Gas Sales Contracts as they now stand before us.

Representative C. V. "Chat" Chatterton
Special Committee to Consider Sale of Royalty Gas

Alaska State Legislature

SPECIAL COMMITTEE ON
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ROYALTY GAS

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REP. JOSEPH H. MCKINNON
REP. CHARLES H. PARR

House of Representatives

February 21, 1977

SPECIAL COMMITTEE REPORT

on House Concurrent Resolutions 11, 12 and 13

Legislative approval of the Administration's proposed sale of the state's 1/8 royalty share from the Prudhoe Bay field should rest on a clear finding that a sale at this time would serve the best interests of present and future generations of Alaskans.

A threshold legal question must first be resolved as to whether the three contracts for which approval is sought in House Concurrent Resolutions 11, 12 and 13* are before the Legislature in compliance with all applicable statutes. This question requires examination of whether, under AS. 38.05.183, competitive bidding was properly waived, whether there was a proper determination of what gas was surplus to the "present and projected intrastate domestic and industrial needs" of the state, and whether the required reporting of such needs was made in proper fashion to the Legislature.

*Identical to Senate Concurrent Resolutions 3, 4, and 5.

AS 38.05.183(d) requires the publication of a report to the Legislature. While a report was issued pursuant to the statute,* the report does not by itself squarely address the issue to be answered under subsection (d).** The Commissioner of Natural Resources, in explanation, stated that the report incorporated by reference a number of other publications which allegedly contain the required information. The information included by reference is, however, conflicting and does not make the report responsive to the statute.

The inadequacy of the report under AS 38.05.183(d) is also significant in view of the ambiguity of the contracts in establishing what future role this report will have in determining what is surplus gas when the state attempts to take back gas for in-state use.

* O'Connor, Kristina M., and Dobey, Patrick L., "Analysis of Prudhoe Bay Royalty Natural Gas Demand and the Proposed Royalty Natural Gas Sale," State of Alaska Department of Natural Resources, Division of Minerals and Energy Management, January, 1977.

** Sec. 38.05.183. SALE OF ROYALTY.
"(d) Oil or gas taken in kind by the state as its royalty share may not be sold or otherwise disposed of for export from the state until the commissioner with the approval of the Alaska Royalty Oil and Gas Development Advisory Board determines that the royalty-in-kind oil or gas is surplus to the present and projected intrastate domestic and industrial needs. The commissioner shall make public, in writing, the specific findings and reasons on which his determination is based and shall, within 10 days of the convening of a regular session of the legislature, submit a report showing the immediate and long-range domestic and industrial needs of the state for oil and gas and an analysis of how these needs are to be met." [emphasis added.]

Regardless of any procedural problems with the presentation of these contracts to the Legislature, it is incumbent on this committee to consider the provisions and purpose of these contracts on the merits.

Hearings were held by this committee on January 27, 1977 and joint hearings were held on January 31, February 1, 2, 3, 4, and 7, 1977. Throughout the varied and sometimes conflicting testimony of some 31 witnesses, there was no doubt what the primary purpose of these contracts is. The stated and singular purpose for selling the state's royalty share of natural gas from the Prudhoe Bay field at this time is to help secure a decision by the President and Congress for the all-Alaska pipeline route.

In the opinion of the committee, there has not yet appeared any other compelling reason for the sale of royalty gas at this time. There was testimony by the Administration and others that these contracts met other objectives, namely, flexible provisions for taking back royalty gas for in-state use and favorable pricing terms. Provisions for a good price and for taking back the gas are more correctly viewed as prerequisites to any sale of royalty gas of this magnitude, rather than as objectives of these contracts.

The policy question for the committee is, therefore, what is the likelihood that approval of these contracts will favorably affect the ultimate decision on gas pipeline routing and what does the state give up by entering into

these contracts. If in the opinion of individual legislators, the costs of the contracts or the uncertainty of the costs to the state of these contracts outweighs the likelihood of having the contracts win certification of the desired pipeline route, the contracts should not be approved.

There is clear agreement among nearly all witnesses before the committee and the stated views of Alaska's congressional delegation, that the internal problems of Canada in certifying and financing a pipeline route and resolving Canadian native land claims questions (before certification, financing or construction of a gas pipeline) are major impediments to timely Canadian certification of the Arctic Gas pipeline. Regardless of whether the State of Alaska enters into these proposed contracts at this time, these problems will continue to be substantial roadblocks to the construction of a Canadian gas pipeline to transport Prudhoe Bay gas. It is inconceivable that if the arguments of the congressional delegation, Dr. Tussing and the El Paso proponents are sound, that the President and the Congress will not give these internal Canadian problems just consideration in their decision on the gas pipeline route.

Nothing in the Alaska Natural Gas Transportation Act of 1976 (which sets out the timetable for F.P.C., Presidential and Congressional decisions on the gas pipeline route)

precludes the serious consideration of all of the above-mentioned Canadian route impediments. In fact, the Act of 1976 mandates the President, in making his decision, to "...inform himself ... of the views and objectives of the government of Canada and other governments with respect to those aspects of [his] decision that may involve inter-governmental and international cooperation among the government of the United States, the States, the government of Canada, and any other government." The factor of delay of pipeline completion is a critical one in the decision-making process by the President and Congress.

Obviously, the probability of delay works in favor of selection of the El Paso route and, to a lesser degree, the Alcan route. If these problems are to be given any consideration, they will be given weight regardless of what action Alaska's Legislature takes on the proposed gas sale. In the event these international considerations are determinative, commitment of the state's gas to the El Paso route is superfluous to the route decision.

At no time during the hearings was the nature or type of the lobbying activities of the three buyers (before federal agencies, the President and the Congress) made clear. However, the committee was informed by the Administration and representatives of the three buyers that in return for the sale of the state's royalty gas, El Paso, Tenneco and

Southern Natural Gas would mount effective lobbying efforts on behalf of the all-Alaska gas pipeline route. The same witnesses also indicated that the conditional promise of delivery of the royalty gas would help to build "constituencies" favorable to the state's cause.

In regard to "lobbying efforts", no standard exists in the contracts to measure suitable performance by the buyers. The contracts state only that the buyers must "actively support" an all-Alaska route or the route chosen by the State. Despite extensive questioning, no statement of projected lobbying expenditures or activities was ever provided. Even assuming that conditional commitment of the gas would provide sufficient incentive to Tenneco (buyer of 50 per cent of the state's royalty share) and Southern (buyer of 25 per cent) to pull all stops on behalf of the all-Alaska line, there is no basis for assuming that El Paso needs the additional incentive of 25 per cent of Alaska's royalty gas in order to work on behalf of its own proposal.

Moreover, the committee believes there is some risk that the political mood of the country towards the petroleum industry, of which our buyers are considered by the public to be a part, will make the "lobbying efforts" of the buyers more of a liability than an asset to the state's cause. In securing lobbying efforts, the committee is of the opinion that the better method by far is to support direct lobbying

efforts by Alaskans for an Alaskan cause, as was done during the Statehood battle and in securing passage of the Alaska Native Claims Settlement Act.

In weighing the claim of the buyers that conditional commitment of our royalty gas will build meaningful constituencies in 42 states, the committee compared the relative magnitude of the quantities of royalty gas sold to the respective buyers to the total 1975 annual gas consumption by the 42 states. Alaska's royalty share accounts for a miniscule percentage of the total needs of these 42 states. For example, Tenneco's annual share of Alaska's royalty gas would amount to only 3.5 per cent of Tenneco's total 1975 sales, and only 0.35 per cent of total 1975 consumption in Tenneco's 25-state market area.

Moreover, in view of the fact that federal legislation will control where gas flows in a time of gas shortage (as is the case presently in the gas-short areas of the United States), there is no reason to believe that commitment under these contracts will have anything to do with where gas flows in the event of future shortages.

In determining what the state gets for sure under these contracts, it is the opinion of the committee that at best, the state receives an absentee lobbying effort having minimal impact, and at worst, a scheme which engenders general disfavor. ~~The implied threat to our sister states that~~

~~failing to secure the desired choice of pipeline routes, the State of Alaska will withhold all of its royalty gas from use in the lower 48 states regardless of whether in-state uses for the gas have been developed could have an adverse impact on the potential leaders we wish to persuade.~~ Testimony before the committee suggested that the threat of withholding royalty gas will not be viewed as credible, but to the extent such a threat is taken seriously, it may prove harmful to our cause on this issue, and perhaps on others of equal or greater importance before Congress.

Legislators must in the final analysis draw their own conclusions as to the political impact of these contracts. Each legislator should, however, be aware of the costs of the contracts to the state.

One principal cost of these contracts to the state is the risk of not being able to take back our own royalty gas for in-state use once gas is flowing out of the state. Despite the artful drafting of the contracts, there is, in the opinion of the committee, a substantial ambiguity as to how surplus will be determined at the time the state desires to use the gas. An opinion by Legislative counsel (attached hereto) states that "...an argument could be made that the determination [of surplus] made to support this sale is the sole determination allowed." While this argument would probably not prevail, according to the opinion, "the con-

tract is not fully clear on this point leaving room for substantial disagreement at a future time." This ambiguity would not exist if the state were given sole discretion to determine at any time in the future what gas is surplus.

Under one provision of the contracts, the state is given sole discretion in determining whether the buyer can recoup from other Alaskan gas fields one-and-one-half times the amount of natural gas the state takes back for in-state use. The committee suggests that this same standard should also clearly apply to the initial decision by the state to take back its gas for in-state use.

At the very minimum, it should be made clear in these sales agreements that surplus must be determined solely on circumstances which exist at the time the state wishes to take the gas back and not by any estimates of state needs contained in state reports issued before the sale. As trustees of resources belonging to the people of Alaska, public officials should not take the chance of committing gas which is not surplus to the future needs of the state.

Another cost to the state is the loss of flexibility in dealing with other potential buyers of the state's royalty gas. Several other companies and the State of California submitted interesting offers, but were unwilling to include a provision for support of an all-Alaska gas pipeline. The state also loses the opportunity to secure future siting of

petrochemical industries based on present commitments of gas.

Recent F.P.C. decisions have disapproved the practice of charging gas customers for advance payments to gas producers for gas not yet produced. Nothing in these decisions rules out a cash advance payment made at the time of initial delivery from being charged to gas users. Moreover, advance payments made from surplus or borrowed capital would be chargeable to the end users of the gas at the time of delivery. The present contracts, however, rule out such cash advances.

In committing 100 per cent of the daily production of the state's royalty gas for up to 20 years, the state could lose the ability to leverage a higher price under these present contract provisions by sales to other buyers. Further, it has been calculated by assigning the state a discount factor of 10 per cent per year that the most profitable production period for the gas is from 1991 to 2010.*

Consultants Carl Swanson and Rush Moody conceded in their testimony that there is a possibility that under continued regulation by the F.P.C., contracts entered into at this time might be given unfavorable gas price treatment

* Interim Report and Testimony Submitted to Joint Gas Pipeline Committee, Public Hearings February 17 - 20, 1976, p. 79.

by the F.P.C. or Congress under a contract vintaging price regulation. This was one concern expressed by the producers of the 7/8's of the Prudhoe field and one of the reasons given by the producers to the F.P.C. for not entering into firm contracts for sale of their 7/8's share.

Another concern of the producers is that the gas bring a sufficient price under either regulation or deregulation to justify an early sale. If projected costs of whatever gas pipeline is certified were only half as inaccurate as those for the oil pipeline, a situation could evolve in which the well-head value of the gas would be so adversely affected that the state would derive little benefit from the inter-state sale of its gas under these contracts.

The uncertainty of the well-head price of the gas at the time of completion of the delivery system is predicted is probably a primary reason for reluctance of the producers to enter into contracts at this time. The contracts do allow the state the best price obtainable by the producers for the sale of their Prudhoe gas, but the strong possibility must be considered that the most economic use of the state's gas (and that of the producers) may be to continue, after completion of a gas line, to re-inject the gas into the reservoir to maximize recovery and daily flow of oil.

Recognizing that although there is reason to believe that under present conditions, some of the above-mentioned

contracts benefits were difficult to obtain, a future contract which does not have political support as its principal goal could contain some of these benefits.

The assumption that only the El Paso or Alcan proposals would give the state an opportunity for in-state use of the gas may be questionable. Present or future market prices may not reflect the full economic cost to the state of not having the gas. A line to carry the state's royalty share (and later perhaps a portion of producer gas) to Fairbanks or to tidewater has not yet been given the serious consideration it deserves.

The question of the effect of 2.0 to 2.4 billion cubic feet per day production of gas on the oil reservoir is one to which no satisfactory answer has been given. The committee does foresee some risk in committing on a daily flow basis 100 per cent of the state's royalty gas to a pipeline which even now is economic only under a daily flow of at least 2.0 billion cubic feet. If, after the financing and construction of that pipeline, the state must defend the decision of the Conservation Committee to curb or end gas production, these contracts may weaken the state's power to restrict the flow of gas from the state. It should be recognized, therefore, that the legal and political challenges to the Conservation Committee's decision by gas purchasers, transmission companies and the American consumer will be

formidable.* The commitment of gas under these contracts may prejudice the state's defense.

All of the foregoing cost considerations cast doubt on the advisability of committing gas for export from the state in order to gain marginal political leverage in the gas pipeline routing decision. If in the opinion of individual legislators, these cost considerations are outweighed by the likelihood that commitment of the gas will have some favorable effect, the committee strongly recommends that 100 per cent of the state's royalty gas not be committed. The sale of 25 per cent of the royalty share to El Paso makes little sense even under the political objectives of building "constituencies" and "lobbying efforts" for the El Paso line. In addition, approval of any or all of the proposed contracts should be done only after the method of determining what is surplus to the intra-state domestic and industrial needs of the State of Alaska is clarified in the contracts.

The entire basis for a sale under these contracts is the belief of the buyers and of the people these buyers are to lobby that the state really will have no significant in-state use for its gas. Despite the take-back provisions and protestations to the contrart, the state has weakened its case for taking back its royalty gas by committing all of

* The committee strongly urges revision of the conservation statutes to anticipate future challenges by defining economic as well as physical waste and assuring that procedural due process and accountability of the committee members are provided for.

it.

Dr. Tussing, Mr. Jefferson Barry and others have testified that regardless of the primary political objective of these contracts, it is advisable not to commit what amounts to 100 per cent of the production of royalty gas for at least 20 years. Reduction of the amount of production of royalty gas for export can be accomplished by amending the contracts or by disapproving one of the sales agreements.

The foregoing report does not attempt to list all possible costs of the gas sales agreements, but only those costs which are now apparent. Each legislator must make his or her own determination as to whether political support gained by these conditional sales constitutes a wise use of the state's natural resources.

Rep. Clark Gruening, Chairman
House Special Committee on the
Sale of Royalty Gas

STATE OF ALASKA
THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

POUCH Y - STATE CAPITOL
JUNEAU, ALASKA 99811
907-465-3830

MEMORANDUM February 16, 1977

SUBJECT: Gas Sales Agreement

TO: Representative Clark Gruening

FROM: Billy G. Berrier BGB
Director, Legal Services Division

You have requested that I review the Royalty Gas Sales Agreement for legal form and freedom from ambiguity. There are major areas that appear to be problems from this limited approach.

The pricing problem has been extensively dealt with in the opinion of Rush Moody, Jr. of the firm Vinson, Elkins, Searls, Connally & Smith.

I do find a substantial ambiguity in the gas reduction clauses. The material clause reads:

> "3.5 The reservation of gas by Seller by way of its exercising its rights of gas reductions pursuant to Sections 3.3 and 3.4 hereof shall be for the sole purpose of Seller meeting the intrastate domestic and industrial needs of the State of Alaska including the right to exchange reserved gas for other natural gas produced or delivered into Alaska, provided such exchanged gas is used for the sole purpose of meeting the intrastate domestic and industrial needs of the State of Alaska. However, this provision shall not limit the right to export from the State any products manufactured from said gas." (emphasis added)

This clause is controlled by Sec. 1.11 of definitions which reads:

> "1.11 The term "domestic and industrial needs of the State of Alaska" shall mean those present and projected residential, commercial and industrial uses for gas within Alaska as determined by the Alaska Royalty Oil and Gas Development Advisory Board in accordance with AS 38.05.183(d)."

However, in Sec. 3.7(a) relating to the buy-back rights of the Buyer a broader reference is apparently made. This section, in material part reads:

> "3.7(a) Should Seller, through the exercise of its rights under Sections 3.3 and 3.4, in fact diminish the volume of gas otherwise available to Buyer hereunder and should Seller during the term of this Agreement and five (5) years thereafter have additional royalty gas which in Seller's sole discretion is surplus to the intrastate domestic and industrial needs of the State of Alaska, and will be transported by the Pipeline, Seller shall offer to sell to Buyer under the provisions of this Agreement, except as to price and term, ratably with other eligible purchasers of Seller's royalty gas from the leases identified in Exhibit A such additional royalty gas equivalent to Seller's prior reductions under Sections 3.3 and 3.4." (emphasis added)

This language is also used in Sec. 3.7(b) with only a slight variant, that section reading:

> "3.7(b) In addition to the right granted Buyer under Subsection 3.7(a) and after all eligible purchasers of royalty gas from the leases identified in Exhibit A have had an opportunity to exercise such right, Seller grants to Buyer the right of first refusal to purchase additional royalty gas from Seller to the extent of one-half (1/2) times the volume that Seller's exercise of its rights under Sections 3.3 and 3.4 in fact diminishes the amount of gas Buyer otherwise would have purchased and received hereunder. Such right is granted during the term of this agreement and five (5) years thereafter. This right of first refusal shall apply to royalty gas which becomes available to Seller and which in Seller's sole discretion is determined to be surplus to the intrastate domestic and industrial needs of the State of Alaska. This right of first refusal applies only to gas which will be transported by the Pipeline." (emphasis added)

The net effect of Sec. 3.5 and definition 1.11 is that the gas reductions the state may order is that not found surplus to needs under AS 38.05.183(d) which reads:

> "(d) Oil or gas taken in kind by the state as its royalty share may not be sold or otherwise disposed of for export from the state until the commissioner with the approval of the Alaska Royalty Oil and Gas Development Advisory Board determines that the royalty in kind

oil or gas is surplus to the present and projected intrastate domestic and industrial needs. The commissioner shall make public, in writing, the specific findings and reasons on which his determination is based and shall, within 10 days of the convening of a regular session of the legislature, submit a report showing the immediate and long-range domestice and industrial needs of the state for oil and gas and an analysis of how these needs are to be met."

It is my understanding that a determination required under this subsection has been made in connection with the sale.

Under Sec. 3.3 of the contract of the state is given the right to reduce the quantity of royalty gas available for sale and delivery by percentage varying with time but the reduction must be pursuant to the limitation in Sec. 3.5. I find the mechanics of this obscure.

Apparently a determination would be made that certain royalty in kind gas is surplus to the present and projected intrastate domestic and industrial need. All royalty gas remaining would be for domestic and industrial needs of the state and, subject to the percentages set out in the contract, the state would have the right to reduce the quantity of royalty gas available for sale and delivery by that amount.

This determination could apparently be made at least annually on a continuing basis but an argument could be made that the determination made to support this sale is the sole determination allowed. The argument would be that the reservation in Sec. 3.5 is deliberately narrow in order to limit the reservation of gas to that which the board initially determined to be not surplus to present and projected needs so that if the projected needs do in fact materialize a take-back can take place, while broader discretion was allowed in Sec. 3.7 to cover the possibility that projected needs may not materialize in the future.

In my opinion this argument even if fully developed would not prevail and that the contract would be construed to allow future determination since that interpretation is much more consistant with the entire contract. Unfortunately, the contract is not fully clear on this point leaving room for substantial disagreement at a future time.

BGB:smh

SCOMM

#21:4

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Exhibit CC-10

(CONFORMED)

See P19-20

PRELIMINARY GAS AGREEMENT

BETWEEN

BP OIL CORPORATION (SELLER)

AND

COLUMBIA GAS TRANSMISSION CORPORATION (BUYER)

Dated as of August 3, 1971

PRELIMINARY GAS AGREEMENT

between

BP OIL CORPORATION (SELLER)

and

COLUMBIA GAS TRANSMISSION CORPORATION (BUYER)

INDEX

Paragraph		Page
1.	Certain Definitions	
	"Exhibit A"	3
	"Exhibit B"	3
	"Permo-Triassic Formation"	3
	"Lease"	4
	"Net Profits Royalty Interest"	4
	"Agreement for Sale and Purchase of Crude Oil"	4
	"Operating Agreement"	4
	"Gas Pipeline"	5
	"Unit Agreement"	5
	"Gas Reserve"	5
2.	Possible Reductions in Dedicated Gas Reserves	7
3.	Rights Granted	12
4.	Exercise of Rights	13
5.	Principles of Negotiation for Price Provision	17
6.	Period of Price Provision Negotiation	20
7.	Renegotiation of Gas Purchase and Sales Agreement	22
8.	Substantially Uniform Price Condition Determined by Federal Power Commission	24
9.	Termination of Gas Purchase and Sales Agreement	25
10.	Negotiation of New Gas Purchase and Sales Agreement	26

Paragraph		Page
11.	Confidentiality	27
12.	Termination of this Agreement	27
13.	Notices	28
14.	Entire Agreement	28
15.	Governing Law	29
16.	Headings	29
17.	Assignability	29

EXHIBITS

Exhibit A - List of Leases

Exhibit B - Form of Gas Purchase and Sales Agreement

PRELIMINARY GAS AGREEMENT

This Agreement has been made and entered into as of the 3rd day of August, 1971, by and between BP OIL CORPORATION, a Delaware corporation (hereinafter referred to as "Seller"), and COLUMBIA GAS TRANSMISSION CORPORATION, a Delaware corporation (hereinafter referred to as "Buyer") to evidence the understandings between the parties hereinafter set forth.

BACKGROUND FACTS

Seller is the owner of the entire working interests in the Leases (and the lands covered thereby in the Prudhoe Bay Area, Alaska), heretofore issued by the State of Alaska, listed and described in Exhibit A attached hereto, which working interests are, however, subject to a certain Net Profits Royalty Interest which is referred to later herein.

A number of wells drilled by the Seller and others on the Leases and in the vicinity thereof have established the existence of a major oil and gas field in the Prudhoe Bay Area of Alaska.

Certain groups (one being called the "Northwest Project Study Group" of which The Standard Oil Company, an Ohio corporation, the indirect parent of Seller, is a member and another being called the "North Trunk Study Group" of which an affiliate of Buyer is a member) are engaged in detailed evaluation studies as to the feasibility, physically and economically, of constructing and operating a large diameter Gas Pipeline for the transportation of gas

from the Prudhoe Bay Area, Alaska. Until such time as the studies are completed and a decision shall have been made by some group to construct such a pipeline with the requisite governmental approvals and/or consents and until such a pipeline is completed, no facilities will be available for transporting the gas from the Prudhoe Bay Area to a market, and hence production of gas in marketable volume cannot be achieved for quite some time.

While ordinarily gas purchase and sales agreements are entered into when gas is actually available for delivery or when its availability is fairly imminent, in this instance, however, Seller and Buyer are each desirous of obtaining the right, under certain conditions hereinafter set forth, to require the other to enter into negotiations for the execution of a definitive Gas Purchase and Sales Agreement well in advance of the time gas from the Prudhoe Bay Area can be transported to market. Many of the provisions of such an Agreement have already been agreed upon between the parties hereto and are set forth in the form of a Gas Purchase and Sales Agreement attached hereto as Exhibit B.

The negotiations above referred to will relate primarily to the price, or the method of determining the price, per Mcf, to be paid by Buyer to Seller for gas of suitable quality delivered in the field where produced, although, depending upon circumstances in the field at the time the gas actually becomes available for delivery by Seller to Buyer, some of the other terms of Exhibit B may require modification by mutual agreement.

It is the desire of the Seller to be assured that in the executed Gas Purchase and Sales Agreement, the Seller will receive for gas sold and delivered thereunder, from time to time, a price per Mcf at least as high as the highest price being paid, or to be paid, at the time of such deliveries for gas of similar quality being purchased in the same field in comparable quantities by the Buyer or by other gas purchasers from other producers and/or from the Seller. It is the intent of Buyer that such assurance be given.

Seller Gas DNR

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants hereinafter set forth, Seller and Buyer have agreed and do by these presents agree as follows:

1. Definitions. The definitions of particular words or phrases set forth in the form of Gas Purchase and Sales Agreement attached hereto as Exhibit B and made a part hereof shall apply to the same words or phrases when used herein. Additionally, the following words or phrases shall have the following meanings:

(a) "Exhibit A" shall mean the schedule or list of leases attached to this Agreement and marked "Exhibit A."

(b) "Exhibit B" shall mean the form of Gas Purchase and Sales Agreement attached to this Agreement and marked "Exhibit B."

(c) "Permo-Triassic Formation" shall mean the identifiable formation or stratum which, based on presently available data, is known to underlay at varying depths and/or in varying thicknesses

a portion of the lands covered by the Leases, and which for reference purposes only was found in the Arco-Humble Prudhoe Bay State No. 1 Well on land covered by the State of Alaska Lease No. ADL-28303 between the depths of 9117 feet below Kelly Bushing and the top of the carbonate formation at 9785 feet below Kelly Bushing as measured by Schlumberger Dual Induction Laterolog, Run 4, dated February 8, 1968, and Run 5, dated March 9, 1968.

(d) "Lease" shall mean any one of the oil and gas leases listed and described in Exhibit A, and "Leases" shall mean all thereof, but in each case only in so far and only to the extent that it or they pertain to the production of gas from the Permo-Triassic Formation.

(e) "Net Profits Royalty Interest" shall mean the Net Profits Royalty Interest which was conveyed by Seller to BP Alaska, Inc. (herein called "BP Alaska") by instrument dated August 1, 1969, a copy of which has been furnished to Buyer.

(f) "Agreement for Sale and Purchase of Crude Oil" shall mean the Agreement entered into by Seller with Buyer as of August 3, 1971. Such Agreement is hereinafter referred to as the "Crude Oil Sales Agreement."

(g) "Operating Agreement" shall mean the Agreement dated August 1, 1969, between Seller and BP Alaska, a copy of which has been furnished to the Buyer.

(h) "Gas Pipeline" means a pipeline for the transportation of gas from the Prudhoe Bay Field, Alaska, to other points in Alaska, and/or to points in Canada and/or to the boundary between Canada and the lower forty-eight states of the United States, and/or to a point or points in the lower forty-eight states of the United States, of sufficient size and throughput capacity to be able to transport from the Prudhoe Bay Field substantially all of the gas which may hereafter be produced and saved for sale from the lands in the Prudhoe Bay Field.

(i) "Unit Agreement" refers to any agreement under which the working interests or other mineral interests of the Seller in some or all of the Leases are unitized with other working interests and other mineral interests in the Prudhoe Bay Area, Alaska, for the production of oil and gas, and shall mean any Unit Agreement or Agreements executed for that purpose and the Unit Operating Agreement or Agreements relating to the Unit or Units.

(j) "Gas Reserve" of the Seller which is to be dedicated under the Gas Purchase and Sales Agreement shall mean gas capable of being economically produced and saved from the gas in place under the Leases ("recoverable gas"), excluding, however, any gas which -

(i) the Seller or any operator of the Leases or of any unit of which the Leases, or any of them,

are a part may use in conformity with good field practices for drilling and production operations for the recovery of oil and gas (including but not limited to gas injection, gas lift, secondary recovery, pressure maintenance, and cycling operations), and/or which Seller or any such operator may supply for similar purposes to the owner or operator of leases in the Alaska North Slope but not within a unit embracing all or some of Seller's Leases, and/or which Seller or any such operator may supply to the owner or owners (or the operator) of an electric power plant for the generation of electric power;

(ii) may be flared under conditions and within limits permitted by law in the operation of the field;

(iii) BP Alaska as owner of the Net Profits Royalty Interest may elect to take in kind from time to time, and gas which BP Alaska under the Operating Agreement may be entitled to receive by way of recoupment of costs in consequence of a Sole Account Operation under Section 10.3 of said Operating Agreement and/or which BP Alaska may be entitled to in consequence of any relinquishment, assignment or conveyance of interests by Seller to BP Alaska under Section 10.4 of said Operating Agreement;

(iv) Seller or the operator of the Leases or of any unit of which the Leases, or any of them, may be a part, shall furnish to the operator of any crude oil pipeline or the operator of any gas pipeline constructed for the movement of crude oil and gas, respectively, from the Alaska North Slope to a destination in Alaska, Canada or any of the lower forty-eight states of the United States, for use and consumption in the operation of such pipeline or pipelines;

(v) Seller or the operator of the Leases or of any unit of which the Leases, or any of them, may be a part, may deem it advisable to supply, or may be directed by any governmental agency of the State of Alaska to supply, for distribution to domestic consumers and industrial users in any city, village, community or other area of the State of Alaska;

(vi) may be lost or consumed in any processing operations of the kind described in Section 2.2.3 of Exhibit B; and

(vii) the State of Alaska as the owner of the lessor's royalty may elect to take in kind.

If under any Unit Agreement embracing any of the Leases (or portions thereof) there shall be allocated to Seller a percentage of the gas to be produced by the Unit greater than the ratio which the recoverable gas in place under such Leases (or the portions thereof) bears to the total recoverable gas in place under all of the lands embraced in the Unit, the excess gas reserves and the daily quantities attributable thereto to which Seller will be entitled arising from such difference in percentage, except as provided in Paragraph 2, shall not be subject to this Agreement or to the Gas Purchase and Sales Agreement, and in such case the exclusions referred to in clauses (i) through (vii) of this subparagraph (j) shall be allocated proportionately between the gas produced from the Unit and to which Buyer will be entitled and the gas produced from the Unit but to which, by reason of this provision, Buyer will not be entitled.

2. Possible Reductions in Dedicated Gas Reserves. In addition to the exclusions and/or reductions listed in Paragraph 1 (j) above, the Gas Reserves to be dedicated under the Gas Purchase and Sales Agreement shall be subject to further reduction in the event of the following contingencies and to the extent indicated with respect to each:

(a) During the period prior to the execution of the Gas Purchase and Sales Agreement contemplated hereby, or if any Gas Purchase and Sales Agreement entered into pursuant to this Agreement shall terminate or be terminated under any provisions contained therein or under any of the provisions of this Agreement, then during the period between the effective date of such termination and the date of the execution between the parties hereto of a new or substitute Gas Purchase and Sales Agreement, the Seller shall have and hereby reserves the right to sell and convey to a purchaser or purchasers or sublease to a sublessee or sublessees, in one or more transactions, up to 17% of its present working interests in any one or more or all of the Leases free and clear, in each case, of this Agreement, and in such event this Agreement, and the Gas Purchase and Sales Agreement, when executed, shall have no application to the interests so sold and conveyed or the interests acquired by the sublessee or sublessees; provided, however, that the gas, if any, which Seller has a right to take in kind under any sublease shall remain subject to this Agreement and that Seller shall use its best efforts to cause the purchaser(s) and/or sublessee(s) to dedicate to the Buyer the gas included in the interests so sold and conveyed or subleased. If the Seller is unable to obtain for the Buyer and from the purchaser(s) and/or sublessee(s) of the

interests so sold and conveyed or subleased by Seller an agreement on their part to dedicate and sell to Buyer the gas to which they will be entitled, then Seller agrees to dedicate to the Buyer under and in pursuance of the terms of the Gas Purchase and Sales Agreement a quantity of gas in addition to that then otherwise dedicated equal to the lesser of (i) the quantity which the purchaser(s) and/or sublessee(s) may be entitled to receive from the Leases by reason of the sale and conveyance or sublease, or (ii) the quantity of "excess gas," if any, arising from the difference in percentage referred to in the last paragraph of Paragraph 1 (j) hereof. For the purposes of this subparagraph, the existence on the date of the execution of the Gas Purchase and Sales Agreement of an executory contract for any such permitted sale, conveyance or sublease by Seller, shall be deemed to be a transaction completed prior to the date of the execution of the Gas Purchase and Sales Agreement, even though the transaction may actually be consummated subsequently. In the event Seller elects to sell, convey or sublease any of its interests pursuant to this reservation, the exclusion referred to in clauses (i) through (vii) of Paragraph 1 (j) above shall be allocated proportionately between the interests disposed of by Seller and those retained by Seller.

(b) Seller reserves the right to take in kind and cause to be transported from the Prudhoe Bay Field for its own use and/or to sell to or exchange with others in the Field or at some destination point or points other than in the Field, an aggregate quantity of 150 billion cubic feet of gas from the Gas Reserve (as defined in Paragraph 1 (j) hereof) to be dedicated to the Gas Purchase and Sales Agreement; provided, however, that if the commencement of deliveries of gas from the Leases to a Gas Pipeline is delayed until some date subsequent to December 31, 1975, the 150 billion cubic feet of gas above reserved to Seller shall be reduced by the product resulting from multiplying 1.25 billion cubic feet by the number of full calendar months subsequent to December 31, 1975, that commencement of such deliveries of gas shall be delayed. Seller shall have the right to take the gas reserved under this Paragraph 2 (b) at a rate not exceeding 15 billion cubic feet in any calendar year (adjusted proportionately for fractional calendar years) beginning January 1, 1976 and ending December 31, 1985.

Any portion of the gas reserved to the Seller under this Paragraph 2 (b) and permitted to be taken by the Seller in any calendar year in accordance with the foregoing, which is produced but not taken by the Seller in such calendar year shall be delivered by Seller to Buyer and purchased by Buyer in accordance with the

terms and provisions of the Gas Purchase and Sales Agreement as the same may be in effect between the parties during such period. If during any calendar year (or fractional calendar year) Seller shall exercise its right to take gas under and in accordance with the provisions of this Paragraph 2 (b) then Seller agrees that it will thereafter dedicate to the Buyer under and in pursuance of the Gas Purchase and Sales Agreement, and make available for delivery to the Buyer, a quantity of gas in addition to that which would otherwise have been available to the Buyer as dedicated gas, a quantity of gas equal to the lesser of (i) the aggregate of the quantities so taken by Seller under this Paragraph 2 (b) or (ii) the quantity of "excess gas," if any, arising from time to time after the first such taking by the Seller, from the difference in percentage referred to in the last paragraph of Paragraph 1 (j) hereof, remaining after subtracting from such quantity of "excess gas" that portion thereof, if any, which Seller is required to dedicate to the Buyer under the provisions of the preceding Paragraph 2 (a) hereof.

(c) If the Advance Payment received by the Seller under the Crude Oil Sales Agreement shall be less than $200,000,000 because of the restrictions or limitations affecting the right of the Seller to request an installment of the Advance Payment or because of the failure of the Buyer to make an installment payment on

account of the Advance Payment in accordance with a Certificate in proper form and timely submitted by the Seller to Buyer pursuant to the terms and conditions of the Crude Oil Sales Agreement, then, in either such case, the Gas Reserve which the Buyer would have been entitled to receive under subparagraphs 1 (j), 2 (a) and 2 (b) hereof, shall be reduced to a quantity equal to the product of multiplying (i) the Gas Reserve which Buyer would otherwise have been so entitled to receive by (ii) a fraction whose numerator is the total of the Advance Payment made to Seller under the Crude Oil Sales Agreement and whose denominator is $200,000,000.

The form of Gas Purchase and Sales Agreement attached hereto as Exhibit B shall be appropriately amended prior to its execution to include provisions relative to the possible reductions (and the actual reductions, if any, which may have been effected by events occurring prior to such execution) in the Gas Reserves contemplated by subparagraphs (a), (b) and (c) of this Paragraph 2.

3. Rights Granted. The parties hereby agree that in the event of the fulfillment of the conditions set forth in Paragraph 4 below either Seller or Buyer may require the other to enter into negotiations for the completion of a Gas Purchase and Sales Agreement substantially in the form of Exhibit B with respect to the Gas Reserves provided herein to be dedicated to said Gas Purchase and Sales Agreement, but (i) with the inclusion of an acceptable pricing provision to be arrived at by the parties jointly by adherence to

the principles herein set forth, and (ii) such changes or modifications in the terms set forth in Exhibit B as may be necessary to make them consistent with the pricing provision, and with the planned operation of the field.

4. Exercise of Rights. The rights granted in the preceding Paragraph 3 may be exercised by the giving of written notice by either party to the other requesting that negotiations be commenced for the completion and execution of the Gas Purchase and Sales Agreement. Such a written notice may be given only after both of the following conditions exist:

(a) There shall have been issued either

(i) to the participants in the Trans Alaska Pipeline System (or their agent) a right-of-way permit, acceptable to them, by the United States Department of the Interior for the construction of a crude oil pipeline from the Prudhoe Bay Area of the North Slope of Alaska to Valdez, Alaska and such other approvals, permits, licenses and/or certificates, acceptable to them, by such federal, state and local agencies having jurisdiction as such participants may deem adequate and sufficient to warrant the commencement of construction of such crude oil pipeline; or

Trans-AK route

Oil

or

(ii) to the aforesaid participants (or their agent) or some other financially responsible group by the United States Department of the Interior, a right-of-way permit, acceptable to such participants or group, as the case may be, for the construction of the United States portion of an alternate crude oil pipeline for the moving of crude oil from the Prudhoe Bay Area of the North Slope of Alaska to a destination in the lower forty-eight states of the United States or to a destination from which the crude oil can be transported year-round by tanker to one or more of the lower forty-eight states of the United States, and such other approvals, permits, licenses and/or certificates, acceptable to such participants or group, as the case may be, by such federal, state or local agencies having jurisdiction, and if such alternate pipeline shall be partly in Canada, by any Dominion or Provincial agencies having jurisdiction as

Canadian route

such participants or group, as the case may be, may deem adequate and sufficient to warrant the commencement of construction of such alternate crude oil pipeline;

and there shall not be in effect any order, writ, judgment, decree, determination or award of any court or administrative or regulatory agency (federal, state or local) enjoining (either temporarily or permanently) the construction or the continuation of construction of such crude oil pipeline.

(b) A determination shall have been made by a group of participants in a project (whether or not the Seller or the Buyer or an affiliate of either of them, is a member of such group) to construct a Gas Pipeline and such group shall have fixed a target date for the filing of an application or applications for the requisite approvals, permits and certifications by governmental agencies having jurisdiction for the construction and operation of such Gas Pipeline, and the public announcement by such group of such determination and such target date.

If and when the conditions referred to in the preceding subparagraphs (a) and (b) have been fulfilled then either party hereunder may give written notice, not earlier than seven (7) months prior to the target date referred to in subparagraph (b) above and not later than five (5) months prior to such target date, provided, however, that such notice may be given immediately if the announcement is made less than five (5) months prior to

the target date, requesting the commencement of negotiations for the completion of the Gas Purchase and Sales Agreement.

If written notice shall have been given by either party to the other, in accordance with the foregoing, of its desire to enter into negotiations for the completion of the Gas Purchase and Sales Agreement such negotiations shall be entered into promptly and shall be carried on in accordance with the procedures and principles set forth in Paragraphs 5 and 6 hereof.

If, within the time or times specified in Paragraph 6 hereof for the carrying on of such negotiations, the parties shall have agreed upon a pricing provision to be included in the Gas Purchase and Sales Agreement and shall have agreed upon such other changes and modifications as may be required in Exhibit B to make the other terms and provisions of Exhibit B consistent with the pricing provision and with the planned operation of the field, and if by the time such negotiations are concluded the owners of a majority of the gas reserves in the Field or the owners of a majority of any Unit or Units embracing substantially all of the Gas Reserves of Seller, shall have determined to produce for sale, and sell, their gas upon the commencement of the regular operation of the Gas Pipeline, then the Gas Purchase and Sales Agreement set forth in Exhibit B shall be promptly executed; provided, however, if the Gas Pipeline will not be a common carrier pipeline (as such term is used in the U. S.) and the following condition has not been fulfilled at the time of execution:

(c) it is established by the Buyer, to the satisfaction of the Seller, that the Buyer will, by contractual arrangements or otherwise, be able to utilize sufficient of the total throughput capacity of the Gas Pipeline to transport from the Prudhoe Bay Area all, or substantially all, of the gas which will be produced daily and/or monthly from the Gas Reserves to be dedicated under the Gas Purchase and Sales Agreement;

then the Gas Purchase and Sales Agreement shall provide:

(i) that Seller may on written notice to the Buyer, terminate said Agreement and this Agreement if the condition in Paragraph 4 (c) above has not been fulfilled within sixty (60) days from and after the date on which the permanent certificates of public convenience and necessity have been issued by the appropriate governmental agencies in the United States, and the equivalent thereof by the appropriate governmental agencies in Canada, for the construction and operation of a Gas Pipeline; provided, however, that if on such said date of issuance there is pending another proceeding before the appropriate governmental agencies for approval of the construction and operation of a second Gas Pipeline in addition to the one for which the aforesaid permanent certificates were issued, and if Buyer is a party to such proceeding and establishes to the satisfaction of the Seller that the condition in Paragraph 4 (c) above will be fulfilled by means of such second Gas Pipeline if permanent certificates are issued by the appropriate governmental agencies for the construction and operation of such second Gas Pipeline, then Seller may terminate said Agreement and this Agreement, by written notice to the Buyer only upon and after the earlier to occur of the following contingencies and dates: (x) upon and after the entry of a final order or orders in the proceeding involving such second Gas Pipeline by the governmental agencies or agency before which the same was pending disapproving the construction and operation thereof and/or denying the issuance of the requisite certificates for such construction and operation, or (y) one hundred and eighty (180) days

after the date of issuance of the permanent certificates by the appropriate governmental agencies for the construction and operation of the first Gas Pipeline (regardless of whether a proceeding shall be then still pending before appropriate governmental agencies for the construction and operation of a second Gas Pipeline), and

(ii) that, if on the earliest date as of and after which Seller would be entitled under the preceding clause (i) to terminate the Gas Purchase and Sales Agreement, Buyer shall have an assured right by contractual arrangements or otherwise to utilize a Gas Pipeline for the transportation of daily and/or monthly quantities of gas less than the quantity specified in Paragraph 4 (c) above (i.e., all or substantially all of the gas which will be produced daily and/or monthly from the Gas Reserves to be dedicated under the Gas Purchase and Sales Agreement), then Seller may not terminate the Gas Purchase and Sales Agreement in its entirety as contemplated by the preceding clause (i) but the parties hereby agree that the said Gas Purchase and Sales Agreement shall be amended to apply only to the quantities of gas thereafter produced daily and/or monthly from the Gas Reserves of the Seller as shall equal the daily and/or monthly quantities of gas as to which on the aforesaid date Buyer has such assured right to utilize a Gas Pipeline for the transportation of Seller's gas, and Buyer's rights thereafter to purchase under the Gas Purchase and Sales Agreement any daily and/or monthly quantities of gas produced from the Gas Reserves in excess of the aforesaid amount shall cease and terminate. In such an event Seller shall be free to enter into negotiations with others for the sale to them of any part or all of such excess daily and/or monthly gas production.

Buyer agrees that it will actively participate in any appropriate governmental agency proceeding for the authorization to construct and operate a Gas Pipeline in order to have capacity to transport Seller's Gas Reserves covered by this Agreement.

5. Principles for Negotiation of Price Provisions. If and when written notice is given by either Buyer or Seller to the other in accordance

with the preceding Paragraph 4, Seller and Buyer shall promptly enter into negotiations for the completion and execution of the Gas Purchase and Sales Agreement. These negotiations will involve principally the consideration of, and the reaching of an agreement with respect to, an appropriate provision for the pricing of the gas to be sold to Buyer. At the commencement of negotiations Seller will furnish to Buyer estimates of the total gas reserves of Seller, the portion thereof which will be available to Buyer, the average daily quantity of gas which should be available to the Buyer at the commencement of deliveries and the approximate date of the commencement of deliveries (if it is anticipated that such date will be subsequent to the commencement of operation of the Gas Pipeline). At the request of Buyer, Seller will also furnish the factual information referred to in Section 3.4 of Exhibit B. In the course of such negotiations the following general principles shall be adhered to by the parties:

(a) The price provision shall relate to the determination of a price per Mcf to be paid by Buyer to Seller from time to time for gas delivered in the field where produced.

(b) The parties shall undertake to determine and fix an initial field price per Mcf of gas as of the date when, at the time of such determination, the parties reasonably expect delivery of gas in the field. In such determination of the initial field price consideration will be given to such information as may be available at the time with respect to prices for gas of similar quality to be delivered in the same field in comparable quantities, being paid or

offered by Buyer to other gas producers in the same field or being paid or offered by other gas purchasers to the Seller or to other gas producers in the same field and to such other relevant information as may be available. As stated earlier herein, it is the desire of the Seller to obtain and the intent of the Buyer to pay for gas delivered from time to time by Seller to Buyer a price per Mcf at least as high as the highest price being paid or offered at the time of each delivery by Seller for gas produced in the same field.

(c) The price provision to be agreed upon by the parties in addition to fixing an initial price per Mcf shall provide for:

(i) Upward and downward adjustments to the initial price or the price in effect from time to time for deviations in the Btu content of the gas.

(ii) An adjustment upward of the initial price, and of the price in effect from time to time, if necessary, so that the price payable by the Buyer will equal any higher price approved or established by the Federal Power Commission for gas produced in the Prudhoe Bay Area, including a guideline price, an in-line and/or area price, whichever is applicable. The Seller shall give the Buyer not less than sixty (60) days written notice of a requested upward adjustment pursuant to this clause which shall become effective on the first day of a calendar month to be specified in such written notice.

(iii) Options to the Seller to become effective at the date of the commencement of the deliveries of gas under the Gas Purchase and Sales Agreement and at the expiration of each five (5) year anniversary date of the commencement of such deliveries, to request a price redetermination. Such request may be made by the Seller to the Buyer in writing either prior to or within sixty (60) days after each of such dates. If such written request is made, the Buyer shall promptly enter into negotiations with the Seller for

the making of such redetermination. The object of such redetermination will be to establish a redetermined price equal to the highest price then being paid by anyone for gas of similar quality produced and delivered in comparable quantities, in the same area. Such redetermined price shall become effective as of the first day of the calendar month next succeeding that in which such redetermination is made.

(iv) Periodic stated price escalations.

(v) An undertaking by the Buyer, if lawful, to pay the Seller for gas delivered in the field a price per Mcf at least equal to the highest price then being paid either by the Buyer or by any other purchaser, for gas of similar quality delivered in comparable quantities in the same field. In the event that such a clause, if initially contained in the Gas Purchase and Sales Agreement would be disapproved by the Federal Power Commission in the light of its then existing announced policy or published rules and regulations it will be omitted, but if such a clause should thereafter become lawful or be permitted under any newly announced policy or any new rules and regulations of the Federal Power Commission the parties hereunder agree that the Gas Purchase and Sales Agreement as previously executed shall be immediately amended to incorporate such a clause as a part thereof.

6. Period of Price Provision Negotiation. The price provision negotiations provided for in Paragraph 5 hereof shall be carried on by the parties, unless a definitive agreement is reached by the parties within a shorter period, for a period of ninety (90) days after the date of delivery of the written notice referred to in Paragraph 4 hereof; provided, however, that such period shall be subject to extension or contraction as follows:

(a) If at the expiration of the first eighty (80) days of the negotiation period it is evident that there is little likelihood of a definitive agreement being reached by the parties by the ninetieth day, either party may give written notice to the other

party at least five (5) days prior to said ninetieth day requesting an extension of the negotiating period for another thirty (30) days, i.e., to a total of one hundred and twenty (120) days. If such written notice shall have been given then the negotiating period shall be extended for such additional thirty (30) days during which the parties shall continue good faith efforts to arrive at an agreement with respect to a pricing provision for the Gas Purchase and Sales Agreement. The negotiating period shall be subject to extensions or contractions as may be mutually agreed upon consistent with the announcement date, target date and the giving of notice provided for in Paragraph 4.

(b) If, prior to the expiration of the period of negotiations, the Seller and Buyer arrive at a definitive price provision, the Gas Purchase and Sales Agreement shall be completed by the inclusion of such price provision and the inclusion, if circumstances then require, of the provisions described in Paragraph 4 above, and with such further modifications and changes as may be required in order to make the remaining provisions of the Gas Purchase and Sales Agreement consistent with the price provision and with the planned operation of the field. The execution and delivery of the Gas Purchase and Sales Agreement shall be in accordance with the provisions of Paragraph 4.

(c) If within the period of negotiations provided for in this Paragraph 6 the parties are unable to arrive at a definitive price provision and to agree upon such other inclusions, modifications and changes in Exhibit B as are referred to in Paragraph 4 above, this Preliminary Gas Agreement shall terminate for all purposes.

7. Renegotiation of Gas Purchase and Sales Agreement. If the definitive Gas Purchase and Sales Agreement contemplated hereby is finalized and executed by the parties at a time when adequate and reliable information as to the prices, if any, then being paid or offered by other gas purchasers for gas being produced, or to be produced, in the Prudhoe Bay Area and/or the delivery conditions which will be applicable to such gas, is not available to the parties hereto (and the parties so agree in writing that adequate and reliable information is not available), then the following provisions shall apply:

(a) The executed Gas Purchase and Sales Agreement shall not be filed with the Federal Power Commission by either party hereto, without the written consent of the other party, unless and until gas producers in the Prudhoe Bay Field controlling a majority of the gas reserves, other than the Gas Reserve of Seller, shall have entered into contracts for the sale of their gas and the pricing provisions in such contracts become known to the parties hereto.

(b) Pending the filing of the Gas Purchase and Sales Agreement with the Federal Power Commission the parties hereto agree to

furnish to each other promptly any information obtained by them with respect to gas purchase offers being made, or gas contracts entered into, by other gas purchasers with other producers of gas in the Prudhoe Bay Field. During such period, also, Buyer will promptly advise Seller of the terms and conditions of any gas contracts entered into, or offers made for the purchase of gas, by Buyer to any other producers in the Prudhoe Bay Field.

(c) If and when Seller obtains reliable information with respect to higher prices for gas in the Prudhoe Bay Field being paid or offered by Buyer or other gas purchasers to Seller or other gas producers and/or the delivery conditions applicable to such gas are more favorable than those set forth in the Gas Purchase and Sales Agreement, Seller shall have the right, which may be exercised by written notice to Buyer from time to time prior to the filing of the Gas Purchase and Sales Agreement with the Federal Power Commission and during such further period as the rules of the Federal Power Commission permit of the withdrawal of a gas contract previously filed and not yet approved or the submission of a new gas contract in substitution, to require the Buyer to negotiate with respect to the price and/or delivery provisions initially contained in the Gas Purchase and Sales Agreement to the end that a new or substitute agreement will be executed providing in effect for the payment by Buyer to Seller

of a price per Mcf of gas at least equal to the highest price then being paid or offered to producers of gas in the Prudhoe Bay Field, and/or containing provisions with respect to delivery pressure, the removal of carbon dioxide and water vapor and other conditions of delivery comparable to those contained in any gas purchase agreements or offers then being made or tendered by Buyer or by other gas purchasers to gas producers in the area to the end that the delivery conditions in the Gas Purchase and Sales Agreement will be compatible with the field operations. The parties will cooperate in filing such new agreement with the Federal Power Commission or in substituting such new agreement for the one previously filed and in endeavoring to obtain the approval of such new agreement by the Federal Power Commission.

8. Substantially Uniform Price Condition Determined by Federal Power Commission. If a Gas Purchase and Sales Agreement is executed by the parties and is filed with the Federal Power Commission and if Seller obtains from the Federal Power Commission a certificate of public convenience and necessity for the sale to Buyer of gas from Seller's gas reserve which contains a price provision no different (when all such price provisions are adjusted to a common basis by giving effect to Btu content, pressure and other delivery conditions) from those contained in certificates of public convenience and necessity issued to other producers for sales of gas from the Prudhoe Bay Field and which are acceptable to such other producers, Seller, notwithstanding

the provisions of Paragraph 9.1 of Exhibit B, will accept its certificate and, if and when a Gas Pipeline begins regular operations, will commence sales to Buyer under and in accordance with the Gas Purchase and Sales Agreement at the conditioned price.

9. Termination of Gas Purchase and Sales Agreement. In addition to any provisions herein or in Exhibit B relating to the termination of the Gas Purchase and Sales Agreement, it is hereby further agreed by and between the parties hereto that the Gas Purchase and Sales Agreement previously entered into may be terminated by either party hereto by written notice to the other party in the event of the happening of any of the following contingencies:

(a) If no application utilizing the Gas Purchase and Sales Agreement is filed with the Federal Power Commission and/or any appropriate Canadian governmental agency within six (6) months after the Gas Purchase and Sales Agreement is signed, for authority to construct and operate a gas pipeline.

(b) If an application of the kind referred to in subparagraph (a) above is filed within the said six (6) months but is later denied by final order of the Federal Power Commission and/or the Canadian governmental agency with which it has been filed and if, at the expiration of one hundred and twenty (120) days after such denial, no new similar application is then pending before the Federal Power Commission and/or any Canadian governmental agency. If a new

similar application is then pending, the later denial of that application shall constitute the contingency provided by this subparagraph (b).

(c) The Gas Purchase and Sales Agreement is not filed with the Federal Power Commission for approval of its provisions relating to price, delivery conditions and other matters covered therein within six (6) months after the Gas Purchase and Sales Agreement has been filed with the Federal Power Commission in connection with the application described in subparagraph (a) above.

(d) The Gas Purchase and Sales Agreement is filed within the aforesaid period but is disapproved by final order of the Federal Power Commission and no appeal from the order of disapproval is filed within sixty (60) days after the entry of the order of disapproval.

(e) If and when the proposed construction of the Gas Pipeline as contemplated in Paragraph 4 hereof shall be abandoned.

10. Negotiation of New Gas Purchase and Sales Agreement. If a Gas Purchase and Sales Agreement entered into pursuant hereto is terminated in accordance with Paragraph 9 of this Agreement or Section 9 of Exhibit B hereof (or the corresponding provision contained in the Gas Purchase and Sales Agreement actually executed by the parties hereto) either Buyer or Seller, at any time prior to the termination of this Preliminary Gas Agreement, shall, subject to the conditions of Paragraph 4 hereof, be entitled to give the

other written notice requesting that negotiations be entered into for a new Gas Purchase and Sales Agreement and the parties shall thereafter proceed in accordance with Paragraphs 5 and 6 hereof to negotiate and to attempt to finalize such new Gas Purchase and Sales Agreement.

11. Confidentiality. Neither party hereto shall without the written consent of the other party disclose the details of this Preliminary Gas Agreement to any outside party or parties. The parties hereto further agree that until such time as any Gas Purchase and Sales Agreement, in final form, is executed by the parties hereto and filed with the Federal Power Commission no details with respect to such Gas Purchase and Sales Agreement will be given by either party to any outside parties or to any newspaper or trade publication, except with the consent of the other party.

12. Termination of this Agreement. Unless some other termination date, or some other contingency for the termination of this Agreement, shall be mutually agreed upon by the parties hereto, this Preliminary Gas Agreement will expire:

(a) In the event of the occurrence of any contingency for such termination set forth in Paragraphs 4 and 6 hereof; otherwise

(b) Upon the date of commencement of on-site construction of a Gas Pipeline, or on December 31, 1990, whichever date is earlier, if no definitive Gas Purchase and Sales Agreement has been executed by the parties hereto prior to such date; provided, however, that if on such date negotiations between the parties hereto for the

execution of a definitive Gas Purchase and Sales Agreement shall be in progress then this Agreement shall remain in effect until such negotiations are discontinued without agreement having been reached by the parties.

If, pursuant to this Agreement, the parties shall enter into a definitive Gas Purchase and Sales Agreement, then this Agreement shall continue in effect so far as concerns those rights, obligations and undertakings of either or both of the parties hereto which are subject to exercise, or which are required to be fulfilled and performed hereunder, subsequent to the execution of such Gas Purchase and Sales Agreement.

13. Notices. Any notice or communication required or permitted to be given hereunder shall be given in writing, delivered to or sent by U. S. Mail, postage prepaid, or by prepaid telegram, addressed to the following addresses:

To Seller: Midland Building, Cleveland, Ohio 44115
Attention: President

To Buyer: 20 Montchanin Road, Wilmington, Delaware 19807
Attention: President

or to such other address or to the attention of such other person as hereafter may be designated in writing by the applicable party by notice to the other as herein provided, and shall be deemed given as of the date of receipt.

14. Entire Agreement. This instrument and the Exhibits hereto attached represent the entire agreement between the parties relative to the transactions provided for herein, and may be amended or modified only by a written instrument duly executed by the parties hereto.

15. Governing Law. This Agreement, and the construction and interpretation thereof, shall be governed by the laws of the State of Ohio.

16. Headings. Paragraph headings used in this instrument are for convenience only and shall not affect the construction of this Agreement.

17. Assignability. This Agreement may not be assigned by either party hereto without the written consent of the other party, except to a wholly-owned subsidiary or to its direct or indirect parent or to another wholly-owned subsidiary of its direct or indirect parent or to a successor corporation resulting from a merger of such party into or with any one or more of the previously listed corporations to which an assignment is permitted; provided, however, that, if while this Agreement is in effect, Seller shall assign, transfer and convey in one transaction or in successive transactions, all or part of its leasehold interests in one or more of the Leases or a right or rights constituting a charge upon its working interests in any one or more of the Leases (other than the 17% permitted to be sold and conveyed, or subleased by Seller free and clear of this Agreement and the Gas Purchase and Sales Agreement under Paragraph 2 hereof), any such assignment, transfer and conveyance shall be made expressly subject to this Agreement in respect of the interest or interests or right or rights so assigned, transferred or conveyed, and Seller shall assign and transfer to the purchaser thereof a corresponding portion of Seller's rights hereunder and shall obligate the purchaser to expressly assume such of the obligations of the Seller under this Agreement as shall be proportionate to the interests of Seller so assigned, transferred and conveyed.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed as of the day and year first above written.

BP OIL CORPORATION

By J. L. Ross
Vice President

By A. P. Mekedis
Assistant Secretary

SELLER

COLUMBIA GAS TRANSMISSION CORPORATION

By Fred W. Batten
President

BUYER

EXHIBIT A

Attached To and Made a Part of a Preliminary Gas Agreement dated as of the 3rd day of August, 1971, Between BP Oil Corporation, a Delaware Corporation ("Seller") and Columbia Gas Transmission Corporation, a Delaware Corporation ("Buyer") with Respect to Certain Gas Produced and Saved from the Interests of BP Oil Corporation Under the Leases Described Herein Covering Lands in the State of Alaska.

In the following description of each Lease —

(a) BP Oil Corporation's interest is stated as a percentage of the total leasehold working interests before deducting Lessor's royalties or the Net Profits Royalty Interest of BP Alaska, Inc.

(b) Each Lease reserves to the State of Alaska a one-eighth royalty in the Hydrocarbons produced and saved.

(c) All of the Leases are subject to a Net Profits Royalty Interest conveyed by BP Oil Corporation to BP Alaska, Inc. by a conveyance dated August 1, 1969.

(d) All leases are subject to the rights of BP Alaska, Inc. under an Operating Agreement entered into by BP Oil Corporation and BP Alaska, Inc., dated August 1, 1969.

Lease Serial No.	Legal Description	Gross Acres	BP Oil Working Interest
ADL-28260	Secs. 1, 2, 11, 12 T11N-R12E-UM	2,560	100%
ADL-28277	Secs. 25, 26, 35, 36 T12N-R13E-UM	2,560	100%
ADL-28278	Secs. 27, 28, 33, 34 T12N-R13E-UM	2,560	100%
ADL-28279	Secs. 29, 30, 31, 32 T12N-R13E-UM	2,459	100%
ADL-28280	Secs. 1, 2, 11, 12 T11N-R13E-UM	2,560	100%
ADL-28281	Secs. 3, 4, 9, 10 T11N-R13E-UM	2,560	100%
ADL-28282	Secs. 5, 6, 7, 8 T11N-R13E-UM	2,469	100%
ADL-28283	Secs. 17, 18, 19, 20 T11N-R13E-UM	2,480	100%
ADL-28284	Secs. 15, 16, 21, 22 T11N-R13E-UM	2,560	100%
ADL-28285	Secs. 13, 14, 23, 24 T11N-R13E-UM	2,560	100%
ADL-28286	Secs. 25, 26, 35, 36 T11N-R13E-UM	2,560	100%

Lease Serial No.	Legal Description	Gross Acres	RP Oil Working Interest
ADL-28287	Secs. 27, 28, 33, 34 T11N-R13E-UM	2,560	100%
ADL-28305	Secs. 17, 18, 19, 20 T11N-R14E-UM	2,480	100%
ADL-28309	Secs. 27, 28, 33, 34 T11N-R14E-UM	2,560	100%
ADL-28310	Secs. 29, 30, 31, 32 T11N-R14E-UM.	2,491	100%
ADL-28311	Secs. 1, 2, 11, 12 T10N-R14E-UM	2,560	100%
ADL-28312	Secs. 3, 4, 9, 10 T10N-R14E-UM	2,560	100%
ADL-28315	Secs. 13, 14, 23, 24 T10N-R14E-UM	2,560	100%
ADL-28320	Secs. 1, 2, 11, 12 T11N-R15E-UM	2,560	100%
ADL-28330	Secs. 17, 18, 19, 20 T10N-R15E-UM	2,512	100%
ADL-28331	Secs. 15, 16, 21, 22 T10N-R15E-UM	2,560	100%
ADL-28333	Secs. 25, 26, 35, 36 T10N-R15E-UM	2,560	100%
ADL-28335	Secs. 29, 30, 31, 32 T10N-R15E-UM	2,523	100%
ADL-28337	Secs. 3, 4, 9, 10 T11N-R16E-UM	2,560	100%
ADL-28338	Secs. 5, 6, 7, 8 T11N-R16E-UM	2,469	100%
ADL-28339	Secs. 17, 18, 19, 20 T11N-R16E-UM	2,480	100%
ADL-28340	Secs. 15, 16, 21, 22 T11N-R16E-UM	2,560	100%
ADL-28341	Secs. 13, 14, 23, 24 T11N-R16E-UM	2,560	100%
ADL-28342	Secs. 27, 28, 33, 34 T11N-R16E-UM	2,560	100%
ADL-28343	Secs. 29, 30, 31, 32 T11N-R16E-UM	2,491	100%
ADL-28348	Secs. 27, 28, 33, 34 T10N-R16E-UM	2,560	100%

Lease Serial No.	Legal Description	Gross Acres	BP Oil Working Interest
ADL-28349	Secs. 29, 30, 31, 32 T10N-R16E-UM	2,523	100%
ADL-34625	Secs. 13, 14, 23, 24 T12N-R15E-UM	2,560	100%
ADL-34630	Secs. 25, 26, 35, 36 T12N-R15E-UM	2,560	100%
ADL-34633	Secs. 25, 26, 35, 36 T12N-R16E-UM	2,560	100%
ADL-34634	Secs. 27, 28, 33, 34 T12N-R16E-UM	2,560	100%
ADL-34635	Secs. 29, 30, 31, 32 T12N-R16E-UM	2,459	100%
ADL-34636	Secs. 1, 2, 11, 12 T11N-R16E-UM	2,560	100%
	TOTAL ACREAGE	96,396	

EXHIBIT B

Attached to and Made a Part of a Preliminary Gas Agreement dated as of the 3rd day of August, 1971, Between BP Oil Corporation, a Delaware Corporation ("Seller") and Columbia Gas Transmission Corporation, a Delaware Corporation ("Buyer").

GAS PURCHASE AND SALES AGREEMENT

BETWEEN

BP OIL CORPORATION (SELLER)

AND

COLUMBIA GAS TRANSMISSION CORPORATION (BUYER)

Dated _____

Prudhoe Bay Field
North Slope Area
State of Alaska

INDEX

SECTION		PAGE
1.	COMMITMENT OF GAS RESERVES	1
2.	RESERVATIONS OF SELLER	2
3.	QUANTITY	5
4.	PRICE	6
5.	TAXES	7
6.	DELIVERY POINT	7
7.	DELIVERY PRESSURE	8
8.	TERM	8
9.	GOVERNMENTAL AUTHORIZATIONS AND CONSTRUCTION OF FACILITIES	9
10.	MISCELLANEOUS	9
	SIGNATURES AND ACKNOWLEDGEMENTS	11
EXHIBIT X.	GENERAL TERMS AND CONDITIONS	
11.	DEFINITIONS	X-1
12.	STATEMENTS AND PAYMENTS	X-2
13.	QUALITY OF GAS	X-2
14.	MEASUREMENTS	X-3
15.	REGULATORY BODIES	X-6
16.	WARRANTY OF TITLE TO GAS	X-7
17.	FORCE MAJEURE	X-7
18.	ARBITRATION	X-9
19.	CONFLICTS	X-10
EXHIBIT Y.	DESCRIPTION OF LEASES	

GAS PURCHASE AND SALES AGREEMENT

THIS AGREEMENT, made and entered into as of the _____ day of _____, 19__, by and between BP OIL CORPORATION, a Delaware corporation, hereinafter referred to as "Seller", and COLUMBIA GAS TRANSMISSION CORPORATION, a Delaware corporation, hereinafter referred to as "Buyer",

W I T N E S S E T H:

WHEREAS, Buyer desires to purchase gas from Seller in the amounts, in the manner and subject to the terms and conditions provided in this contract (which shall include the General Terms and Conditions attached hereto as Exhibit X, and all other Exhibits hereinafter referred to), and has made arrangements to receive and transport the gas deliverable hereunder:

NOW, THEREFORE, in consideration of the premises and the covenants set forth in this contract, the parties hereto have mutually covenanted and agreed, and do hereby mutually covenant and agree as follows:

SECTION 1. COMMITMENT OF GAS RESERVES

1.1 Seller represents that it is the owner of certain interests in oil and gas leases in the Prudhoe Bay Field, North Slope Area, State of Alaska, which leases are described in the schedule marked Exhibit Y, attached hereto and made a part hereof. Such leases are covered hereby insofar and only insofar as said leases pertain to Seller's gas and gas rights in the Penno-Triassic Formation, as more fully described in Exhibit Y. Seller represents that none of the leases are subject to any commitment of Seller in conflict with this contract and that Seller desires to sell gas to Buyer under the terms and conditions hereof.

1.2 Seller, subject to all of the terms and conditions of this contract, hereby commits to the performance of this contract Seller's interest in the gas underlying the leases and in the formation covered by this contract, and will make available for sale and delivery to Buyer at the points of delivery over the term of this contract all gas produced and saved from such formation which is attributable to such leases less the volumes produced and saved from such leases which are reserved by Seller in Section 2 hereof.

1.3 Seller will proceed with diligence in the performance of any and all acts required for the delivery in accordance herewith of the volumes of gas provided for herein by Seller for the account of Buyer; provided, however, that nothing herein shall be construed to require Seller to produce any well or wells in a manner which would not constitute good operating practice, nor shall Seller be obligated to drill additional wells, or to deepen or rework any existing wells, or to take any action which is in conflict with the plan of operation of a Unit or Units comprising all or a part of the leases committed hereto.

1.4 Seller will not sell to any other party or parties gas committed to Buyer hereunder during the term hereof without the written consent of Buyer.

SECTION 2. RESERVATIONS OF SELLER

2.1 Seller shall not be obligated to deliver to Buyer from the leases committed to this agreement volumes of gas in excess of that which can be legally produced in paying quantities without damage to the wells or reservoirs, and in accordance with good engineering practices, less the volumes excepted and reserved to Seller.

2.2 Seller expressly reserves with respect to the leases covered by this contract the following prior rights, together with sufficient gas to satisfy the same:

2.2.1 To operate Seller's properties free from any control by Buyer in such manner as Seller, in Seller's sole discretion, may deem advisable, including without limitation the right, but never the obligation, to drill new wells, to repair and rework old wells, to renew or extend, in whole or in part, any lease covered hereby.

2.2.2 To abandon any well or surrender any lease, in whole or in part, when no longer deemed by Seller to be capable of producing gas in paying quantities under normal methods of operation; provided, however, that, in the event Seller should terminate or surrender any lease described in Exhibit Y hereof, written notice shall be given to Buyer within thirty (30) days thereafter; provided further, however, that Seller shall not be liable if through inadvertence or mistake Seller fails to give such notice.

2.2.3 To process or cause to be processed the gas, prior and/or subsequent to delivery, for the recovery of helium and liquid and liquefiable hydrocarbons other than methane, except such minimum quantities

of methane as must necessarily be removed in such processing (including the right to use the gas for fuel in the operation of any plant in which the gas is processed), and the right to the shrinkage in volumes caused by rights reserved to Seller herein; provided that in the exercise of such rights, Seller does not in any way interfere with the delivery of gas to Buyer in the quantity and of the quality provided for herein and does not reduce the total heating value thereof below 1,000 Btu per cubic foot; provided further, that Seller shall not process the gas subsequent to delivery except at such point (including without limitation points on Buyer's transmission lines within its market area) and on such terms and conditions as Buyer may consent to, which consent shall not be unreasonably withheld.

2.2.4 To exclude from dedication and delivery to Buyer any gas which:

(i) the Seller or any operator of the leases or any unit of which the leases, or any of them, are a part, may use in conformity with good field practices for drilling and production operations for the recovery of oil and gas (including but not limited to gas injection, gas lift, secondary recovery, pressure maintenance, and cycling operations), and/or which Seller or any such Operator may supply for similar purposes to the owner or operator of leases in the Alaska North Slope, but not within a unit embracing all or some of Seller's leases, and/or which Seller or any such operator may supply to the owner or owners (or the operator) of an electric power plant for the generation of electric power;

(ii) may be flared under conditions and within limits permitted by law in the operation of the field;

(iii) BP Alaska, Inc. as owner of the Net Profits Royalty Interest (conveyed by Seller to BP Alaska, Inc. by instrument dated August 1, 1969) may elect to take in kind from time to time, and gas which BP Alaska, Inc. under the Operating Agreement (dated August 1, 1969, between Seller and BP Alaska, Inc.) may be entitled to receive by way of recoupment of costs in consequence of a sole account operation under Section 10.3 of said Operating Agreement and/or which BP Alaska, Inc. may be entitled to in consequence of any relinquishment, assignment or conveyance of interests by Seller to BP Alaska, Inc. under Section 10.4 of said Operating Agreement;

(iv) Seller or the operator of the leases or of any unit of which the leases, or any of them, are a part, shall furnish to the operator of any crude oil pipeline or the operator of any gas pipeline constructed for the movement of crude oil and gas, respectively, from the Alaska North Slope to a destination in Alaska, Canada or any of the lower 48 states of the United States, for use and consumption in the operation of such pipeline or pipelines;

(v) Seller or the operator of the leases or of any unit of which the leases, or any of them, may be a part, may deem it advisable to supply, or may be directed by any governmental agency of the State of Alaska to supply, for distribution to domestic consumers and industrial users in any city, village, community or other area in the State of Alaska;

(vi) the State of Alaska as the owner of the lessor's royalty may elect to take in kind from time to time.

2.2.5 To pool, combine or unitize any of Seller's interest in the leases covered hereby with other properties of Seller and of others in the same field, and to alter such pooling, combination or units in any of which events this contract will cover Seller's interest in the units and gas attributable thereto to the extent that Seller's interest is derived from or through the leases covered hereby, subject to the following:

If under any Unit Agreement embracing any of the leases (or any portions thereof) there shall be allocated to Seller a percentage of the gas to be produced by the unit greater than the ratio which the recoverable gas in place under such leases (or the portions thereof) bears to the total recoverable gas in place under all of the lands embraced in the unit, the excess gas reserves and daily quantities attributable thereto to which Seller will be entitled arising from such difference in percentage shall not be subject to this Gas Purchase and Sales Agreement, and in such case the exclusions referred to in clauses (i) through (vi) of Paragraph 2.2.4 above and any gas lost or consumed in any processing operations of the kind described in Paragraph 2.2.3 above shall be allocated proportionately between the gas produced from the unit and to which Buyer will be entitled and the gas produced from the unit but to

which, by reason of this provision, Buyer will not be entitled. Buyer hereby agrees that it will, upon request of Seller, support Seller in any application necessary to effectuate this Paragraph 2.2.5 before the Federal Power Commission and/or any other regulatory agencies having jurisdiction.

Seller shall give notice in writing to Buyer of the formation of any such unit and of any change in Seller's interest therein which is attributable to the leases covered hereby within thirty (30) days after such occurrence.

SECTION 3. QUANTITY

3.1 It is contemplated that Seller will have approximately _____ Mcf of gas per day available for delivery hereunder on the date of first delivery and that such quantity may be increased thereafter to approximately _____ Mcf of gas per day.

3.2 Subject to the provisions of this contract, commencing on the date of first delivery and thereafter, Seller will sell and deliver to Buyer, and Buyer will purchase and take from Seller, on each day during the term hereof, the volumes of gas that are produced and available for delivery each day from the leases covered hereby, other than the volumes of gas reserved by Seller in Section 2 hereof. Seller will give or cause to be given, to Buyer reasonable notice in the event that Seller desires at any time to materially increase or decrease the quantity of gas deliverable hereunder. Seller shall, commensurate with good production and operating practices and in accordance with proper conservation measures, endeavor to so operate its wells and facilities so that gas to be received therefrom pursuant hereto shall be available to Buyer at as uniform rates of flow and operating conditions as possible throughout each month during the term hereof; provided, however, nothing contained herein shall obligate Seller to operate its wells and facilities contrary to the operations of any unit containing all or a part of the leases committed hereto.

3.3 Upon receipt by Buyer of notice from Seller that Seller and others producing gas from the formation containing Seller's gas propose to increase on a long term basis the volume of gas that will be available for delivery from such formation, if such increase is substantially in excess of the estimate provided for above, Buyer will cooperate with Seller and others involved in determining the feasibility of increasing the amount of capacity available to transport gas produced from such formation and to increase the

amount of such capacity, if feasible. Upon completion of the steps necessary to provide such an increase in capacity, Buyer's and Seller's maximum daily sales and purchase obligations hereunder will increase to equal Seller's share in the increased production from such formation which is covered hereby that can be transported.

If the Buyer declines to proceed as provided in the above paragraph, or if at any time Buyer declines or is unable, for reasons other than force majeure, to purchase Seller's share of the total field or unit gas produced and made available for sale and which is committed to this contract, so as to purchase Seller's gas on a ratable basis with other producers in the Prudhoe Bay Field and to prevent the drainage of Seller's reserves, then and in such event Buyer shall, upon request by Seller, release from this contract such portion of Seller's gas reserves and accompanying daily gas volumes as is necessary to equalize withdrawals and prevent drainage of Seller's reserves. It is hereby agreed that any gas so released shall be available for sale by Seller to third parties.

3.4 Upon request by Buyer, Seller shall furnish to Buyer such factual information as Seller may possess with respect to its wells and acreage covered by this contract, including copies of any electric logs, core analyses, geological, engineering and production data, and any and all basic information in connection with such wells. This shall not apply to information held confidential by Seller.

3.5 Seller will furnish Buyer each month with copies of all production, well test, completion and recompletion reports filed by Seller with any regulatory body covering the leases which are committed to this agreement.

SECTION 4. PRICE

(To Be Negotiated)

Notwithstanding any provision of this contract to the contrary, if, in order to comply with or by reason of any present or future law or rule, regulation or order of any governmental officials or bodies having jurisdiction, the basis or method of measurement of gas delivered hereunder is changed, then the price per Mcf for gas purchased hereunder shall be adjusted to compensate for the change in the basis or method of measurement, to the end that the total amount of money payable for volumes of gas purchased according to the measurement provisions set forth herein shall remain unaffected by such change of basis or method of measurement.

SECTION 5. TAXES

5.1 Any valid sales, transaction, occupation, service, production, severance, gathering, transmission, export or excise tax, assessment or fee levied, assessed or fixed by the United States or any state or other governmental authority, and taxes of a similar nature or equivalent in effect (not including income, excess profits, capital stock, franchise or general property taxes), in addition to or greater than those being actually levied, assessed or fixed as of the date of this contract, in respect of or applicable to the gas delivered by Seller to Buyer under this contract, and which Seller may be liable for either directly or indirectly through any obligation to reimburse others, are hereinafter collectively referred to as an "additional tax". There shall be added to the price set forth in Section 4 hereof, so long as the additional valid tax shall be in effect, an amount per Mcf sufficient to reimburse Seller for such additional tax.

5.2 Seller will bill Buyer for amounts paid by Seller which are reimbursable under this Section on the same monthly, quarterly or other periodic basis as that established by law for the payment of such reimbursable taxes.

SECTION 6. DELIVERY POINT

6.1 The points of delivery of the gas delivered and sold hereunder, at which point ownership and control of the gas sold hereunder shall pass from Seller to Buyer, shall be at the intake side of a measuring station installed or caused to be installed by Buyer at such point as Buyer and Seller may mutually designate and agree upon on or in the immediate vicinity of the lands which are covered by the oil and gas leases described in Exhibit Y hereto.

6.2 Seller shall make reports, or cause reports to be made to Buyer's dispatcher, as often as may be necessary in practice, of the pressure at which the gas is being delivered hereunder and the rate of such deliveries. Seller shall have agents or employees available at reasonable times to receive from such dispatcher advices and requests for changes in the rates of delivery of gas hereunder as required by Buyer from time to time.

6.3 Except as otherwise specifically provided herein, as between the parties hereto, Seller shall be deemed to be in control and possession of the gas delivered hereunder, shall be responsible for, and shall indemnify Buyer against, any damage or injury caused thereby, until the same shall have been delivered to or for the account of Buyer at the point of delivery, after which Buyer shall be deemed to be in possession and control thereof, shall be responsible for, and shall indemnify Seller against, any damage or injury caused thereby.

SECTION 7. DELIVERY PRESSURE

All gas sold and delivered hereunder shall be delivered at the delivery point specified in Section 6 at such pressure as Buyer may require for delivery into the pipeline, but not in excess of 1,200 psig.

SECTION 8. TERM

8.1 This contract shall become effective upon the execution hereof and shall continue and remain in force and effect for the life of the leases covered hereby; provided that if, prior to the expiration of the term hereof, the volumes of gas available for delivery hereunder shall be so reduced that further production of gas for delivery hereunder, including operation of compressors, would no longer be profitable for Seller or that further operation of the facilities used to transport such gas by or for the account of Buyer would no longer be profitable to Buyer, then the party for whom continued operation under this contract is no longer profitable may give notice to the other, which notice shall give the reason for such non-profitability and on the ninetieth day after the giving of such notice this contract shall terminate unless the parties agree to extend the term hereof prior to the end of such ninety (90) day period.

SECTION 9. CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY AND CONSTRUCTION OF FACILITIES

9.1 Both Seller and Buyer will file or cause to be filed with the Federal Power Commission and any other regulatory body or bodies having jurisdiction, such applications for certificates of public convenience and necessity or other approvals and consents as are required by law in connection herewith. Such applications will be prosecuted with diligence. If any such certificate or approval is refused by or is unsatisfactory to the party obtaining it, then such party may cancel and terminate this contract by giving notice to the other party within thirty (30) days after the issuance of the order refusing or granting such certificate or approval, and if either party so terminates this contract, then the respective obligations of the parties to sell and buy gas hereunder shall be of no force and effect from the date of such termination.

9.2 Upon the issuance and acceptance of the necessary certificates, Buyer will proceed with due diligence to cause to be installed the facilities necessary to receive deliveries of gas hereunder, and Seller will use due diligence to install and place in operation, or cause to be installed and placed in operation, the necessary facilities for the delivery of gas hereunder at the applicable delivery point above specified. When, in accordance with this Section, the necessary steps have been taken by Buyer to receive, and Seller to deliver, gas hereunder, Buyer shall commence taking deliveries.

SECTION 10. MISCELLANEOUS

10.1 No waiver by either party of one or more defaults by the other in the performance of any of the provisions of this contract shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or of a different character.

10.2 This contract shall be binding upon and inure to the benefit of the heirs, legal representatives, successors and assigns of the respective parties hereto and shall be binding upon any purchaser or assignee of Buyer's properties or system and upon any purchaser or assignee of the properties of Seller which are subject to this contract, and Seller and Buyer both agree that no sale or assignment of said properties of Seller or any part thereof or all or substantially all of Buyer's system shall be made unless the purchaser or assignee thereof shall assume and agree to be bound by this contract insofar as the same shall affect and relate to the property or interest sold or conveyed.

10.3 Notwithstanding any other actual or constructive knowledge of or notice to Buyer, no change or division in ownership in this contract by Seller shall be binding upon Buyer for any purpose until after Buyer receives, at the place provided for herein, certified copies of the instrument or instruments constituting or accomplishing the change in ownership from the party acquiring the interest or right in this contract or from Seller.

10.4 All notices, requests, demands, statements and payments provided for in this contract shall be in writing and shall be addressed to the parties as follows:

Seller - Statements and Payments Only:

Other:

Buyer -

or such other address as either party may designate by notice. Routine communications, including monthly statements and payments, shall be considered as duly delivered when mailed by either registered, certified or ordinary mail.

10.5 This agreement, and the construction and interpretation thereof, shall be governed by the laws of the State of Ohio.

10.6 Paragraph headings used in this agreement are for convenience only and shall not affect the construction of this agreement.

10.7 This agreement may be amended or modified only by a written instrument duly executed by the parties hereto.

10.8 Except in the cases for which arbitration is specifically provided herein, if either party shall fail to perform any of the covenants or obligations imposed upon it by this contract (except where such failure

shall be excused under the force majeure provisions hereof), then, and in that event, the other party may, at its option (without waiving any other remedy for breach hereof), by notice in writing specifying wherein the default has occurred, indicate such party's election to terminate the contract by reason thereof. The party in default shall have thirty (30) days from the receipt of such notice to remedy such default and to pay or indemnify the other party for all loss or damage incurred as a result thereof, and upon failure so to do, this contract shall terminate from and after the expiration of such thirty (30) day period. Any such termination shall be an additional remedy and shall not prejudice the right of the party not in default to collect any amounts due it hereunder for any damage or loss suffered by it and shall not waive any other remedy to which the party not in default may be entitled for breach of this contract.

10.9 This contract is executed in five (5) duplicate originals.

IN WITNESS WHEREOF, this instrument is executed as of the day and year first above written.

SELLER:

ATTEST: BP OIL CORPORATION

_____ By _____

Secretary President

BUYER:

ATTEST: COLUMBIA GAS TRANSMISSION CORPORATION

_____ By _____

Secretary President

STATE OF)
) ss.
COUNTY OF)

This certifies that on this _____ day of _____, 19__, before me, the undersigned, a Notary Public in and for the above named County and State personally appeared _____ to me known to be the identical person who subscribed the name of the maker thereof to the foregoing instrument as the President, and acknowledged to me that he executed same as his free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes therein mentioned.

WITNESS my hand and official seal the day and year in this certificate first above written.

My Commission Expires:

_____ _____
Notary Public

STATE OF)
) ss.
COUNTY OF)

This certifies that on this _____ day of _____, 19__, before me, the undersigned, a Notary Public in and for the above named County and State personally appeared _____ to me known to be the identical person who subscribed the name of the maker thereof to the foregoing instrument as the President, and acknowledged to me that he executed same as his free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes therein mentioned.

WITNESS my hand and official seal the day and year in this certificate first above written.

My Commission Expires:

_____ _____
Notary Public

EXHIBIT X

Attached to and Made a Part of a Gas Purchase and Sales Agreement dated _____, 19__, Between BP Oil Corporation, a Delaware Corporation ("Seller"), and Columbia Transmission Corporation, a Delaware Corporation ("Buyer").

SECTION 11. DEFINITIONS

11.1 The term "gas", unless the context otherwise requires, shall include natural gas produced from gas wells, and oil well gas produced with crude oil, or the mixture of hydrocarbon gases that remain after processing natural gas and/or oil well gas.

11.2 Unless the context otherwise requires, the term "lease" shall mean Seller's interest in the oil and gas leases, and portions thereof, which are described in Exhibit Y, as to the formation specified in Exhibit Y.

11.3 The term "day" shall mean a period of 24 consecutive hours beginning at 8 o'clock a.m., Local Time. The reference date for any day shall be the date of the beginning of such day.

11.4 The term "month" shall mean the period beginning at 8 o'clock a.m., Local Time, on the first day of a calendar month and ending at the same time on the first day of the next succeeding calendar month.

11.5 The term "contract year" shall mean each successive period of twelve (12) consecutive months beginning on the first day of the month following the month in which deliveries of gas are commenced to Buyer hereunder and any anniversary of such date; provided that the period from the date of first delivery to Buyer hereunder to the first day of the month next following such delivery shall be considered part of the first such contract year.

11.6 The term "Mcf" shall mean 1,000 cubic feet of natural gas as determined on the measurement basis set forth in Section 14 of this Exhibit X.

11.7 The term "Btu" shall mean British thermal unit.

11.8 The term "psia" shall mean pounds per square inch, absolute.

11.9 The term "psig" shall mean pounds per square inch, gauge.

SECTION 12. STATEMENTS AND PAYMENTS

12.1 On or before the 15th day of each month after deliveries of gas are commenced hereunder, Buyer shall render or cause to be rendered to Seller a statement showing the total amount of gas delivered at the point of delivery hereunder during the last preceding month. Within seven (7) days after receipt of such statement from Buyer, Seller will furnish,or cause to be furnished, to Buyer an allocation statement prepared by Seller, or Seller's duly authorized agent, setting forth, with respect to the total volume of gas delivered to Buyer at the common point of measurement of the gas delivered hereunder and other gas delivered there, the portion of such total volume which was delivered by Seller hereunder. Buyer shall be entitled to rely conclusively on the volumes contained in such allocation statement in making payment to Seller for gas delivered hereunder. Buyer shall make payment to Seller on or before the 25th day of each calendar month for all gas delivered during the preceding month; provided, however, that, if an allocation statement is not furnished to Buyer as provided herein, Buyer shall be entitled to withhold payment for gas delivered hereunder until ten (10) days after Buyer shall have been furnished with such allocation statement.

12.2 Each party shall have the right at reasonable times to examine the books, records and charts of the other party to the extent necessary to verify the accuracy of any statement, allocation, charge or computation made pursuant to the provisions of any Section hereof. If any such examination reveals any inaccuracy in such billing theretofore made, the necessary adjustments in such billing and payments shall be promptly made; provided that no adjustments for any billing or payment shall be made after the lapse of three years from the rendition thereof.

SECTION 13. QUALITY OF GAS

13.1 The gas delivered hereunder shall be merchantable natural gas; shall be commercially free from dust, gums, gum-forming constituents, gasoline, water, or any other substance of any kind which may become separated from the gas in the course of pipeline transportation after delivery to Buyer; shall not contain more than six (6) pounds of water per million cubic feet of gas as determined by a dew point apparatus approved by the Bureau of Mines; shall not contain more than one (1) grain of hydrogen sulphide per one hundred cubic feet of gas nor more than twenty (20)

grains of total sulphur per one hundred cubic feet of gas; shall not be more than three percent (3%) by volume of carbon dioxide, more than three percent (3%) by volume of nitrogen nor more than one percent (1%) by volume of oxygen; shall not be at a temperature of more than one hundred and twenty degrees (120°) Fahrenheit nor less than twenty-five degrees (25°) Fahrenheit; and shall have a gross heating value of not less than nine hundred fifty (950) nor more than one thousand one hundred fifty (1150) British thermal units per cubic foot of gas saturated with water vapor at a temperature of sixty degrees (60°) Fahrenheit and at an absolute pressure equivalent to thirty (30) inches of mercury at thirty-two degrees (32°) Fahrenheit.

(This Paragraph 13.1 contemplates delivery to pipeline under conventional conditions; however, if a dense phase pipeline is utilized, or if the plan of field operation and/or plan of pipeline operation results in availability or use of gas of specifications different than that above, then and in such event, this Paragraph 13.1 will have to be changed accordingly.)

13.2 Buyer shall not be obligated to receive and purchase gas hereunder that fails to conform to the foregoing requirements and shall have the right, after giving notice to Seller, to refuse to accept delivery of such gas as long as such gas fails to meet such requirements and shall have the right to cancel this contract if such gas fails to meet such requirements for one hundred eighty (180) days following the date of such notice.

If it is uneconomic for Seller to treat the gas subject to this agreement so it will meet specifications provided herein and if Buyer does not elect to treat such gas, then at any time while Buyer is not taking such gas because it does not meet specifications Buyer shall upon request by Seller release from the terms of this contract the off-specification gas and the leases attributable thereto.

SECTION 14. MEASUREMENTS

14.1 The volume of gas delivered hereunder shall be measured at the points of delivery with orifice meters and such other equipment and instruments as may be required. Buyer shall install, maintain, and operate, or cause the installation, maintenance and operation of, such measuring equipment without cost to Seller. The measurement equipment so installed shall conform to and shall be operated in accordance with the specifications and recommendations contained in the American Gas Association

publication, Orifice Metering of Natural Gas, Gas Measurement Committee Report No. 3, and in such amendments and revisions thereto and superseding reports thereof as are recommended by such Committee. Such amendments, revisions, and superseding reports shall be effective on the first day of the month following the date that either Buyer or Seller notifies the other that such amendments or revisions shall be adopted.

14.2 Except in the gross heating value determination provided in Section 13.1 of this Exhibit X, one cubic foot of gas shall be that volume of gas contained in one cubic foot of space at a temperature of sixty degrees (60°) Fahrenheit and at a pressure of fourteen and sixty-five hundredths (14.65) pounds per square inch absolute. The volume of gas delivered hereunder shall be computed in accordance with the specifications and recommendations contained in the American Gas Association publication, Orifice Metering of Natural Gas, Gas Measurement Committee Report No. 3, and in such amendments and revisions thereto and superseding reports thereof as are recommended by such Committee, including but not limited to the corrections for Reynolds number, expansion, pressure base, temperature base, flowing temperature, specific gravity, manometer factor, and supercompressibility. Such amendments, revisions, and superseding reports shall be effective the first day of the month following the date that either Buyer or Seller notifies the other that such amendments or revisions shall be adopted. The pressure base shall be fourteen and sixty-five hundredths (14.65) pounds per square inch absolute. The temperature base shall be sixty degrees (60°) Fahrenheit. The atmospheric pressure shall be assumed to be fourteen and seven-tenths (14.7) pounds per square inch absolute. Corrections for Reynolds number, expansion, manometer factor, and supercompressibility or deviation from Boyle's Law shall be made by application of the correction factors or formulas contained in the aforesaid report or amendments thereto. In making the correction for supercompressibility, the mol percent of nitrogen and carbon dioxide will be used. Such mol percent determination shall be made as soon as practicable after deliveries commence hereunder and as may be required from time to time thereafter. Further, as to the correction for supercompressibility, the gas delivered hereunder shall be assumed to deviate from Boyle's Law to an extent agreeable with the American Gas Association tables of Supercompressibility Factors for Natural Gas of pure hydrocarbon composition, as may be hereafter amended or changed, at the specific gravity and flowing temperature hereof, and at the arithmetic average static pressure recorded during periods of gas flow only; provided, however, that the American Gas Association tables for hydrocarbon gases agree within plus or minus 0.2 percent of the Boyle's Law deviation determined by test or calculated from knowledge of the fractional analysis of the gas composition. When the American Gas Association tables are found to not agree within 0.2 percent plus or minus

of the actual deviation from Boyle's Law within the range of operating pressures and temperatures, Buyer will prepare factor tables that agree with the actual deviation from Boyle's Law, as may be determined by actual test or fractional analysis, with the tables thus prepared being used for volumetric calculation purposes for a period of time not exceeding three (3) months, and such factor tables shall be furnished by Buyer to Seller. Tests shall be conducted upon the commencement of deliveries hereunder and thereafter as herein provided, to determine the actual Boyle's Law deviation, using Bureau of Mines type of test equipment, based upon the original Burnett apparatus described in Research Bulletin 13, Institute of Gas Technology, or by calculation with knowledge of the fractional components of the gaseous composition, using the pseudo critical pressure and temperature of the composition as a base for determining the deviation within the measuring range of pressures and temperatures. Where actual Boyle's Law deviation is found to agree with the American Gas Association factor tables for hydrocarbon gases, within a plus or minus tolerance of 0.2 percent, subsequent tests or determinations to verify the accuracy of the American Gas Association tables will be conducted during each calendar year; provided, however, such determinations will be suspended for an extended and indefinite period of time following any two (2) consecutive determinations that reflect agreement with the American Gas Association tables, unless either Buyer or Seller deem it prudent to redetermine the actual deviation from Boyle's Law upon indication of gas composition changes resulting from changed gas processing methods or changes of gas production sources.

(This Paragraph 14.2 contemplates delivery to a pipeline under conventional conditions; however, if a dense phase pipeline is utilized, this Paragraph 14.2 will have to be changed accordingly.)

14.3 Buyer shall measure or cause the measurement of the flowing temperature, the specific gravity, and the gross heating value of the gas delivered hereunder with such devices as are ordinarily used for such measurements. The flowing temperature of the gas measured shall be determined by recording thermometers. The specific gravity shall be measured once each month, or at longer intervals if deemed necessary by Buyer and Seller, or continuously if Buyer so elects. The gross heating value shall be determined by use of a recording type calorimeter installed by Buyer. If such measurements are not made continuously, the measurement to be used in the computation of the volume for any month shall be the most recent measurement made prior to such month. If such measurements are made continuously, the measurement to be used in the computation of the volume for any day shall be the arithmetical average of the measurements made when gas was being delivered on such day.

14.4 Buyer shall test or cause the testing of the accuracy of the equipment measuring gas delivered hereunder at least once each month or more often if Buyer deems necessary or at such times as Seller may request, provided that Seller may not request such a test more often than once each month. Buyer shall give Seller notice of the time and date when such equipment shall be tested and adjusted and shall permit Seller to observe any such tests or adjustments if Seller is present when such test or adjustments are made.

14.5 If any measuring equipment is found by test to be measuring inaccurately, such equipment shall be adjusted to measure accurately. If, when measuring gas at a flow rate substantially equal to the average of the volumes measured during the thirty (30) days preceding the date of the most recent previous test, the deviation of such measuring equipment from perfect accuracy is not greater than two percent (2%), all measurements by such equipment since the most recent previous test shall be deemed correct. If such deviation is greater than two percent (2%), the volumes delivered during the period that such equipment is known to have been measuring inaccurately or, if such period is unknown, during the last half of the period of time since the most recent previous test shall be determined. When determining the volumes delivered during such periods, due consideration shall be given to the measurement made by any check measurement equipment, installed by Seller, to the extent of the inaccuracy as indicated by calibration tests of the measurement equipment and mathematical calculations, and the volume of gas measured by such equipment under similar conditions when such equipment is known to have been measuring accurately.

14.6 All test data, measurement charts, books of account, and similar records relating to the amount of gas delivered and the amount of gas which Buyer is obligated to purchase hereunder and the amount due therefor shall be preserved by Buyer for a period of at least three (3) years and, during such period, shall, at the request of Seller, be made available for inspection by Seller at all reasonable times. Upon request of Seller, Buyer will cause to be submitted to Seller for checking and calculation the records and charts from Buyer's measuring facilities, subject to return by Seller within thirty (30) days after receipt thereof.

SECTION 15. REGULATORY BODIES

15.1 This contract is subject to all present and future valid orders, rules and regulations of any regulatory body having jurisdiction, so long as such orders, rules and regulations shall be in force and effect.

SECTION 16. WARRANTY OF TITLE TO GAS

16.1 Seller warrants title to all hydrocarbon gas sold and delivered hereunder, that such gas is free from liens and adverse claims of every kind, that it has the right to sell all hydrocarbon gas sold hereunder. Seller will pay or cause to be paid, all royalties, taxes and other sums due on production, gathering or handling of the gas delivered by such Seller. Seller will indemnify and save Buyer harmless against all loss, damage and expense of every character on account of adverse claims to the gas delivered by it or of royalties, taxes, payments or other charges thereon applicable before or upon delivery to Buyer. In the event any adverse claim of any kind is asserted with respect to any of said gas or monies due Seller therefor, Buyer may retain as security for the performance of the obligations of Seller, any such monies, up to the amount of claim, without interest, until such claim has been finally determined, or until Seller shall have furnished to Buyer bond or other assurance satisfactory to Buyer, conditioned for the protection of Buyer with respect to such claim.

16.2 If at any time hereafter it shall appear that the ownership or title to all or part of the lands or leases covered by this contract, or the gas produced thereform, which is committed under this contract, is vested in a party or parties other than Seller, and Seller, after using all reasonable means available to it, shall lose or relinquish title thereto as a result of such defect or failure of title, Seller shall be released from all further obligations hereunder with respect to such lands, leases and the gas produced therefrom as may be affected by such defect or failure of title.

SECTION 17. FORCE MAJEURE

17.1 In the event of either party hereto being rendered unable, wholly or in part, by force majeure, to carry out its obligations under this contract, other than to make payments due hereunder, it is agreed that on such party's giving notice and full particulars of such force majeure in writing, or by telegraph, to the other party as soon as practicable after the occurrence of the cause relied on, then the obligations of the party giving such notice, so far as they are affected by such force majeure, shall be suspended during the continuance of any inability so caused, but for no longer period, and such cause shall as far as possible be remedied with all reasonable dispatch. It is provided, however, that the obligations of Seller to deliver and Buyer to receive gas on any day or days governed wholly or in part by force majeure shall be the actual quantity of gas, if any, delivered and received on such days.

17.2 The term "force majeure" as employed herein shall mean acts of God, strikes, lockouts or other industrial disturbances, acts of the public enemy, wars, blockades, military action, insurrections, riots, epidemics, landslides, lightning, earthquakes, fires, storms or storm warnings, crevasses, floods, washouts, arrests and restraints of governments and people, civil disturbances, explosions, breakage or accident to machinery or lines of pipe, the necessity for testing (as required by law, governmental regulation or for safe operation thereof, in the judgment of the testing party) or making repairs or alterations to machinery or lines of pipe, freezing of wells or lines of pipe, partial or entire failure of wells, inability of any party hereto to obtain necessary materials, supplies or permits due to existing or future rules, regulations, orders, laws or proclamations of governmental authorities (both Federal and State), including both civil and military, any inability on the part of any purchaser or purchasers to receive gas from Buyer by reason of force majeure affecting such purchaser or purchasers, provided that such inability of Buyer to take gas because of force majeure affecting its purchasers shall be fairly apportioned among its various sources of gas supply, and any other causes, whether of the kind herein enumerated or otherwise, not within the control of the party claiming suspension, and which by the exercise of due diligence such party is unable to prevent or overcome; such term shall likewise include (a) in those instances where either party hereto is required to obtain servitudes, right-of-way grants, permits or licenses to enable such party to fulfill its obligations hereunder, the inability of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such servitudes, right-of-way grants, permits or licenses, and (b) in those instances where either party hereto is required to furnish materials and supplies for the purpose of constructing or maintaining facilities, or is required to secure permits or permission from any governmental agency to enable such party to fulfill its obligations hereunder, the inability of such party to acquire, or the delays on the part of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such materials and supplies, permits and permissions; provided, however, Seller shall have the right but not the obligation to sell on a day to day basis free from this contract any gas which is committed to Buyer hereunder but which Buyer does not take because of force majeure. The word "party" as used in this Section 17.2 shall mean and include any person or persons, corporate or otherwise, with whom Buyer enters into or has agreements for the transportation, for its account, of the gas to be delivered hereunder from the point of delivery hereunder to Buyer's facilities.

17.3 It is understood and agreed that the settlement of strikes or lockouts shall be entirely within the discretion of the party having the difficulty, and that the above requirement that any force majeure

shall be remedied with all reasonable dispatch shall not require the settlement of strikes or lockouts by acceding to the demands of the opposing party when such course is inadvisable in the discretion of the party having the difficulty.

SECTION 18. ARBITRATION

18.1 Any controversy, except those involving legal questions, between the parties arising under this contract not resolved by agreement shall be determined by a board of arbitration upon notice of submission given either by Buyer or Seller, which request shall also name one (1) arbitrator. The party receiving such notice shall, within twenty (20) days thereafter, by notice to the other, name the second arbitrator, or failing so to do, the party giving notice of submission shall name the second. The two (2) arbitrators so appointed shall name the third, or failing so to do within twenty (20) days, the third arbitrator may be appointed by the person who is at the time the senior (in service) judge of the United States District Court for that District of Alaska in which the leases covered hereby are situated.

18.2 The arbitrators selected to act hereunder shall be qualified by education, experience, and training to pass upon the particular question in dispute. Therefore, it is agreed that if an engineering question is involved, qualified engineers shall be appointed, and similar procedure will be followed in connection with other questions.

18.3 The arbitrators so appointed shall promptly hear and determine (after giving the parties due notice of hearing and a reasonable opportunity to be heard) the questions submitted, and shall render their decision within sixty (60) days after appointment of the third arbitrator. If within said period a decision is not rendered by the board or a majority thereof, new arbitrators may be named and shall act hereunder at the election of either Buyer or Seller in like manner as if none had been previously named.

18.4 The decision of the arbitrators, or of a majority thereof, made in writing shall be final and binding upon the parties hereto as to the questions submitted, and the parties will abide by and comply with such decision. The expenses of arbitration, including reasonable compensation to the arbitrators, shall be borne equally by Buyer and Seller, except that each party shall bear the compensation and expense of its counsel, witnesses and employees.

SECTION 19. CONFLICTS

19.1 Should any conflict appear or exist between these General Terms and Conditions and the contract to which they are attached, the contract shall govern.

EXHIBIT Y

Attached to and Made a Part of a Gas Purchase and Sales Agreement dated _____, 19__, Between BP Oil Corporation, a Delaware Corporation ("Seller"), and Columbia Gas Transmission Corporation, a Delaware Corporation ("Buyer"), With Respect to Certain Gas Produced and Saved from the Interests of BP Oil Corporation Under the Leases Described Herein Covering Lands in the State of Alaska.

In the following description of each Lease --

(a) BP Oil Corporation's interest is stated as a percentage of the total leasehold working interests before deducting Lessor's royalties or the Net Profits Royalty Interest of BP Alaska, Inc.

(b) Each Lease reserves to the State of Alaska a one-eighth royalty in the Hydrocarbons produced and saved.

(c) All of the Leases are subject to a Net Profits Royalty Interest conveyed by BP Oil Corporation to BP Alaska, Inc. by a conveyance dated August 1, 1969.

(d) All Leases are subject to the rights of BP Alaska, Inc. under an Operating Agreement entered into by BP Oil Corporation and BP Alaska, Inc., dated August 1, 1969.

Lease Serial No.	Legal Description	Gross Acres	BP Oil Working Interest
ADL-28260	Secs. 1, 2, 11, 12 T11N-R12E-UM	2,560	100%
ADL-28277	Secs. 25, 26, 35, 36 T12N-R13E-UM	2,560	100%
ADL-28278	Secs. 27, 28, 33, 34 T12N-R13E-UM	2,560	100%
ADL-28279	Secs. 29, 30, 31, 32 T12N-R13E-UM	2,459	100%

Lease Serial No.	Legal Description	Gross Acres	BP Oil Working Interest
ADL-28280	Secs. 1, 2, 11, 12 T11N-R13E-UM	2,560	100%
ADL-28281	Secs. 3, 4, 9, 10 T11N-R13E-UM	2,560	100%
ADL-28282	Secs. 5, 6, 7, 8 T11N-R13E-UM	2,469	100%
ADL-28283	Secs. 17, 18, 19, 20 T11N-R13E-UM	2,480	100%
ADL-28284	Secs. 15, 16, 21, 22 T11N-R13E-UM	2,560	100%
ADL-28285	Secs. 13, 14, 23, 24 T11N-R13E-UM	2,560	100%
ADL-28286	Secs. 25, 26, 35, 36 T11N-R13E-UM	2,560	100%
ADL-28287	Secs. 27, 28, 33, 34 T11N-R13E-UM	2,560	100%
ADL-28305	Secs. 17, 18, 19, 20 T11N-R14E-UM	2,480	100%
ADL-28309	Secs. 27, 28, 33, 34 T11N-R14E-UM	2,560	100%
ADL-28310	Secs. 29, 30, 31, 32 T11N-R14E-UM	2,491	100%
ADL-28311	Secs. 1, 2, 11, 12 T10N-R14E-UM	2,560	100%
ADL-28312	Secs. 3, 4, 9, 10 T10N-R14E-UM	2,560	100%
ADL-28315	Secs. 13, 14, 23, 24 T10N-R14E-UM	2,560	100%
ADL-28320	Secs. 1, 2, 11, 12 T11N-R15E-UM	2,560	100%

Lease Serial No.	Legal Description	Gross Acres	BP Oil Working Interest
ADL-28330	Secs. 17, 18, 19, 20 T10N-R15E-UM	2,512	100%
ADL-28331	Secs. 15, 16, 21, 22 T10N-R15E-UM	2,560	100%
ADL-28333	Secs. 25, 26, 35, 36 T10N-R15E-UM	2,560	100%
ADL-28335	Secs. 29, 30, 31, 32 T10N-R15E-UM	2,523	100%
ADL-28337	Secs. 3, 4, 9, 10 T11N-R16E-UM	2,560	100%
ADL-28338	Secs. 5, 6, 7, 8 T11N-R16E-UM	2,469	100%
ADL-28339	Secs. 17, 18, 19, 20 T11N-R16E-UM	2,480	100%
ADL-28340	Secs. 15, 16, 21, 22 T11N-R16E-UM	2,560	100%
ADL-28341	Secs. 13, 14, 23, 24 T11N-R16E-UM	2,560	100%
ADL-28342	Secs. 27, 28, 33, 34 T11N-R16E-UM	2,560	100%
ADL-28343	Secs. 29, 30, 31, 32 T11N-R16E-UM	2,491	100%
ADL-28348	Secs. 27, 28, 33, 34 T10N-R16E-UM	2,560	100%
ADL-28349	Secs. 29, 30, 31, 32 T10N-R16E-UM	2,523	100%
ADL-34625	Secs. 13, 14, 23, 24 T12N-R15E-UM	2,560	100%
ADL-34630	Secs. 25, 26, 35, 36 T12N-R15E-UM	2,560	100%

Lease Serial No.	Legal Description	Gross Acres	BP Oil Working Interest
ADL-34633	Secs. 25, 26, 35, 36 T12N-R16E-UM	2,560	100%
ADL-34634	Secs. 27, 28, 33, 34 T12N-R16E-UM	2,560	100%
ADL-34635	Secs. 29, 30, 31, 32 T12N-R16E-UM	2,459	100%
ADL-34636	Secs. 1, 2, 11, 12 T11N-R16E-UM	2,560	100%
	TOTAL ACREAGE	96,396	

INSOFAR AND ONLY INSOFAR AS said leases pertain to the Permo-Triassic Formation, such Formation being the formation or stratum which, for reference purposes only, was found in the ARCO-Humble Prudhoe Bay State No. 1 Well on land covered by the State of Alaska Lease No. ADL-28303 between the depths of 8117 feet below Kelly Bushing and the top of the carbonate formation at 8785 feet below Kelly Bushing as measured by Schlumberger Dual Induction Laterolog, Run 4, dated February 8, 1968, and Run 5, dated March 9, 1968.

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Exhibit CG - 1
Docket No. CP75-257
13 pages and 13 pages
of Exhibit I

COLUMBIA GAS TRANSMISSION CORPORATION

Amendment and Supplement

to Preliminary Gas Agreement

AMENDMENT OF AND SUPPLEMENT TO
PRELIMINARY GAS AGREEMENT BETWEEN
BP OIL CORPORATION, SELLER
AND
COLUMBIA GAS TRANSMISSION CORPORATION, BUYER

(Dated as of August 3, 1971)

THIS AMENDMENT made and entered into as of the 31st day of October 1974, between SOHIO PETROLEUM COMPANY, a Delaware corporation, herein called the Seller, and COLUMBIA GAS TRANSMISSION CORPORATION, a Delaware corporation, herein called the Buyer, changes and amends the Preliminary Gas Agreement (the "Agreement") originally entered into as of August 3, 1971 between BP OIL CORPORATION, as Seller, and COLUMBIA GAS TRANSMISSION CORPORATION, as Buyer, in the respects hereinafter specifically set forth.

BACKGROUND OF AMENDMENT AND SUPPLEMENT

This Amendment of and Supplement to the Agreement hereinafter set forth have been necessitated principally because of the long delay in the issuance by the United States Department of Interior of a permit for the construction of a crude oil pipeline for the transportation of crude oil from the Prudhoe Bay Area of Alaska to Valdez, Alaska. At the time the Agreement was executed it was anticipated by both parties that such permit would be issued and all other requisite rights of way, licenses, leases and permits would be obtained by the participants, including the Seller, in the so-called Trans-Alaska Pipeline System (involving

a large diameter crude oil pipeline for the transportation of crude oil from the Prudhoe Bay Area to Valdez, Alaska) prior to July 1, 1973. This did not occur.

The permit above referred to was not issued to the participants in the Trans-Alaska Pipeline System until January 23, 1974 and sufficient rights of way, licenses, leases and permits to warrant commencement and continuation of the construction of the pipeline were obtained from other federal, state and local agencies prior to the execution of this Amendment. At the execution date of this Amendment construction work on the crude oil pipeline and related facilities and access highways is in progress.

Under the Agreement, Seller agreed to commit to Buyer under a form of Gas Purchase and Sales Agreement in substantially the form attached to the Agreement as Exhibit B, and to be entered into between the Seller and the Buyer at a later date (as provided in Paragraphs 3, 4, 5 and 6 of the Agreement), the recoverable gas in the Permo-Triassic Formation underlying lands in the oil and gas leases listed and described in Exhibit A of the Agreement (herein called "Permo-Triassic Gas" and "Leases," respectively), subject however, to certain exclusions set forth in Paragraph 1(j) of the Agreement. All formations under the Leases are subject to a Net Profits Royalty Interest owned by BP Alaska, Inc. ("BP Alaska") a corporation not presently owned or controlled by Seller or its parent.

The portion of the oil and gas production from the Leases to which the Net Profits Royalty Interest will apply will depend upon the average daily level of crude oil production from the Leases achieved before January 1, 1978. Under the conveyance creating the aforesaid Net Profits Royalty Interest, BP Alaska has the right to take in kind from the Seller such oil and gas produced from the aforesaid Leases as is attributable to the Net Profits Royalty Interest. BP Alaska has heretofore contracted to sell to another gas company the gas which it may be entitled to take in kind from the aforesaid Leases up to an aggregate total of 3 trillion cubic feet and BP Alaska has elected by letter, dated February 27, 1973, addressed to Seller (a copy of which has been furnished to Buyer), to take in kind enough of the gas produced from the Leases and attributable to its Net Profits Royalty Interest to meet its obligations to such other gas company.

Under these circumstances, Seller may have available for delivery to the Buyer under the Agreement (and under the Gas Purchase and Sales Agreement attached to the Agreement as Exhibit B) an aggregate quantity of gas produced from the Permo-Triassic Formation less than that contemplated by the parties at the time the Agreement was executed.

The purpose of the amendments to the Agreement herein made is (i) to commit to Buyer under the terms of the Agreement, as herein amended, and under the Gas Purchase and Sales Agreement (as and when it is executed by the parties) in addition to the

gas which becomes available to Seller from the Permo-Triassic Formation under the Leases, all gas which may in the future become available to Seller for sale by it from all other formations as may exist under the lands covered by the Leases, (ii) to eliminate the provisions of subparagraphs (a) and (b) of Paragraph 2 of the Agreement under which the Seller had retained the right to sell 17 percent of the Leases and to take in kind certain of the gas produced from the Leases, and (iii) to provide that, if, under any Unit Agreement embracing any of the Prudhoe Bay leases or portions thereof or formations thereunder (meaning the Leases defined in Paragraph A(1) on pages 5 and 6 hereof), there shall be allocated to Seller a percentage of the gas to be produced by the Unit greater than the ratio which the recoverable gas in place under such Leases (or the portions thereof or the formations thereunder) bears to the total recoverable gas in place under the lands (and/or formations thereunder) embraced in the Unit, the excess gas reserves and the daily quantities attributable thereto to which Seller will be entitled arising from such difference in percentage will be sold and delivered by Seller to Buyer hereunder up to a total quantity thereof equal to that quantity of gas, if any, from the Permo-Triassic Formation, which is taken in kind by BP Alaska as owner of the Net Profits Royalty Interest and which BP Alaska does not sell directly or indirectly to Buyer, or otherwise make available to Buyer.

The purpose of the Supplement is to commit to the Agreement for sale to Buyer all gas which may in the future become available to Seller from lands outside of the Prudhoe Bay Area covered by any and/or all of the oil and gas leases listed and

described on Exhibit I attached hereto and made a part hereof (herein called "Non-Prudhoe Bay leases") and which is attributable to the working interests of Seller in such leases.

BP Oil Corporation was merged into Sohio Petroleum Company, a Delaware corporation, as of the close of business December 31, 1973 and by operation of law and by the terms of the Agreement of Merger Sohio Petroleum Company has succeeded to all of the properties and assets of BP Oil Corporation and has assumed all of its debts, liabilities, agreements, undertakings and obligations, including the Agreement and consequently this "Amendment of and Supplement to Preliminary Gas Agreement" is executed by Sohio Petroleum Company as successor to BP Oil Corporation.

AMENDMENTS TO THE AGREEMENT

In the light of the foregoing circumstances and to accomplish the purposes above recited, it is agreed that the following amendments shall be and the same are hereby made to the Agreement and that prior to its finalization and execution the terms and provisions set forth in Exhibit B to that Agreement shall be changed and amended (among other required amendments) to conform to and be consistent with the amendments herein made to the Agreement.

A. Amendments to Paragraph 1. Certain of the definitions and/or provisions set forth in Paragraph 1 of the Agreement are hereby amended to read in full, or in part, as follows:

1. The definition of "Lease" appearing in subparagraph 1(d) is hereby changed to read in full, as follows:

"(d) "Lease" shall mean any one of the oil and gas leases listed and described in Exhibit A and "Leases" shall mean all thereof and in each case shall relate not only to recoverable gas reserves contained in the Permo-Triassic Formation but to all recoverable gas reserves, if any, contained in any and all other formations underlying any Lease or the Leases."

2. The last paragraph of Paragraph 1 of the Agreement is hereby changed and amended to read in full, as follows:

"If under any Unit Agreement embracing any of the Leases (or portions thereof or formations thereunder) there shall be allocated to Seller a percentage of the gas to be produced by the Unit greater than the ratio which the recoverable gas in place under such Leases (or the portions thereof or the formations thereunder) bears to the total recoverable gas in place under the lands (and/or formations thereunder) embraced in the Unit, the excess gas reserves and the daily quantities attributable thereto to which Seller will be entitled arising from such difference in percentage will be sold and delivered by Seller to Buyer hereunder up to a total quantity thereof equal to that quantity

of gas, if any, from the Permo-Triassic Formation, which is taken in kind by BP Alaska as owner of the Net Profits Royalty Interest and which BP Alaska does not sell directly or indirectly to Buyer, or otherwise make available to Buyer, provided, however, that if during any period the excess Unit gas, if any, to which Seller will be entitled shall exceed the quantity of gas, if any, which under the foregoing provisions Seller is obligated to sell and deliver to Buyer hereunder, then in such case and during such period the exclusions referred to in clauses (i) through (vii) of this subparagraph (j) shall be allocated proportionately to the gas produced from the Unit and to which Buyer will be entitled hereunder and the gas produced from the Unit but to which the Buyer will not under the foregoing provisions be entitled to receive from Seller."

B. Amendments to Paragraph 2 of the Agreement.

1. Subparagraphs (a) and (b) of Paragraph 2 of the Agreement are hereby deleted in their entirety from the Agreement.

2. Subparagraph (c) of Paragraph 2 is hereby amended to read in full, as follows:

"(c) If the Advance Payment received by Seller under the Crude Oil Sale Agreement shall be less than $175,000,000 because of restrictions or limitations affecting the right of the Seller to request an installment of the Advance Payment or because of the

failure of Buyer to make an installment payment on account of the Advance Payment in accordance with a Certificate in proper form and timely submitted by Seller to Buyer pursuant to the terms and conditions of the Crude Oil Sales Agreement then in either such case the Seller's share of the gas reserve in the Permo-Triassic Formation under the Leases which the Buyer would have been entitled to receive under subparagraph 1(j) shall be reduced to a quantity equal to the product of multiplying (i) the gas reserve which Buyer would have otherwise been entitled to receive by (ii) a fraction whose numerator is the total of the Advance Payment made to Seller under the Crude Oil Sales Agreement and whose denominator is $175,000,000. This provision shall not be applied to reduce the amount of gas committed to Buyer which is produced from any other formation under the Leases or the gas under the Non-Prudhoe Bay leases committed to Buyer under the Supplement hereto.

"The form of Gas Purchase and Sales Agreement attached hereto as Exhibit B shall be appropriately amended prior to its execution to include provisions relative to the foregoing possible reduction (or the actual reduction, if any, if the event herein referred to shall have occurred prior to such execution) in the Permo-Triassic Formation gas reserves contemplated by this subparagraph (c) of this Paragraph 2."

C. Amendments to Exhibit B. In addition to the modifications and/or changes which may be required to be made in the form of Gas Purchase and Sales Agreement, attached as Exhibit B, prior to its execution under the other provisions of the Agreement, such Exhibit B shall also be modified, changed and amended in whatever respects may be necessary in order to incorporate and/or reflect the amendments and changes made in the Agreement by this Amendment.

D. Amendments to Paragraph 17 of the Agreement. The parenthetical phrase "(other than the 17% permitted to be sold, consigned or subleased by Seller free and clear of this Agreement and the Gas Purchase and Sales Agreement under Paragraph 2 hereof)" appearing in Paragraph 17 of the Agreement is hereby deleted.

E. Miscellaneous. Some of the foregoing amendments delete an entire Paragraph of the original Agreement or delete a lettered subparagraph of a Paragraph of the original Agreement, without making any changes in the numbering of the remaining Paragraphs or the lettering of the remaining (or substituted) subparagraphs. This treatment is intentional so that cross references appearing in certain Paragraphs to other Paragraphs or subparagraphs of the Agreement, and cross references contained in subparagraphs to the provisions of other Paragraphs or other subparagraphs of the Agreement, need not be changed. However, wherever any unchanged Paragraph of the Agreement now makes cross reference to a Paragraph or a subparagraph which has been expressly deleted by this Amendment, such cross reference shall be disregarded and shall be given no force and effect hereafter.

SUPPLEMENT TO AGREEMENT

The Agreement as amended by the foregoing provisions hereof is hereby supplemented to add thereto and make a part thereof, as a supplement or addition, the following provisions:

1. Seller hereby commits and dedicates to the Buyer, in addition to the gas reserves committed by Seller to the Buyer under the Agreement as above amended, all reserves, if any, of recoverable gas which may be found to underlay the lands covered by one or any of the oil and gas leases listed and described in Exhibit I, attached hereto and made a part hereof (herein called "Non-Prudhoe Bay leases") to the extent that such gas reserves and the production therefrom is attributable to the working interests (fractional or otherwise) of the Seller in and to such oil and gas leases, subject to the following exclusions:

(a) Gas taken in kind by the owner of any royalty and/or overriding royalty interests in such leases.

(b) Gas to which BP Alaska may become entitled in consequence of any assignment which Seller shall become obligated to execute and deliver, and shall execute and deliver, with respect to Seller's working interests in any one or more of the Non-Prudhoe Bay leases pursuant to the provisions of Section 10 of the Operating Agreement entered into between BP Oil Corporation and BP Alaska, dated August 1, 1969, relating to the so-called "Alaskan Properties Other Than Prudhoe."

(c) To the extent applicable all of the exclusions set forth in subparagraph 1(j) of the Agreement, as hereinabove amended (except clause (iii)) shall also constitute exclusions from the gas reserves under the Non-Prudhoe Bay leases herein dedicated by Seller to the Buyer.

2. If, as and when discovery shall be made of gas in commercial quantities underlying the lands covered by any one or more of the Non-Prudhoe Bay leases in any area, and gas shall be available for market, the Buyer and the Seller shall promptly enter into negotiations for the execution of a Gas Purchase and Sales Agreement which shall be applicable to the gas reserves so discovered, which Gas Purchase and Sales Agreement shall be substantially similar to Exhibit B (except for such provisions therein as may not be applicable to such area) and which will have the object of obligating Seller to sell and Buyer to purchase Seller's share of the recoverable gas reserves of such leases at a price per MCF at least as high as the highest price being paid, or to be paid, at the time of such deliveries for gas of similar quality being purchased in the same field in comparable quantities by the Buyer or by other gas purchaser from other producers and/or from the Seller.

3. The Seller may at any time, or from time to time, without the consent of the Buyer, sell, convey, assign, and transfer or farm-out a portion or successive portions of, or a right or rights constituting a charge upon, its working interests

in any one or more of the Non-Prudhoe Bay leases (or its interest in any unit embracing any of the Non-Prudhoe Bay leases) provided, however, that, if, while the Agreement as hereinbefore amended and this Supplement shall be in effect and/or while any Gas Purchase and Sales Agreement applicable to any one or more or all of the Non-Prudhoe Bay leases shall be in effect between the parties hereto, Seller shall assign, transfer and convey in one transaction, or in successive transactions, all or part of its leasehold interest in any one or more of the Non-Prudhoe Bay leases or shall enter into a farm-out arrangement with respect thereto or shall create any right or rights constituting a charge upon its working interests in any one or more of such leases, any such assignment, transfer, conveyance or other agreement creating any such charge shall be made expressly subject to the Agreement as amended, and to this Supplement and to any Gas Purchase and Sales Agreement which may have been theretofore entered into by the parties hereto pertaining to any such lease or leases. Seller shall assign and transfer to the purchaser a corresponding portion of Seller's rights under the Agreement, as amended, and under this Supplement and under any previously executed Gas Purchase and Sales Agreement relating to the leases in which interest or interests are assigned and shall obligate the purchaser to expressly assume such of the obligations of the Seller under the foregoing instruments as shall be proportionate to the interests of the Seller so assigned, transferred and

conveyed, except that any assignment and transfer made by Seller to BP Alaska pursuant to Section 10 of the Operating Agreement, dated August 1, 1969, relating to "Alaska Properties Other Than Prudhoe" shall not be subject to the foregoing provisions.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed as of the day and year first above written.

SOHIO PETROLEUM COMPANY

By _____
Vice President

By _____
Assistant Secretary

Seller

COLUMBIA GAS TRANSMISSION CORPORATION

By _____
President

Buyer

APPROVED LAW DEPT.

EXHIBIT I

Description of Sohio Petroleum Company's (successor to BP Oil Corporation) Interests in Non-Prudhoe Bay Leases in the State of Alaska, Attached to and Made a Part of a Supplement dated October 31, 1974 Between Sohio Petroleum Company and Columbia Gas Transmission Corporation to the Preliminary Gas Agreement, dated August 3, 1971, Between the Same Parties or Their Predecessors.

DESCRIPTION OF PROPERTIES

In the following descriptions of each Lease

(a) Sohio's interest is stated as a percentage of the total leasehold estate before deducting lessor's royalties and overriding royalties, if any, to which the same is subject.

(b) Each lease reserves to the lessor a one-eighth royalty in the hydrocarbons produced and saved.

(c) Overriding royalties are stated as a percentage of leasehold (7/8ths) production.

PART 1

LEASES SUBJECT TO THE RIGHTS OF BP ALASKA EXPLORATION, INC., (AS TRANSFEREE OF BP ALASKA, INC.) UNDER AN OPERATING AGREEMENT ENTERED INTO BY BP OIL CORPORATION AND BP ALASKA, INC., DATED AUGUST 1, 1969

(A) STATE LEASES

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25526	Sec. 10, 11, 12, 13 T12N-R4E-UM, EXC-NPR #4	2,335	25%	None
ADL-25529	Sec. 14, 15, 22, 23, T12N-R4E-UM (15, 22:EXC-NPR #4)	2,015	25%	None
ADL-25530	Sec. 24, 25, 26, 27, 35 T12N, R4E-UM (26, 27, 35:EXC-NPR #4)	2,540	25%	None
ADL-25538	Sec. 17, 18, 19, 20 T12N, R5E-UM	2,448	25%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25558	Sec. 29, 30, 31, 32, T12N-R5E-UM	2,459	25%	None
ADL-25559	Sec. 5, 6, 7, 8, T11N-R5E-UM	2,469	25%	None
ADL-25621	Sec. 13, 14, 23, 24, T9N-R8E-UM	2,560	25%	None
ADL-25676	Sec. 29, 30, 31, 32, T10N-R10E-UM	2,523	25%	None
ADL-25680	Sec. 5, 6, 7, 8, T9N-R9E-UM	2,533	25%	None
ADL-25686	Sec. 13, 14, 23, 24, T9N-R10E-UM	2,560	25%	None
ADL-25689	SEC. 13, 14, 23, 24, T9N-R9E-UM	2,560	25%	None
ADL-25512 (@)	Sec. 17, 18, 19, 20, T13N-R9E-UM	2,544	12.5%	None
ADL-25513 (@)	Sec. 15, 16, 21, 22, T13N-R9E-UM	2,560	12.5%	None
ADL-25519 (@)	Sec. 25, 26, 35, 36, T13N-R9E-UM	2,560	12.5%	None
ADL-25520 (@)	Sec. 27, 28, 33, 34, T13N-R9E-UM	2,560	12.5%	None
ADL-25521 (@)	Sec. 29, 30, 31, 32, T13N-R9E-UM	2,555	12.5%	None
ADL-25522 (@)	Sec. 13, 14, 23, 24, T13N-R8E-UM	2,560	12.5%	None
ADL-25523 (@)	Sec. 25, 26, 35, 36, T13N,R8E-UM	2,560	12.5%	None
ADL-25524 (@)	Sec. 27, 28, 33, 34, T13N-R8E-UM	2,560	12.5%	None
ADL-25525 (@)	Sec. 29, 30, 31, 32, T13N-R6E-UM	2,555	12.5%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25531 (@)	Sec. 1, 2, 11, 12, T12N-R8E-UM	2,560	8.333%	None
ADL-25535 (@)	Sec. 1, 2, 11, 12, T12N-R6E-UPM	2,560	8.333%	None
ADL-25536 (@)	Sec. 3, 4, 9, 10 T12N-R6E-UPM	2,560	8.333%	None
ADL-25537 (@)	Sec. 5, 6, 7, 8 T12N-R6E-UPM	2,437	8.333%	None
ADL-25539 (@)	Sec. 17, 18, 19, 20, T12N-R6E-UPM	1,448	8.333%	None
ADL-25540 (@)	Sec. 15, 16, 21, 22, T12N, R6E-UPM	2,560	8.333%	None
ADL-25541 (@)	Sec. 13, 14, 23, 24, T12N-R6E-UPM	2,560	8.333%	None
ADL-25547 (@)	Sec. 13, 14, 23, 24, T12N-R8E-UM	2,560	8.333%	None
ADL-25548 (@)	Sec. 25, 26, 35, 36, T12N-R8E-UM	2,560	8.333%	None
ADL-25553 (@)	Sec. 29, 30, 31, 32, T12N-R7E-UPM	1,280 1,179	8.333% 9.375%	None None
ADL-25554 (@)	Sec. 25, 26, 35, 36, T12N-R6E-UPM	2,560	9.375%	None
ADL-25555 (@)	Sec. 27, 28, 33, 34, T12N-R6E-UPM	2,560	9.375%	None
ADL-25556 (@)	Sec. 29, 30, 31, 32, T12N-R6E-UPM	2,459	8.333%	None
ADL-25561 (@)	Sec. 5, 6, 7, 8, T11N-R6E-UPM	2,469	8.333%	None
ADL-25562 (@)	Sec. 3, 4, 9, 10, T11N-R6E-UPM	2,560	9.375%	None
ADL-25563 (@)	Sec. 1, 2, 11, 12, T11N-R6E-UPM	2,560	9.375%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25564 (@)	Sec. 5, 6, 7, 8 T11N-R7E-UPM	2,469	9.375%	None
ADL-25569 (@)	Sec. 1, 2, 11, 12, T11N-R8E-UM	2,560	8.333%	None
ADL-25570 (@)	Sec. 13, 14, 23, 24, T11N-R8E-UM	2,560	8.333%	None
ADL-25575 (@)	Sec. 17, 18, 19, 20, T11N-R7E-UPM	2,480	9.375%	None
ADL-25576 (@)	Sec. 13, 14, 23, 24, T11N-R6E-UPM	2,560	9.375%	None
ADL-25577 (@)	Sec. 15, 16, 21, 22, T11N-R6E-UPM	2,560	9.375%	None
ADL-25578 (@)	Sec. 17, 18, 19, 20, T11N-R6E-UPM	2,480	8.333%	None
ADL-25579 (@)	Sec. 29, 30, 31, 32, T11N-R6E-UPM	2,491	8.333%	None
ADL-25580 (@)	Sec. 27, 28, 33, 34, T11N-R6E-UPM	2,560	9.375%	None
ADL-25581 (@)	Sec. 25, 26, 35, 36, T11N-R6E-UPM	2,560	9.375%	None
ADL-25582 (@)	Sec. 29, 30, 31, 32, T11N-R7E-UPM	2,491	9.375%	None
ADL-25583 (@)	Sec. 27, 28, 33, 34, T11N-R7E-UPM	1,920 640	8.333% 9.375%	None None
ADL-25584 (@)	Sec. 25, 26, 35, 36, T11N-R7E-UPM	2,560	8.333%	None
ADL-25585 (@)	Sec. 29, 30, 31, 32, T11N-R8E-UPM	2,491	8.333%	None
ADL-25586 (@)	Sec. 27, 28, 33, 34, T11N-R8E-UPM	2,560	8.333%	None
ADL-25587 (@)	Sec. 25, 26, 35, 36, T11N-R8E-UPM	2,560	8.333%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25588 (@)	Sec. 1, 2, 11, 12, T10N-R8E-UM	2,560	8.333%	None
ADL-25589 (@)	Sec. 3, 4, 9, 10, T10N-R8E-UM	2,560	8.333%	None
ADL-25590 (@)	Sec. 5, 6, 7, 8, T10N-R8E-UM	2,501	8.333%	None
ADL-25591 (@)	Sec. 1, 2, 11, 12, T10N-R7E-UPM	2,560	8.333%	None
ADL-25592 (@)	Sec. 3, 4, 9, 10 T10N-R7E-UPM	1,280 1,280	8.333% 9.375%	None None
ADL-25593 (@)	Sec. 5, 6, 7, 8, T10N-R7E-UPM	612 1,889	8.333% 9.375%	None None
ADL-25594 (@)	Sec. 1, 2, 11, 12, T10N-R6E-UPM	1,280 1,280	8.333% 9.375%	None None
ADL-25595 (@)	Sec. 3, 4, 9, 10 T10N-R6E-UPM	1,280 1,280	8.333% 9.375%	None None
ADL-25596 (@)	Sec. 5, 6, 7, 8, T10N-R6E-UPM	2,501	8.333%	None
ADL-25597 (@)	Sec. 17, 18, 19, 20, T10N-R6E-UPM	2,512	8.333%	None
ADL-25598 (@)	Sec. 15, 16, 21, 22, T10N-R6E-UPM	2,560	8.333%	None
ADL-25599 (@)	Sec. 13, 14, 23, 24, T10N-R6E-UPM	2,560	8.333%	None
ADL-25600 (@)	Sec. 17, 18, 19, 20, T10N-R7E-UPM	2,512	8.333%	None
ADL-25601 (@)	Sec. 15, 16, 21, 22, T10N-R7E-UPM	2,560	8.333%	None
ADL-25602 (@)	Sec. 13, 14, 23, 24, T10N-R7E-UPM	2,560	8.333%	None
ADL-25603 (@)	Sec. 17, 18, 19, 20, T10N-R8E-UPM	2,512	8.333%	None
ADL-25604 (@)	Sec. 15, 16, 21, 22, T10N-R8E-UPM	2,560	8.333%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25605 (@)	Sec. 13, 14, 23, 24, T10N-R8E-UPM	2,560	8.333%	None
ADL-25607 (@)	Sec. 27, 28, 33, 34, T10N-R8E-UM	2,560	8.333%	None
ADL-25608 (@)	Sec. 29, 30, 31, 32, T10N-R8E-UM	2,523	8.333%	None
ADL-25609 (@)	Sec. 25, 26, 35, 36, T10N-R7E-UPM	2,560	8.333%	None
ADL-25610 (@)	Sec. 27, 28, 33, 34, T10N-R7E-UPM	2,560	8.333%	None
ADL-25611 (@)	Sec. 29, 30, 31, 32, T10N-R7E-UPM	2,523	8.333%	None
ADL-25612 (@)	Sec. 25, 26, 35, 36, T10N-R6E-UPM	2,560	8.333%	None
ADL-25613 (@)	Sec. 27, 28, 33, 34, T10N-R6E-UPM	2,560	8.333%	None
ADL-25614 (@)	Sec. 1, 2, 11, 12, T9N-R6E-UPM	2,560	12.5%	None
ADL-25615 (@)	Sec. 5, 6, 7, 8, T9N-R7E-UPM	2,533	12.5%	None
ADL-25616 (@)	Sec. 3, 4, 9, 10, T9N-R7E-UPM	2,560	12.5%	None
ADL-25617 (@)	Sec. 1, 2, 11, 12, T9N-R7E-UPM	2,560	12.5%	None
ADL-25618 (@)	Sec. 5, 6, 7, 8, T9N-R8E-UM	2,533	12.5%	None
ADL-25619 (@)	Sec. 3, 4, 9, 10, T9N-R8E-UM	2,560	12.5%	None
ADL-25622 (@)	Sec. 13, 14, 23, 24, T9N-R7E-UPM	2,560	12.5%	None
ADL-25623 (@)	Sec. 15, 16, 21, 22, T9N-R7E-UPM	2,560	12.5%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25627 (@)	Sec. 3, 4, 9, 10, T12N-R10E-UM	2,560	12.5%	None
ADL-25628 (@)	Sec. 5, 6, 7, 8, T12N-R10E-UM	2,437	12.5%	None
ADL-25629 (@)	Sec. 1, 2, 11, 12, T12N-R9E-UM	2,560	12.5%	None
ADL-25630 (@)	Sec. 3, 4, 9, 10 T12N-R9E-UM	2,560	12.5%	None
ADL-25631 (@)	Sec. 5, 6, 7, 8 T12N-R9E-UM	2,437	12.5%	None
ADL-25632 (@)	Sec. 17, 18, 19, 20, T12N-R9E-UM	2,448	12.5%	None
ADL-25633 (@)	Sec. 15, 16, 21, 22, T12N-R9E-UM	2,560	12.5%	None
ADL-25634 (@)	Sec. 13, 14, 23, 24, T12N-R9E-UM	2,560	12.5%	None
ADL-25635 (@)	Sec. 17, 18, 19, 20, T12N-R10E-UM	2,448	12.5%	None
ADL-25636 (@)	Sec. 15, 16, 21, 22, T12N-R10E-UM	2,560	12.5%	None
ADL-25637 (@)	Sec. 13, 14, 23, 24, T12N-R10E-UM	2,560	12.5%	None
ADL-25640 (@)	Sec. 29, 30, 31, 32, T12N-R10E-UM	2,459	12.5%	None
ADL-25641 (@)	Sec. 25, 26, 35, 36, T12N-R9E-UM	2,560	12.5%	None
ADL-25642 (@)	Sec. 27, 28, 33, 34, T12N-R9E-UM	2,560	12.5%	None
ADL-25643 (@)	Sec. 29, 30, 31, 32, T12N-R9E-UM	2,459	12.5%	None
ADL-25644 (@)	Sec. 5, 6, 7, 8 T11N-R9E-UM	2,469	12.5%	None
ADL-25645 (@)	Sec. 3, 4, 9, 10, T11N-R9E-UM	2,560	12.5%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25646 (@)	Sec. 1, 2, 11, 12, T11N-R9E-UM	2,560	12.5%	None
ADL-25652 (@)	Sec. 17, 18, 19, 20, T11N-R10E-UM	2,480	12.5%	None
ADL-25653 (@)	Sec. 13, 14, 23, 24, T11N-R9E-UM	2,560	12.5%	None
ADL-25654 (@)	Sec. 15, 16, 21, 22, T11N-R9E-UM	2,560	12.5%	None
ADL-25655 (@)	Sec. 17, 18, 19, 20, T11N-R9E-UM	2,480	12.5%	None
ADL-25656 (@)	Sec. 29, 30, 31, 32, T11N-R9E-UM	2,491	12.5%	None
ADL-25657 (@)	Sec. 27, 28, 33, 34, T11N-R9E-UM	2,560	12.5%	None
ADL-25658 (@)	Sec. 25, 26, 35, 36, T11N-R9E-UM	2,560	12.5%	None
ADL-25659 (@)	Sec. 29, 30, 31, 32, T11N-R10E-UM	2,491	12.5%	None
ADL-25665 (@)	Sec. 1, 2, 11, 12, T10N-R9E-UM	2,560	12.5%	None
ADL-25666 (@)	Sec. 3, 4, 9, 10, T10N-R9E-UM	2,560	12.5%	None
ADL-25667 (@)	Sec. 5, 6, 7, 8, T10N-R9E-UM	2,501	12.5%	None
ADL-25668 (@)	Sec. 17, 18, 19, 20, T10N-R9E-UM	2,512	12.5%	None
ADL-25527 (@)(+)	Sec. 5, 6, 7, 8, T12N-R8E-UM	2,437	8.333%	None
ADL-25528 (@) (+)	Sec. 1, 2, 11, 12, T12N-R7E-UPM	2,560	8.333%	None
ADL-25532 (@)(+)	Sec. 3, 4, 9, 10, T12N-R8E-UM	2,560	8.333%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25533 (@)(+)	Sec. 3, 4, 9, 10, T12N-R7E-UPM (4) Sub to FO-27718 and FO-16883 (unsurveyed)	2,560	8.333%	None
ADL-25534 (@)(+)	Sec. 5, 6, 7, 8, T12N-R7E-UPM (5) Sub to FO16883 (unsurveyed) and 27718 (unsurveyed)	2,437	8.333%	None
ADL-25542 (@)(+)	Sec. 17, 18, 19, 20, T12N-R7E-UPM	2,448	8.333%	None
ADL-25543 (@)(+)	Sec. 15, 16, 21, 22, T12N-R7E-UPM	2,560	8.333%	None
ADL-25544 (@)(+)	Sec. 13, 14, 23, 24, T12N-R7E-UPM	2,560	8.333%	None
ADL-25545 (@)(+)	Sec. 17, 18, 19, 20, T12N-R8E-UM	2,448	8.333%	None
ADL-25546 (@)(+)	Sec. 15, 16, 21, 22, T12N-R8E-UM	2,560	8.333%	None
ADL-25549 (@)(+)	Sec. 27, 28, 33, 34, T12N-R8E-UM	2,560	8.333%	None
ADL-25550 (@)(+)	Sec. 29, 30, 31, 32, T12N-R8E-UM	2,459	8.333%	None
ADL-25551 (@)(+)	Sec. 25, 26, 35, 36, T12N-R7E-UPM	2,560	8.333%	None
ADL-25552 (@)(+)	Sec. 27, 28, 33, 34, T12N-R7E-UPM	2,560	8.333%	None
ADL-25565 (@)(+)	Sec. 3, 4, 9, 10, T11N-R7E-UPM	2,560	8.333%	None
ADL-25566 (@)(+)	Sec. 1, 2, 11, 12, T11N-R7E-UPM	2,560	8.333%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-25567 (@)(+)	Sec. 5, 6, 7, 8, T11N-R8E-UM	2,469	8.333%	None
ADL-25568 (@)(+)	Sec. 3, 4, 9, 10, T11N-R8E-UM	2,560	8.333%	None
ADL-25571 (@)(+)	Sec. 15, 16, 21, 22, T11N-R8E-UM	2,560	8.333%	None
ADL-25572 (@)(+)	Sec. 17, 18, 19, 20, T11N-R8E-UM	2,480	8.333%	None
ADL-25573 (@)(+)	Sec. 13, 14, 23, 24, T11N-R7E-UPM	2,560	8.333%	None
ADL-25574 (@)(+)	Sec. 15, 16, 21, 22, T11N-R7E-UPM	2,560	8.333%	None

Footnotes:

(@) Subject to Colville Delta General Agreement with Atlantic Richfield Company.

(+) Subject to Nimrod Joint Operating Agreement with Atlantic Richfield Company.

(B) FEDERAL LEASES

(Including those subject to state selection)

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
F-029659 (*)	Blk 8: All T1N-R20E-UPM	2,560	13.75%	2%
F-029677 (*)	Blk 9: All T1N-R20E-UPM	2,555	13.75%	2%
F-031237 (*)	Blk 7: All T1N-R19E-UPM	2,560	13.75%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
F-031238 (*)	Blk 7: All T1N-R20E-UPM	2,560	13.75%	None
F-032704 (#)	Blk 3: All T5N-R15E-UPM	2,534	25%	2%
F-032768 (#)	Blk 4: All T6N-R14E-UPM	2,560	25%	2%
F-032788	Blk 1: All T7N-R9E-UPM	2,560	25%	2%
F-032790	Blk 2: All T7N-R9E-UPM	2,560	25%	1½%
F-033197	Blk 8: All T8N-R10E-UPM	2,560	25%	2½%
F-033198	Blk 7: All T8N-R10E-UPM	2,560	25%	2½%
F-034434	Blk 8: All T5N-R22E-UPM	2,560	25%	2½%
F-034438	Blk 5: All T5N-R23E-UPM	2,560	25%	3%
F-034811	Blk 1: All T7N-R6E-UPM	2,560	25%	None
F-034813	Blk 2: All T8N-R6E-UPM	2,560	25%	None
F-034814	Blk 5: All T8N-R6E-UPM	2,560	25%	None
F-034815	Blk 6: All T8N-R6E-UPM	2,560	25%	None
F-034816	Blk 7: All T8N-R6E-UPM	2,560	25%	None
F-034817	Blk 8: All T8N-R6E-UPM	2,560	25%	None

Lease Serial No.	Legal Description	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
F-034818	Blk 1: All T7N-R7E-UPM	2,560	25%	None
F-034819	Blk 2: All T7N-R7E-UPM	2,560	25%	None
F-034820	Blk 3: All T7N-R7E-UPM	2,471	25%	None
F-034821	Blk 4: All T8N-R7E-UPM	2,450	25%	None
F-034822	Blk 1: All T7N-R8E-UPM	2,560	25%	None
F-034823	Blk 2: All T7N-R8E-UPM	2,560	25%	None
F-034824	Blk 3: All T7N-R8E-UPM	2,471	25%	None
F-034825	Blk 8: All T8N-R8E-UPM	2,560	25%	None
F-034829	Blk 1: All T6N-R8E-UPM	2,560	25%	None
F-021270 (*)	Secs. 17, 19, 20, T1N-R20E-UPM	1,914	13.75%	2½%
F-021271 (*)	Secs. 16, 21, 22, T1N-R20E-UPM	1,920	13.75%	2½%
F-10 (*)	Blk 2: All T1S-R21E-UM	2,560	13.75%	None
F-11 (*)	Blk 3: All T1S-R21E-UM	2,444	10.625%	None
F-12 (*)	Blk 9: All T1N-R21E-UM	2,555	10.625%	None

Footnotes:

(*) Subject to Kemik Unit Operating Agreement. Subject to assignment of all rights to BP Alaska Exploration, Inc., upon the completion of Kemik Unit No. 2 well.

(#) Sohio's 25% interest subject to Farmont Agreement with Mobil and Phillips who have earned 1/2 interest to depth of 4,666 feet.

PART 2

LEASES SUBJECT TO JOINT VENTURE AGREEMENT
STATE OF ALASKA 23RD COMPETITIVE SALE
BETWEEN GULF OIL CORPORATION, BP ALASKA, INC.
AND BP OIL CORPORATION, DATED OCTOBER 1, 1969

Lease Serial No.	Legal Descripttion	Gross Acres	Sohio Working Interest	Overriding Royalty Interests
ADL-47416	Sec. 1, 2, 11, 12, T13N-R6E-UM	2,560	2.5%	None
ADL-47417	Sec. 3, 4, 9, 10, T13N-R6E-UM	2,560	6.75%	None

Exhibit CG - 2
Docket No. CP75 - 257
3 pages and 16
pages of Exhibit X

Letter to Columbia Gas Transmission

and Exhibit X

BP Alaska Inc. 100 Pine Street, San Francisco, California 94111. Telephone (415) 445-9400

February 28, 1975

Columbia Gas Transmission Corporation
20 Montchanin Road
Wilmington, Delaware 19807

Gentlemen:

We take this means of responding to your inquiry as to whether we would be willing to provide you with gas which we may have for sale in the future in the State of Alaska from existing leases now held by us.

At this time we have the following interests in Alaska as far as they pertain to the subject matter of this letter.

1. BP Alaska Inc. ("Alaska") owns a net profits interest in the Prudhoe Bay area leases which are described in Exhibit A, Part I, to the Master Gas Agreement entered into between Alaska and Northern Natural Gas Company ("Northern Natural") as of January 1, 1972, a copy of which has been furnished to you, such Master Gas Agreement having heretofore been assigned by Alaska to BP Alaska Exploration Inc. ("Exploration"). On February 27, 1973, Alaska and Exploration entered into a Gas Option Agreement whereby Exploration has the right to take certain gas from Alaska's said net profits interest to help Exploration meet its obligation under the Master Gas Agreement. On February 27, 1973, by letter to BP Oil Corporation (now Sohio Petroleum Company), Alaska elected to take in kind under the Net Profits Interest gas to enable it to comply with the Gas Option Agreement.

2. Exploration, in addition to holding the Gas Option Agreement with Alaska referred to above, owns varying interests in leases shown in Exhibit X hereto. The gas covered by the Gas Option Agreement and gas from certain of the leases in Exhibit X are subject to the right and option of Northern Natural to purchase up to 3 trillion cubic feet under the Master Gas Agreement.

RECEIVED
MAR 4 1975
D. C. H.
VICE PRESIDENT

Alaska and Exploration are willing to give and hereby give you the right and option to purchase gas as follows from the interests in certain existing oil and gas leases now held by Alaska and Exploration. This right and option shall be for a quantity of gas up to 5.6 trillion cubic feet during the life of the Prudhoe Bay field, less such gas as you will be entitled to receive under the Preliminary Gas Agreement dated August 3, 1971, as amended, between you and Sohio Petroleum Company, from the Prudhoe Bay leases described in Exhibit A to that Agreement.

Subject to such limitation, Alaska and Exploration give you this right and option with respect to the following quantities of gas:

(a) By Alaska, the gas attributable to its aforesaid Net Profits Interest over and above that delivered to Exploration under the Gas Option Agreement provided, however, that Alaska shall be under no obligation, and does not intend, to take gas in kind simply for the purpose of delivering it to Columbia because gas delivered to Columbia under the Preliminary Gas Agreement, as amended, includes gas attributable to the Net Profits Interest not taken in kind by Alaska. Alaska shall, however, deliver to Columbia any gas Alaska takes in kind under the aforesaid letter of February 27, 1973, but only if and to the extent that such gas is in excess of the amount Alaska needs to comply with its obligation under the Gas Option Agreement.

(b) By Exploration, a quantity equal to the sum of (1) the gas available under the Gas Option Agreement, and (2) the gas from its interests in the leases described in Exhibit X hereto, insofar as this sum exceeds the gas required to meet the 3 trillion cubic feet obligation to Northern Natural under the Master Gas Agreement.

Any gas sold to Columbia by Alaska and Exploration shall be priced in accordance with Article IV of the Master Gas Agreement and shall be sold subject to a Gas Sale and Purchase Agreement the same as or substantially similar to Exhibit B to the Master Gas Agreement. Columbia agrees to purchase such gas at such prices and under the terms and conditions of such a Gas Purchase and Sale Agreement.

The right and option granted Columbia hereunder shall at all times be subject to the prior rights and interests of Northern Natural under the Master Gas Agreement.

By making this dedication of gas from its interests in the leases in Exhibit X, Exploration does not limit its right to sell, unitize, farmout, or otherwise manage, operate or otherwise dispose of any lease or any interest therein free and clear of any obligation to Columbia hereunder. Sale or other disposition by Alaska of any interest in its aforesaid net profits interest shall be subject to your rights to gas as set out in this letter.

Very truly yours,

BP ALASKA INC.

By _____

BP ALASKA EXPLORATION INC.

By _____

EXHIBIT X

TO FEBRUARY 28, - A.J.E - 2/28/75

LETTER DATED ~~JANUARY 15,~~ 1975

FROM

BP ALASKA INC. AND BP ALASKA EXPLORATION INC.

TO

COLUMBIA GAS TRANSMISSION CORPORATION

E X H I B I T X

DESCRIPTION OF PROPERTIES

RAINBOW AREA

LEASE SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
F-033197 (**)	Blk. 8: All, T8N-R10E-UPM	2,560
F-033198 (**)	Blk. 7: All, T8N-R10E-UPM	2,560
F-034811	Blk. 1: All, T7N-R6E-UPM	2,560
F-034813	Blk. 2: All, T8N-R6E-UPM	2,560
F-034814	Blk. 5: All, T8N-R6E-UPM	2,560
F-034815	Blk. 6: All, T8N-R6E-UPM	2,560
F-034816	Blk. 7: All, T8N-R6E-UPM	2,560
F-034817	Blk. 8: All, T8N-R6E-UPM	2,560
F-034818	Blk. 1: All, T7N-R7E-UPM	2,560
F-034819	Blk. 2: All, T7N-R7E-UPM	2,560
F-034820	Secs. 5, 6, 7, 8, T7N-R7E-UPM	2,471
F-034821	Blk. 4: All, T8N-R7E-UPM	2,450
F-034822	Blk. 1: All, T7N-R8E-UPM	2,560
F-034823	Blk. 2: All, T7N-R8E-UPM	2,560
F-034824	Secs. 5, 6, 7, 8, T7N-R8E-UPM	2,471
F-034825	Blk. 8: All, T8N-R8E-UPM	2,560
F-034829	Blk. 1: All, T6N-R8E-UPM	2,560
	Total ----------	43,143

(**) Subject to 2 1/2% O.R.R. Interest

E X H I B I T X

DESCRIPTION OF PROPERTIES

FRANKLIN BLUFFS AREA

LEASE SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
ADL-64683 (*) formerly F-032704	Secs. 5, 6, 7, 8, T5N-R15E-UPM	2,534
ADL-64697 (*) formerly F-032768	Blk. 7: All, T6N-R14E-UPM	2,560
	Total --------	5,094

(*) Subject to 2% O.R.R. Interest

E X H I B I T X

DESCRIPTION OF PROPERTIES

KEMIK UNIT AREA

LEASE SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
F-031237	Blk. 7: All, T1N-R19E-UPM	2,560
F-029659 (*)	Blk. 8: All, T1N-R20E-UPM	2,560
F-029677 (*)	Blk. 9: All, T1N-R20E-UPM	2,555
F-021270 (**)	Secs. 17, 19, 20, T1N-R20E-UPM	1,914
F-021271 (**)	Secs. 16, 21, 22, T1N-R20E-UPM	1,920
F-031238	Secs. 25, 26, 35, 36, T1N-R20E-UPM	2,560
F-10	Secs. 3, 4, 9, 10, T1S-R21E-UPM	2,560
F-11	Secs. 5, 6, 7, 8, T1S-R21E-UPM	2,444
ADL-65448 formerly F-12	Secs. 29, 30, 31, 32, T1N-R21E-UPM	2,555
	Total --------	21,628

(*) Subject to 2% O.R.R. Interest
(**) Subject to 2 1/2% O.R.R. Interest

E X H I B I T X

DESCRIPTION OF PROPERTIES
PRIORITY FEDERAL LEASE APPLICATIONS

SURPRISE CREEK

SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
F-344	Blk. 7: All, T6S-R45W-UPM	2,560
F-345	Blk. 8: All, T6S-R45W-UPM	2,560
F-346	Blk. 9: All, T6S-R45W-UPM	2,495
F-348	Blk. 5: All, T6S-R46W-UPM	2,560
F-349	Blk. 6: All, T6S-R46W-UPM	2,560
F-352	Blk. 5: All, T7S-R46W-UPM	2,560
F-359	Blk. 6: All, T7S-R46W-UPM	2,560
F-360	Blk. 9: All, T6S-R46W-UPM	2,495
F-361	Blk. 3: All, T7S-R45W-UPM	2,505
F-362	Blk. 1: All, T7S-R46W-UPM	2,560
F-363	Blk. 2: All, T7S-R46W-UPM	2,560
F-364	Blk. 3: All, T7S-R46W-UPM	2,505
F-365	Blk. 4: All, T7S-R46W-UPM	2,515
	Total --------	32,995

N.B. These are only applications.

E X H I B I T X

DESCRIPTION OF PROPERTIES
PRIORITY FEDERAL LEASE APPLICATIONS

KILLIK RIVER

SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
F-8453	Blk. 6: All, T11S-R8W-UPM	2,560
F-8454	Blk. 2: All, T11S-R12W-UPM	2,560
F-8455	Blk. 4: All, T11S-R10W-UPM	2,516
F-8456	Blk. 1: All, T11S-R11W-UPM	2,560
F-8457	Blk. 6: All, T11S-R12W-UPM	2,560
F-8458	Blk. 5: All, T11S-R13W-UPM	2,560
F-8459	Blk. 6: All, T11S-R14W-UPM	2,560
F-8460	Blk. 1: All, T11S-R5W-UPM	2,560
F-8461	Blk. 4: All, T11S-R6W-UPM	2,516
F-8462	Blk. 1: All, T11S-R7W-UPM	2,560
F-8463	Blk. 4: All, T11S-R8W-UPM	2,516
F-8464	Blk. 3: All, T11S-R9W-UPM	2,506
F-8465	Blk. 6: All, T11S-R10W-UPM	2,560
F-8466	Blk. 5: All, T11S-R11W-UPM	2,560
F-8467	Blk. 3: All, T11S-R13W-UPM	2,506
F-8468	Blk. 4: All, T11S-R14W-UPM	2,516
F-8469	Blk. 2: All, T11S-R15W-UPM	2,560
F-8470	Blk. 8: All, T11S-R5W-UPM	2,560
F-8471	Blk. 6: All, T11S-R5W-UPM	2,560
F-8472	Blk. 4: All, T11S-R5W-UPM	2,516
F-8473	Blk. 2: All, T11S-R5W-UPM	2,560

Continued.....

E X H I B I T X

DESCRIPTION OF PROPERTIES
PRIORITY FEDERAL LEASE APPLICATIONS

KILLIK RIVER

SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
F-8474	Blk. 9: All, T11S-R6W-UPM	2,526
F-8475	Blk. 7: All, T11S-R6W-UPM	2,560
F-8476	Blk. 5: All, T11S-R6W-UPM	2,560
F-8477	Blk. 3: All, T11S-R6W-UPM	2,506
F-8478	Blk. 1: All, T11S-R6W-UPM	2,560
F-8479	Blk. 4: All, T11S-R12W-UPM	2,516
F-8480	Blk. 6: All, T11S-R7W-UPM	2,560
F-8481	Blk. 4: All, T11S-R7W-UPM	2,516
F-8482	Blk. 2: All, T11S-R7W-UPM	2,560
F-8483	Blk. 9: All, T11S-R8W-UPM	2,526
F-8484	Blk. 7: All, T11S-R8W-UPM	2,560
F-8485	Blk. 5: All, T11S-R8W-UPM	2,560
F-8486	Blk. 1: All, T11S-R8W-UPM	2,560
F-8487	Blk. 8: All, T11S-R9W-UPM	2,560
F-8488	Blk. 6: All, T11S-R9W-UPM	2,560
F-8489	Blk. 4: All, T11S-R9W-UPM	2,516
F-8490	Blk. 1: All, T11S-R9W-UPM	2,560
F-8491	Blk. 9: All, T11S-R10W-UPM	2,526
F-8492	Blk. 7: All, T11S-R10W-UPM	2,560
F-8493	Blk. 5: All, T11S-R10W-UPM	2,560
F-8494	Blk. 3: All, T11S-R10W-UPM	2,506
F-8495	Blk. 1: All, T11S-R10W-UPM	2,560

Continued.....

E X H I B I T X

DESCRIPTION OF PROPERTIES
PRIORITY FEDERAL LEASE APPLICATIONS

KILLIK RIVER

SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
F-8496	Blk. 8: All, T11S-R11W-UPM	2,560
F-8497	Blk. 6: All, T11S-R11W-UPM	2,560
F-8498	Blk. 4: All, T11S-R11W-UPM	2,516
F-8499	Blk. 2: All, T11S-R11W-UPM	2,560
F-8500	Blk. 9: All, T11S-R12W-UPM	2,526
F-8501	Blk. 7: All, T11S-R12W-UPM	2,560
F-8502	Blk. 5: All, T11S-R12W-UPM	2,560
F-8503	Blk. 3: All, T11S-R12W-UPM	2,506
F-8504	Blk. 1: All, T11S-R12W-UPM	2,560
F-8505	Blk. 8: All, T11S-R13W-UPM	2,560
F-8506	Blk. 6: All, T11S-R13W-UPM	2,560
F-8507	Blk. 4: All, T11S-R13W-UPM	2,516
F-8508	Blk. 2: All, T11S-R6W-UPM	2,560
F-8509**	Blk. 2: All, T11S-R13W-UPM	2,560**
F-8510	Blk. 9: All, T11S-R14W-UPM	2,526
F-8511	Blk. 7: All, T11S-R14W-UPM	2,560
F-8512	Blk. 5: All, T11S-R14W-UPM	2,560
F-8513	Blk. 3: All, T11S-R14W-UPM	2,506
F-8514	Blk. 1: All, T11S-R14W-UPM	2,560

Continued.....

E X H I B I T X

DESCRIPTION OF PROPERTIES
PRIORITY FEDERAL LEASE APPLICATIONS

KILLIK RIVER

SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
F-8515	Blk. 8: All, T11S-R15W-UPM	2,560
F-8516	Blk. 6: All, T11S-R15W-UPM	2,560
F-8517	Blk. 3: All, T11S-R15W-UPM	2,506
	Total.....	165,412

** Not first priority filing

N.B. These are only applications.

E X H I B I T X

DESCRIPTION OF PROPERTIES

CANNING RIVER AREA

LEASE SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
ADL-65982 formerly F-034434 (**)	Secs. 27, 28, 33, 34, T5N-R22E-UPM	2,560
F-034438 (+)	Blk. 5: All, T5N-R23E-UPM	2,560
	Total ----------	5,120

(**) Subject to 2 1/2% O.R.R. Interest

(+) Subject to 3% O.R.R. Interest

E X H I B I T X

DESCRIPTION OF PROPERTIES
PRIORITY FEDERAL LEASE APPLICATIONS

GUBIK AREA

SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
F-2203	Blk. 3: All, T1N-R4E-UPM	2,560
	Total -----	2,560

N.B. This is only an application.

EXHIBIT X

DESCRIPTION OF PROPERTIES

COLVILLE DELTA AREA

PIKONIK, KACHEMACH, SPRUCE TREE

LEASE SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
ADL-25512	T13N-R9E, Secs. 17, 18, 19, 20-UM	2,544
ADL-25513	T13N-R9E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25519	T13N-R9E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25520	T13N-R9E, Secs. 27, 28, 33, 34-UM	2,560
ADL-25521	T13N-R9E, Secs. 29, 30, 31, 32-UM	2,555
ADL-25522	T13N-R8E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25523	T13N-R8E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25524	T13N-R8E, Secs. 27, 28, 33, 34-UM	2,560
ADL-25525	T13N-R6E, Secs. 29, 30, 31, 32-UM	2,555
ADL-25527	T12N-R8E, Secs. 5, 6, 7, 8-UM	2,437
ADL-25528	T12N-R7E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25531	T12N-R8E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25532	T12N-R8E, Secs. 3, 4, 9, 10 Exc. SE¼-UM	2,400
ADL-25532	T12N-R8E, Secs. 10 SE ¼-UM	160
ADL-25533	T12N-R7E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25534	T12N-R7E, Secs. 5, 6, 7, 8-UM	2,437
ADL-25535	T12N-R6E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25536	T12N-R6E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25537	T12N-R6E, Secs. 5, 6, 7, 8-UM	2,437
ADL-25539	T12N-R6E, Secs. 17, 18, 19, 20-UM	2,448
ADL-25540	T12N-R6E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25541	T12N-R6E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25542	T12N-R7E, Secs. 17, 18, 19, 20-UM	2,448
ADL-25543	T12N-R7E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25544	T12N-R7E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25545	T12N-R8E, Secs. 17, 18, 19, 20-UM	2,448
ADL-25546	T12N-R8E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25547	T12N-R8E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25548	T12N-R8E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25549	T12N-R8E, Secs. 27, 28, 33, 34-UM	2,560

E X H I B I T X

DESCRIPTION OF PROPERTIES

COLVILLE DELTA AREA

PIKONIK, KACHEMACH, SPRUCE TREE

LEASE SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
ADL-25550	T12N-R8E, Secs. 29, 30, 31, 32-UM	2,459
ADL-25551	T12N-R7E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25552	T12N-R7E, Secs. 27, 28, 33, 34-UM	2,560
ADL-25553	T12N-R7E, Secs. 29, 32-UM	1,280
ADL-25553	T12N-R7E, Secs. 30, 31-UM	1,179
ADL-25554	T12N-R6E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25555	T12N-R6E, Secs. 27, 28, 33. 34-UM	2,560
ADL-25556	T12N-R6E, Secs. 29, 30, 31, 32-UM	2,459
ADL-25561	T11N-R6E, Secs. 5, 6, 7, 8-UM	2,469
ADL-25562	T11N-R6E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25563	T11N-R6E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25564	T11N-R7E, Secs. 5, 6, 7, 8-UM	2,469
ADL-25565	T11N-R7E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25566	T11N-R7E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25567	T11N-R8E, Secs. 5, 6, 7, 8-UM	2,469
ADL-25568	T11N-R8E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25569	T11N-R8E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25570	T11N-R8E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25571	T11N-R8E, Secs. 15, 16, 21,22-UM	2,560
ADL-25572	T11N-R8E, Secs. 17, 18, 19, 20-UM	2,480
ADL-25573	T11N-R7E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25574	T11N-R7E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25575	T11N-R7E, Secs. 17, 18, 19, 20-UM	2,480
ADL-25576	T11N-R6E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25577	T11N-R6E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25578	T11N-R6E, Secs. 17, 18, 19, 20-UM	2,480
ADL-25579	T11N-R6E, Secs. 29, 30, 31, 32-UM	2,491
ADL-25580	T11N-R6E, Secs. 27, 28, 33, 34-UM	2,560
ADL-25581	T11N-R6E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25582	T11N-R7E, Secs. 29, 30, 31, 32-UM	2,491

EXHIBIT X

DESCRIPTION OF PROPERTIES

COLVILLE DELTA AREA

PIKONIK, KACHEMACH, SPRUCE TREE

LEASE SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
ADL-25583	T11N-R7E, Sec. 33-UM	640
ADL-25583	T11N-R7E, Secs. 27, 28, 34-UM	1,920
ADL-25584	T11N-R7E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25585	T11N-R8E, Secs. 29, 30, 31, 32-UM	2,491
ADL-25586	T11N-R8E, Secs. 27, 28, 33, 34-UM	2,560
ADL-25587	T11N-R8E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25588	T10N-R8E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25589	T10N-R8E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25590	T10N-R8E, Secs. 5, 6, 7, 8-UM	2,501
ADL-25591	T10N-R7E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25592	T10N-R7E, Secs. 3, 10-UM	1,280
ADL-25592	T10N-R7E, Secs. 4, 9-UM	1,280
ADL-25593	T10N-R7E, Secs. 5, 6, 8-UM	1,889
ADL-25593	T10N-R7E, Sec. 7-UM	612
ADL-25594	T10N-R6E, Secs. 1, 2-UM	1,280
ADL-25594	T10N-R6E, Secs. 11, 12-UM	1,280
ADL-25595	T10N-R6E, Secs. 3, 4-UM	1,280
ADL-25595	T10N-R6E, Secs. 9, 10-UM	1,280
ADL-25596	T10N-R6E, Secs. 5, 6, 7, 8-UM	2,501
ADL-25597	T10N-R6E, Secs. 17, 18, 19, 20-UM	2,512
ADL-25598	T10N-R6E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25599	T10N-R6E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25600	T10N-R7E, Secs. 17, 18, 19, 20-UM	2,512
ADL-25601	T10N-R7E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25602	T10N-R7E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25603	T10N-R8E, Secs. 17, 18, 19, 20-UM	2,512
ADL-25604	T10N-R8E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25605	T10N-R8E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25607	T10N-R8E, Secs. 27, 28, 33, 34-UM	2,560

EXHIBIT X

DESCRIPTION OF PROPERTIES

COVILLE DELTA AREA

PIKONIK, KACHEMACH, SPRUCE TREE

LEASE SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
ADL-25608	T10N-R8E, Secs. 29, 30, 31, 32-UM	2,523
ADL-25609	T10N-R7E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25610	T10N-R7E, Secs. 27, 28, 33, 34-UM	2,560
ADL-25611	T10N-R7E, Secs. 29, 30, 31, 32-UM	2,523
ADL-25612	T10N-R6E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25613	T10N-R6E, Secs. 27, 28, 33, 34-UM	2,560
ADL-25614	T9N-R6E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25615	T9N-R7E, Secs. 5, 6, 7, 8-UM	2,533
ADL-25616	T9N-R7E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25617	T9N-R7E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25618	T9N-R8E, Secs. 5, 6, 7, 8-UM	2,533
ADL-25619	T9N-R8E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25622	T9N-R7E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25623	T9N-R7E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25627	T12N-R10E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25628	T12N-R10E, Secs. 5, 6, 7, 8-UM	2,437
ADL-25629	T12N-R9E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25630	T12N-R9E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25631	T12N-R9E, Secs. 5, 6, 7, 8-UM	2,437
ADL-25632	T12N-R9E, Secs. 17, 18, 19, 20-UM	2,448
ADL-25633	T12N-R9E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25634	T12N-R9E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25635	T12N-R10E, Secs. 17, 18, 19, 20-UM	2,448
ADL-25636	T12N-R10E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25637	T12N-R10E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25640	T12N-R10E, Secs. 29, 30, 31, 32-UM	2,459

E X H I B I T X

DESCRIPTION OF PROPERTIES

COLVILLE DELTA AREA

PIKONIK, KACHEMACH, SPRUCE TREE

LEASE SERIAL NO.	LEGAL DESCRIPTION	GROSS ACRES
ADL-25641	T12N-R9E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25642	T12N-R9E, Secs. 27, 28, 33, 34-UM	2,560
ADL-25643	T12N-R9E, Secs. 29, 30, 31, 32-UM	2,459
ADL-25644	T11N-R9E, Secs. 5, 6, 7, 8-UM	2,469
ADL-25645	T11N-R9E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25646	T11N-R9E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25652	T11N-R10E, Secs. 17, 18, 19, 20-UM	2,480
ADL-25653	T11N-R9E, Secs. 13, 14, 23, 24-UM	2,560
ADL-25654	T11N-R9E, Secs. 15, 16, 21, 22-UM	2,560
ADL-25655	T11N-R9E, Secs. 17, 18, 19, 20-UM	2,480
ADL-25656	T11N-R9E, Secs. 29, 30, 31, 32-UM	2,491
ADL-25657	T11N-R9E, Secs. 27, 28, 33, 34-UM	2,560
ADL-25658	T11N-R9E, Secs. 25, 26, 35, 36-UM	2,560
ADL-25659	T11N-R10E, Secs. 29, 30, 31, 32-UM	2,491
ADL-25665	T10N-R9E, Secs. 1, 2, 11, 12-UM	2,560
ADL-25666	T10N-R9E, Secs. 3, 4, 9, 10-UM	2,560
ADL-25667	T10N-R9E, Secs. 5, 6, 7, 8-UM	2,501
ADL-25668	T10N-R9E, Secs. 17, 18, 19, 20-UM	2,512

NOTE:

1. The leases referred to in this Exhibit X are subject to the Operating Agreement (Alaskan Properties Other Than Prudhoe) dated August 1, 1969, between Sohio Petroleum Company (Del.) (formerly BP Oil Corporation) and BP Alaska Exploration Inc. (by assignment from BP Alaska Inc.).

2. The lease applications referred to in this Exhibit X, are subject to the Agreement Concerning Certain Leases for Which Applications Have Been Filed, dated October 10, 1969, between Sohio Petroleum Company (Del.) (formerly BP Oil Corporation) and BP Alaska Exploration Inc. (by assignment from BP Alaska Inc.) (excepting the lease application under the heading of Gubik Area), and to the Joint Venture Agreement, North Slope Exploration Joint Venture, between BP Alaska Exploration Inc. (by assignment from BP Alaska Inc.) and Gulf Oil Corporation, dated January 1, 1970.

3. The leases referred to on pages 1-10 of this Exhibit X are subject to the Joint Venture Agreement, North Slope Exploration Joint Venture, between BP Alaska Exploration Inc. (by assignment from BP Alaska Inc.) and Gulf Oil Corporation, dated January 1, 1970.

4. The leases referred to on pages 1-10 of this Exhibit X are subject to the Master Gas Agreement dated January 1, 1972, between BP Alaska Exploration Inc. (by assignment from BP Alaska Inc.) and Northern Natural Gas Company.

5. The leases referred to on page 3 of this Exhibit X are subject to the Kemik Unit Operating Agreement dated September 5, 1970.

FEBRUARY ~~28~~, 1975 WJ E. 2/28/75

IDENTIFIED AS EXHIBIT X (pages 1 through 16) TO LETTER DATED ~~JANUARY 15, 1975~~ FROM BP ALASKA INC. AND BP ALASKA EXPLORATION INC. TO COLUMBIA GAS TRANSMISSION CORPORATION.

BP ALASKA INC.

By H C Rockwood

BP ALASKA EXPLORATION INC.

By H C Rockwood

SOHIO PIPE LINE COMPANY

BP BUILDING, 3111 "C" STREET
ANCHORAGE, ALASKA

TELEPHONE: (907) 274-2955

GOVERNMENT AND PUBLIC AFFAIRS DEPARTMENT

MAIL: P.O. BOX 4-2329
ANCHORAGE, ALASKA 99509

February 3, 1977

Honorable John L. Rader
ALASKA STATE SENATE
Pouch V
State Capitol Building
Juneau, Alaska 99811

The agreement between SOHIO and Columbia Gas covering our Purdhoe Bay gas reserves was discussed at the Joint Committee hearings on February 1, 1977. It became apparent to me that there were several misunderstandings regarding our agreement and to clear up those misunderstandings we are enclosing a copy of our Mr. Spahr's letter to you dated March 10, 1976. This letter gives a good summary of the transaction and the reasons for making such an agreement in 1971.

We are anxious for the Legislature to have a correct understanding of this transaction and would be willing to appear before an appropriate committee to expand on the enclosed letter if you deem it desirable.

I plan to return to Juneau on Wednesday, February 9.

K. E. Showalter

K. E. Showalter

KES:ft

Enclosure

cc: R. M. Donaldson

SOHIO THE STANDARD OIL COMPANY
MIDLAND BUILDING, CLEVELAND, OHIO, 44115

March 10, 1976

CHARLES E. SPAHR
CHAIRMAN

The Honorable John L. Rader, Chairman
Gas Pipeline Impact Committee
Alaska State Capital
State Capitol Building
Pouch V
Juneau, Alaska 99801

Dear Senator Rader:

I know that you are working hard for a gas pipeline that would be built from Prudhoe Bay south through Alaska, possibly along much of the right-of-way for the Trans Alaska Pipeline now under construction. I also understand your hope that Sohio could be able to support such a gas pipeline by committing its Prudhoe Bay gas to the proposed pipeline.

On February 19th in our response to questions you had asked on behalf of the Gas Pipeline Impact Committee we indicated that Sohio had entered into a Preliminary Gas Agreement with Columbia Gas dated August 3, 1971 covering our Alaskan gas. This agreement is still in effect and I expect that it will remain in effect. It gives Columbia Gas control of the ultimate disposition of the gas, subject to appropriate federal and state regulations and subject to Sohio and Columbia Gas reaching a final agreement on the price of the gas.

Our agreement with Columbia Gas is probably not fully understood by many in Alaska and elsewhere, and in fact, is a little bit complicated. It did serve as an important part of the early financing of the development of Sohio Prudhoe leases. I think your committee might find it useful to have a summary of what our agreement with Columbia Gas is all about and that's the purpose of this letter.

The Preliminary Gas Agreement covers all of Sohio's Alaskan gas except that which may be used for field purposes. The State of Alaska's royalty gas from our leases will be included unless the State elects to take its royalty in kind. In addition gas attributable to BP's net profits royalty interest in our leases will be included unless BP elects to take its royalty in kind. The agreement further provides that either Sohio or Columbia Gas may cause the other to enter into negotiations looking toward the signing of a regular gas purchase and sales contract of the type appended to the Preliminary Agreement as an exhibit. A regular agreement has not been signed nor have the negotiations started because there are

still too many unknowns at this time with respect to the gas. These include how much gas Sohio will have available for sale, the rate the gas will be produced and when the production will start.

In order to get this right to negotiate for our gas, Columbia Gas was willing to pay us an advance of $175 million as long as we used the money to develop our Prudhoe Bay leases. Sohio received the money in 1971, 1974, and 1975 and has used it for this purpose. Columbia Gas needed some assurance of getting its money back within a reasonable number of years. Since the timing of gas production was so uncertain, Sohio agreed it would repay the $175 million advance in Prudhoe Bay oil after the field started producing. This advance and the repayment were provided for in a document called an Agreement for Sale and Purchase of Crude Oil. In effect, Columbia has bought $175 million worth of oil for future delivery and paid for it in advance. When Columbia sells the oil it gets from us and receives an amount equal to the advance plus interest, the oil agreement will be at an end. Columbia has appointed Sohio as its agent to sell this oil on its behalf. In summary, Columbia Gas has loaned Sohio $175 million to get the right to negotiate for the purchase of Sohio's Prudhoe Bay gas.

Both the Preliminary Gas Agreement and the Agreement for Sale and Purchase of Crude Oil are lengthy documents but if you want copies, I will be glad to send them to you.

Further background on these agreements might also be helpful. Our agreement with Columbia Gas was the first to be entered into with respect to Prudhoe Bay gas and many have asked us why we did this as early as 1971. I think the step we took was a good one, particularly in view of the financing problems we had at the time. When Sohio acquired its oil and gas interests in Alaska from BP in 1970, it recognized that the development costs of the field and the cost of building an oil pipeline across the State of Alaska, together with tankers to move the oil to the lower 48 states, would be a monumental physical and financial task. This was particularly true because Sohio was, and is, relatively small when compared to the size of this development. Consequently, as soon as the BP transaction had been agreed upon, we undertook to study every possible source of funds that was available to Sohio for this development. In making these studies, we kept in mind our need to preserve as much of our normal borrowing power as we could for the tremendous capital requirements of the oil pipeline once that project commenced.

We knew Sohio now had large oil and gas reserves in Alaska and that such reserves would have a sizable loan value as a source of development money, if they were located in the lower 48 states near transportation facilities.

We talked to banks about loans which would, in effect, be secured by a pledge of future production from these reserves. We met with no success. The oil pipeline project had been stopped by the courts, and the banks told us, in effect, that they would not loan money on a non-recourse basis against these reserves. The banks said that until the pipe started to go into the ground, non-recourse loans supported solely by these reserves would not be made. Additional credit would have to be pledged. They could not take the risk of loaning money solely against the reserves and then find that the pipeline would never be built. Unfortunately, all during this time inflation and environmental constraints were increasing the development costs by leaps and bounds.

Faced with this situation, Sohio conceived and entered into the agreements with Columbia Gas. In return for agreeing to negotiate with Columbia for our gas, we were able in effect to use part of Columbia's borrowing power to supplement our own. By getting the money from Columbia we were able to carry on a continuous drilling program at Prudhoe during years when some owners stopped drilling completely.

With this perspective and the fact that Columbia Gas will probably be the company determining and arranging for the transportation of this gas, I don't think Sohio should make any statements that could be interpreted as a commitment to any particular gas pipeline project. This would be contrary to the spirit of our agreements with Columbia Gas. This is also consistent with the Statement of Position we filed with the Federal Power Commission in April, 1975.

The State of Alaska and Sohio do have a mutual interest in seeing a pipeline to transport Prudhoe Bay gas. We hope that the current process involving all the interested parties and evaluating the alternative proposals will result in the selection of the project that is best for everyone. Your committee's proceedings will add to this record. Whether or not the matter is finally resolved in the Congress remains to be seen, but we all hope for an early determination.

One other matter ought to be mentioned here. Though I am not thoroughly familiar with the arrangements other companies have made with respect to their Prudhoe gas, I believe that some made agreements which provided for advances to be made by the gas companies with the provision that if such advances did not become part of the rate base of the gas company, the agreement would not be effective. Our agreement with Columbia Gas has no such provision.

Sincerely,

C. E. Spahr

CES:el

SCOMM

#21:5

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

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January 28, 1977

House Special Committee and
Senate Special Committee to
Consider the Sale of Royalty Gas
The Legislature of the State of Alaska
State Capitol
Juneau, Alaska 99811

Gentlemen:

You have requested my review and analysis of the contracts by and between the Commissioner of Natural Resources of the State of Alaska acting pursuant to AS 38.05-.183(d), seller, and Tenneco Alaskan, Inc., El Paso Natural Gas Company and Southern Natural Gas Company, buyers. The contracts in question are each in two parts, one part denominated "General Terms and Conditions," and the other denominated "Royalty Gas Sales Agreement."

I express no opinion on matters relating to title, taxes, or compliance with State contracting requirements. My opinions here offered are limited, as requested, to a legal analysis of the contracts, and an assessment of the merits, and demerits, of the various provisions thereof.

To submit my opinions in these areas, I have reviewed the contracts in question, and a summary of Commissioner Martin's negotiations as furnished to me by the Office of the Attorney General of the State of Alaska. I believe these materials to be sufficient to render the requested analysis, but my comments are necessarily limited to the materials which were available to me for review.

I wish to make clear also that I do not arrogate to myself the formulation or expression of an opinion as to whether the contracts in question should, or should not, be approved by the Legislature. The vote of each member must necessarily be cast in terms of his own appraisal of the contracts, giving due and

appropriate regard to the constituency which he represents, their wishes and best interests, and his perception of where the interests of the State lie. It would be most presumptuous for me to offer an opinion on a matter so peculiarly within the responsibility of elected representatives, particularly when my exposure to the people, the economy and the planning of the State of Alaska is as limited as it is.

Finally, it must be clearly recognized that an analysis of contracts already negotiated, and an appraisal of whether those contracts are, on balance, "good" or "bad," if undertaken as an abstract proposition, can be most misleading and unfair to the negotiators. A contract takes shape through a process of bargaining, and many provisions may not be precisely as one of the contracting parties would wish. The provisions are forged through negotiation and compromise, and if one gauges the contract only by reading the final contract after the negotiation process has run its course, it might appear that certain agreements have been embodied in the contract which are less than desirable and which should be modified or eliminated. Were one familiar with the negotiation process, however, he might realize that the apparently undesirable provisions were in fact necessary if an agreement was to be reached. I would caution, therefore, against an interpretation of my comments and opinions as critical of the officials who negotiated on behalf of the State.

Having offered these preliminary explanatory comments, let me turn to the contracts themselves.

I append, as Attachment A, a detailed summary of the contracts, section by section. Rather than reiterate this summary, I would prefer to offer my generalized perception of the relative merits and demerits of the contracts in terms of probable benefits and areas of concern. The Committee may wish to explore the concerns which I set forth with the Commissioner of the Department of Natural Resources, for indeed his experience in the negotiation process may well substantiate the view that the contracts as presented to the Legislature, even though containing certain problem areas, do in fact represent the best bargain that could have been struck under all of the attendant circumstances.

* * * * * * * * *

I would speak first on a positive note, addressing the obvious benefits which accrue to the State under the contracts as submitted to the Legislature for approval. I suggest that the benefits are material and substantial and, specifically, there are the following factors to be considered:

1.

The State has secured an agreement for full reimbursement of all costs related to the State's taking of its gas in kind. (Article II, Sections 2.2 and 2.3.) I consider this to be a significant concession in behalf of the State. When the State takes its gas in kind, it is quite possible that the taking will occur at the point of production, so that all costs incurred downstream from that point, such as for transportation to a processing plant, processing, and redelivery to a pipeline transporter, must be borne by the State in ratio to its percentage of the production taken. I do not believe that anyone can guarantee that the State would not be exposed to claims for substantial costs resulting from the in-kind taking. The royalty sales agreement clearly insulates the State from cost exposure with respect to the initial arrangements necessary to an in-kind taking, whether or not the costs reimbursed to the State by the buyers of the royalty gas are collectable by the buyers in their jurisdictional resale rate structure.

2.

The State has sold only a portion of its Prudhoe Bay royalty gas, and has secured the contractual right to withdraw volumes sold under the contract for Alaska in-state needs. (Article III, Sections 3.1 through 3.6.) If an alternate market for the State's royalty gas develops between the present time and the time when the buyers under the contract are in a position to take delivery, the State may take and dispose of its royalty gas in any manner that it chooses, so long as such taking and/or disposition does not interfere with the State's ability to deliver to the buyers when they are in a position to take. (Section 3.8.) The State is not committed by contract to a warranted volume of gas to be sold and delivered under the contracts, and has no stated minimum delivery obligation. (Section 3.2.)

I consider these provisions to be extremely favorable to the State. It is prudent to retain a portion of the State's royalty gas even when a decision has been made to sell part of that royalty gas, since holding a portion free of commitment permits negotiation at a later time when operating conditions have been established, and when circumstances may indicate that significantly different contractual arrangements are in order. Thus, sale of 2.6 Tcf under the contracts in question, rather than a sale of all of the State's Prudhoe Bay royalty gas is, in my judgment, proper.

It has, of course, been essential from the outset that the future needs of the State for natural gas for in-state uses must be in some manner accommodated throughout a royalty gas sales arrangement. It would obviously be unacceptable for the State to sell its royalty gas for transportation out of the State without some provision for meeting future natural gas needs within the State. The arrangement worked out in the contracts to accomplish this objective is favorable to the State. The State may withdraw, over time and upon suitable notice, up to 100 percent of the gas contracted for sale under the instant agreements; the rights of withdrawal must, of course, be exercised for the sole purpose of the State meeting the intrastate domestic and industrial needs of the State of Alaska, and the withdrawal is scaled from 25 percent through 100 percent over 20 years; nonetheless, the withdrawal provisions are more favorable than I would have anticipated and they represent a major element of strength in these contracts.

3.

The State has excepted and reserved from the sale, all liquids removed from the State's royalty gas prior to its delivery to the pipeline (Article IV, Section 4.4), and the State has retained processing rights for the recovery of liquefiable hydrocarbons other than methane, whether exercised before or after delivery to the buyer. (Article IX.) If the liquids are not removed from the gas stream so that the liquid content of the gas stream delivered for sale produces a higher than 1,000 Btu per cubic foot average, the State will be compensated for the greater heating content through adjustment of the sales price. (Article VI, Section 6.6.)

These arrangements for the State to retain the benefits of the liquid content of the gas stream should prove beneficial to the State over the life of gas production from Prudhoe Bay. Liquids and liquid products can provide a significant source of additional revenue to the State if they are sold on the open market and, conversely, if there is need for liquid products in the State (such as a need for propane for its multiple uses, or a need for butane and natural gasoline as feedstocks for petrochemical or other operations), the State is free to direct the liquids and the liquid products to their highest and best use. The inclusion of these provisions in the contract is a distinct plus.

4.

The contract permits State withdrawal from the contract, without penalty, in the event of the occurrence of several different circumstances: If the State is prevented from taking its gas in kind by federal action, the sales agreements shall be void (Article II, Section 2.1); the contracts can be terminated if a decline in production results in nonprofitability to the State (Article VIII); the sales agreements may be terminated by the State if the State so elects following Federal Power Commission certification of an Alaskan gas transportation proposal, except that this right of termination would not exist if the Commission's grant of a certificate is to the El Paso project (Article XI, Section 11.5); and the State may terminate the royalty sales contracts if, by January 1, 1979, all regulatory approvals which the State deems necessary to enable the State to perform its obligations under or receive the benefits of the contract have not been received (Article XI, Section 11.2).

The cumulative effect of these termination options is sufficient, in my opinion, to safeguard the State against reasonably foreseeable adverse developments which might occur. Their inclusion in the contracts is of significant value to the State.

* * * * * * * * * *

I must now turn to certain aspects of the contracts which are of concern to me. These relate to the pricing of the State's royalty gas when sold to the buyers under these contracts.

1. Section 6.1 imposes an upper limit on the price which the state will receive for its royalty gas, and this limitation will be operative unless and until appropriate Federal legislation deregulating Alaska gas is passed. The Section 6.1 limitation, in full, is as follows:

> "In consideration thereof, the price which buyer shall pay seller for gas purchased hereunder shall be determined in accordance with Section 6.2 or Section 6.3 or Section 6.4 or Section 6.5 and shall be subject to the adjustment as provided in Section 6.6; however, the price paid seller for gas which buyer reflects in its rates to jurisdictional customers shall never be higher than the price buyer is permitted to retain in its jurisdictional resale rates so long as such rates are subject to regulation by the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises)."

The underscored proviso is thus given controlling affect, irrespective of the price indicated under Section 6.2 (price fixed at the highest price permitted by the Federal Power Commission to any working interest seller from the Exhibit A reservoirs); irrespective of the price indicated under Section 6.3 (in the event of deregulation at the time of first deliveries, the price is fixed at the level of the highest price being paid by any interstate gas purchaser for gas produced from the Exhibit A leases); irrespective of the price indicated under Section 6.4 (in the event of the cessation of federal regulation after such has once commenced, the price is to be fixed by redetermination and/or arbitration); and irrespective of the price which would result from redetermination in accordance with Section 6.5

The limitation holds as a ceiling on the State's sale price "so long as such rates (buyer's jurisdictional resale rates) are subject to regulation by the Federal Power Commission ...."

It is inescapable that the buyers under these contracts will become transporters of natural gas in interstate commerce, and that they are purchasing gas for resale in interstate commerce. The rates at which the buyers sell for resale will be within the jurisdiction of the Federal Power Commission under the Natural Gas Act, and I know of no foreseeable set of circumstances that would produce legislation, or a Commission decision, changing this result.

Section 6.1 may not be unduly burdensome if legislation is passed which denies the Federal Power Commission the power to refuse recovery of purchased gas costs in an interstate transporter's jurisdictional resale rates, for then it could be argued that the buyers under this contract must necessarily be "permitted to retain" in their jurisdictional resale rates the amounts paid to the State and, therefore, the ceiling limitation in the Section 6.1 proviso would not interfere with operation of the other pricing alternates in the contracts. Such legislative language was employed in the bill which passed the United States

Senate in October 1975, S. 2310, and the same type of language now finds expression in the most recent deregulation legislation offered in the current Congress by Senators Pearson and Bentsen, S. 256.

I do not think the language of the contracts to be altogether clear, however, that Section 6.1 becomes inoperative in the event of Congressional deregulation. If it is the intent of the contracting parties that "flow through" language in a deregulation bill would effectively eliminate the Section 6.1 proviso, then I would suggest that an appropriate letter be obtained and made a part of the contracts before they become effective.

2. Even if Section 6.1 is clarified as suggested, you must understand that Section 6.1 will still subject the State's royalty sales to FPC rate regulation, and such will continue unless and until the Congress enacts appropriate deregulation legislation.

While the State has uniformly and steadfastly maintained that its sales of royalty gas are not subject to direct regulation by the Federal Power Commission because the State is not a person within the meaning of the Natural Gas Act (and I agree with this position), the State does by these contracts consent to indirect rate regulation by the Commission by conceding that the State's sale price is limited to that amount which the Commission will permit the buyers to retain in their jurisdictional rates.

3. At this time, the State cannot determine its sale price, or anticipated revenues at time of first delivery. Section 6.2 does not yield a present price, for there are no FPC-set rates for Alaska gas at this time. Neither Section 6.3 nor 6.4 yields a present price, for their conditions precedent (deregulation) have not occurred. I am at a loss, therefore, to advise the Committee on the sale price which will be applicable at the time of first delivery. If the status quo prevails through the time for first delivery, I assume -- although the contract is silent on the point -- that the buyers and the State would agree to an interim price which would be paid to the State, subject to refund.

4. You should note that the pricing mechanism agreed to in Article VI results, in every reasonably probable circumstance, in the State's sale price being determined by parties other than the State. If federal regulation continues, or if deregulation legislation is not appropriately drafted, the FPC sets the rate for the State. If deregulation occurs, before or after first delivery, the sales price negotiated by private firms making comparable sales will determine the State's sales price.

5. I cannot guess what rate the FPC will set for private sales of natural gas from Prudhoe Bay, but the prospects for a relatively low rate -- because the gas is associated and many costs can be allocated to oil, and because the size of this discovery and these reserves may operate to distort initial well-head rates downward -- are not to be ignored. It will, in my judgment, be easier for the FPC to find reasons why a private seller's rate should be low than it would be for the Commission to deny to the State public funds for public needs. Thus, the contract tying arrangement to private firms' prices -- not yet negotiated -- may deprive the State of a strong argument for adequate prices: namely, that State revenues will be public monies devoted to public needs and public uses, and that, therefore, the State's sales rate should not be judged by traditional FPC concerns of windfall profits to private firms.

6. In Article VI, redetermination rights under Section 6.5 are not clearly granted if deregulation occurs prior to first deliveries. Such rights should exist to protect the State adequately over the twenty-year term of these agreements, and should be provided in Section 6.3, or through re-wording of Section 6.5. Incidentally, re-determination <u>downward</u> at the buyer's request, as permitted in Section 6.5, is not frequently seen. If Section 6.5 is modified, revision to eliminate the possibility of price reductions in the future should be explored.

7. Under the pricing scheme in the contracts, the probable mechanism for Federal Power Commission review of the State's royalty sales rate will be either (a) in the various pipeline rate cases where the cost of purchasing gas from the State is submitted to the Commission as a recoverable item by the pipeline in its resale rate structure; or (b) in a producer sales proceeding where one of the Prudhoe Bay working interest owners requests FPC sales authority; or (c) a rule-making procedure to determine as Alaska ceiling rate for producer sales. The State will be forced to seek intervention, and participate forcefully if allowed to intervene, in one or more of these proceedings in order to have an opportunity of making a direct presentation to the FPC on the appropriate rate level for sales by the State.

Are these problems sufficient to condemn the contracts as inprovident? To some -- those whose sole concern is specificity of price and certainty of revenue -- the answer will be "Yes". But that answer may apply too narrow a standard if -- as may well be true -- there are no reasonable pricing alternatives available to the State.

If all prospective pipeline buyers, present and future, would insist on a pricing structure similar to the one in these contracts, then the alternative to rejection of these contracts

is the alternative of having no contract for the sale of the State's royalty gas. Viewed in this light, the pricing structure before you may be unpalatable, but it may be necessary. If you say "no" to this pricing structure, you may really be saying that the State should not contract at all; that the State should play a less affirmative role in the routing decision; and that the State can strike a better bargain for its gas after the Federal decisional process has run its course.

This choice is yours to make. It requires a broader understanding of the State's goals and needs than I possess, and accordingly, I would be foolish to attempt to recommend a course of action to you. The best I can do is make you aware of the problems, so that your decision will be an informed one.

I would add two footnotes. If these contracts are approved, appropriate deregulation legislation by the Congress becomes terribly important to you. If Alaska gas is deregulated, most of your pricing problems disappear. On the other hand, if deregulation does not occur, the FPC becomes terribly important to you. That agency's pricing regulations will directly impact on your revenues. In the absence of deregulation, the State will be required to become an active, and effective, advocate at the FPC.

* * * * * * * * *

As a final area of general discussion, I would like to call the Committee's attention to several of the provisions in the contract which I think are significant. I do not classify these provisions as being either "good" or "bad" since, in most instances, one's perception of the provisions will depend upon considerations other than legal analysis.

In Article XI, Section 11.4, it is provided that the Governor of Alaska may give notice to the buyers of his decision to support a project other than the trans-Alaska pipeline, and if the Governor does so, with appropriate notice to the buyers, then the newly selected project will be considered the "pipeline" for the purposes of the contract. The buyers need not concur in this change in the State's official position, and if they do not agree, then they are given the right to terminate the contracts.

Second, the selection by the State of Tenneco and Southern as buyers of a portion of the State's royalty gas brings a promise of support by those two organizations of the trans-Alaska gas pipeline system. The involvement, and support, of these two concerns adds a new element to decisional process in Washington with respect to the selection of the routing of a North Slope gas transmission system.

Third, it should be noted that the contracts grant certain options on State royalty gas which are triggered if the State effects a withdrawal of all or any portion of the gas committed under these contracts in order to satisfy in-State needs. The options are not exercisable unless the gas covered thereby is surplus to the needs of the State, and unless the surplus gas is to be transported to market through the trans-Alaska pipeline system. I do not find the option provisions objectionable, but I felt that they were significant enough to require separate mention.

Finally, the contract does not speak to one element of revenue loss that the State will probably sustain by reason of an in-kind taking. The severance tax payable on the State's royalty gas if the State did <u>not</u> take in kind will probably be lost if the State does take in kind. No treatment of this problem appears in the contract.

I will stand ready to respond to such questions as the Committee might have during its hearing on February 2, 1977, and if there are any matters contained in this letter or in its attachment which are not clear, I trust that I will have an opportunity to speak to any such problem at that time.

Respectfully submitted,

Rush Moody, Jr.

RM:bw
Attch.

ATTACHMENT "A"

SUMMARY OF MAJOR CONTRACTUAL PROVISIONS

A. "General Terms and Conditions"

Section 1 defines the terms essential to an understanding of the contract. The definitions are standard, and require no comment except to note the definition of the term "domestic and industrial needs of the State of Alaska" as set forth in Section 1.11. This term is defined to mean "those present and projected residential, commercial and industrial uses for gas within Alaska as determined by the Alaska Royalty Oil & Gas Development Advisory Board in accordance with AS 38.05-.183(d)."

This definition is critical to the structure of the royalty gas sale inasmuch as it forms the basis for the State's rights of withdrawal of royalty gas from the contract as set forth in Article III of the various royalty gas sales agreements.

Section 2 delineates the respective responsibilities of buyer and seller for damage or injury occurring in connection with the movement of royalty gas. The State is responsible prior to delivery to the buyers, and the buyers are responsible after receipt of the gas, except that while the gas is being processed by or on behalf of the State, the buyers are not responsible.

The contract does not fix responsibility, as between buyer and seller, for the processing stage.

Section 3 governs metering of gas sold under the contract; the provisions which essentially require the buyers to install necessary meters to measure accurately the gas purchased under the agreement, but which permit the State to install check meters and otherwise periodically review the accuracy of the purchaser's metering activities, are standard and reasonable. In one respect these provisions are more favorable to the State than might be expected; the contract calls for correction of inaccuracies, when they occur, for a period extending back one-half of the time elapsed since the date of last calibration of the metering equipment. Frequently, gas sales contracts limit the period of time of recalculation, with it being fairly standard that such period is limited to a correction period of two weeks, or at most one month.

Section 4 contains standard provisions relating to the definition of the unit of volume sold.

Section 5 sets forth technical standards for gas measurement, and is standard in the industry.

Section 6, dealing with billing and payment, provides for the rendition of monthly statements, by the 15th day of each

month, setting forth the amount of gas delivered by the State and purchased by the buyers during the preceding calendar month, and for payment to be made by the 25th day of the calendar month in which the run statement is rendered. These provisions are standard.

Section 7, entitled "Receipt of Available Gas," imposes upon the buyer the obligation to proceed diligently to seek such authorization as required to receive gas then available for delivery by the State. As will be discussed later, the intent of Section 7 with respect to Tenneco Alaskan, Inc. and Southern Natural Gas Company is not altogether clear since neither of these buyers appears to be so situated that an authorization "to receive gas" would be required. Neither of these two buyers is in the present posture of seeking certificates permitting the transportation of royalty gas, or permitting construction of facilities to transport gas in interstate commerce and, accordingly, Section 7 is probably inappropriate in their contracts.

Section 8 contains a standard warranty of title by the State.

Section 9, force majeure, permits either party to the contract to suspend its performance if reasons force majeure supervene. The force majeure provisions are standard, but it is

interesting to note that, in a case such as this where the State is a contracting party, the State can effectively relieve itself of any obligations under the contract by the imposition of "future rules, regulations, orders, laws or proclamations." The State can thus create a force majeure situation through its own action, and if the effect of force majeure is to require suspension of the State's performance under the contract, the State incurs no liability by reason of nonperformance to the buyers. Conversely, if the State, by future rule, regulation, order, law or proclamation makes it impossible for the buyers to perform, the buyers have no liability for nonperformance to the State.

Section 10 makes the contract subject to all present and future valid laws and valid regulations of the United States, the State of Alaska or any duly constituted agency thereof. This is a standard provision.

Section 11 permits assignment of rights under the contract; it is expressly provided that either buyer or seller may assign its rights under the agreement to a security holder without such security holder incurring personal obligation under the contract, and without such security holder being required to qualify to do business in the State of Alaska.

Section 12 is not a standard contractual provision normally encountered in gas contracts. Section 12 provides, in essence, that if a producer of gas, of which the State's in-kind royalty gas is a part, enters into a contract of sale which contains provisions more favorable to the seller than the terms and conditions set forth in Sections 3, 5 and 6 of the "General Terms and Conditions," then the State has the option to include such more favorable terms and conditions within this contract "within 90 days after approval by the Federal Power Commission of said working interest owner's contract for the sale of its gas." The limitation of the State's right to move to more favorable terms is, as noted, limited to changes in the sections of the State's contract dealing with metering, measurement, and billing, and since these provisions are fairly well standard, it is doubtful that Section 12 will be of consequence. It should also be noted that if deregulation of new gas occurs, and if Prudhoe Bay gas is included within the definition of new gas so that the producer sales of that gas never become subject to FPC review, then Section 12 becomes meaningless inasmuch as the State would never have a matured right to demand favorable changes in Sections 3, 5 and 6.

Section 13 contains miscellaneous provisons to aid in the interpretation and application of the contract. The provisions of Section 13 are not remarkable.

B. "Royalty Gas Sales Agreement"

Three separate "Royalty Gas Sales Agreements" have been negotiated, but all are identical in terms, with the exception that Tenneco Alaskan, Inc. is the buyer of 50 percent of the State's royalty gas covered by the total sales transaction, Southern Natural Gas Company is the buyer of 25 percent, and El Paso Natural Gas Company is the buyer of 25 percent. Since all contracts are identical, the following summary of the provisions of the El Paso contract will apply to the others also.

Article I sets forth the mutual promises of buyer and seller each to support actively and seek before appropriate authorities the ultimate selection and implementation of a trans-Alaska gas pipeline system. For purposes of this article, "pipeline" means a large diameter gas pipeline commencing at Prudhoe Bay, crossing Alaska in approximately the same route as the present trans-Alaska pipeline system oil pipeline, and terminating in the Prince William Sound area.

Article II, denominated "seller's royalty gas," covers several matters: Section 2.1 sets forth the State's warranty of

its right to take royalty gas in kind, and its royalty share as being 12-1/2 percent. The leases identified in Exhibit A to the agreement set forth the specific acreage and royalty shares covered by the contract. If the State is prevented by federal action from taking its gas in kind, the gas sales agreement shall be void. [It should be here noted that Exhibit A was not furnished to me for review; I have assumed it to be no more than a listing and description of those State leases from which royalty gas will be sold under this contract.]

Section 2.2 provides that in addition to the sales price provided for elsewhere in the contract, the State will be reimbursed for the State's pro rata share of costs attributable to "the preparation and transportation of gas to be delivered hereunder." These costs are identified as being those costs which the State may incur as a result of its election to take its gas in kind, and which costs would not have been incurred if the State had not elected to take the royalty gas in kind.

Section 2.3 provides, however, that if the buyer is not able to include within its jurisdictional cost of service as determined by the Federal Power Commission, the cost reimbursement provided for in Section 2.2, then the buyer may terminate the gas sales agreement six months after giving notice of termination. If the

right of termination is exercised, the buyer must nonetheless reimburse the State for those costs identified in Section 2.2 which become due and payable by the State prior to termination.

Article III governs the quantity of gas to be sold under the sales agreement. The structure of this article is as follows:

Section 3.1 establishes the State's agreement to sell 25 percent of seller's royalty gas available at the prescribed delivery points. (The Southern contract also calls for 25 percent of seller's royalty gas, while the Tenneco contract calls for 50 percent of the State's royalty gas.)

Section 3.2 establishes the base volume of gas to be sold by the State and purchased by the buyers during the term of the gas sales agreement. For El Paso, the base volume may be less than, but under no condition shall it be in excess of, 650 Bcf. The same base volume applies in the Southern contract, while the Tenneco contract specifies a maximum base volume of 1,300 Bcf.

Sections 3.3 and 3.4 relate to the right of the State to withdraw from the contract certain volumes to meet the present and future needs of the State. The schedule of reductions is as follows:

From date of first delivery through the fifth anniversary thereof, the State has the right to reduce the

quantity of royalty gas otherwise available for sale under Section 3.1 by up to and including 25 percent.

Commencing on the fifth anniversary date of first delivery and continuing through the tenth anniversary date thereof, the State has the right to reduce the quantity of royalty gas available for sale under Section 3.1 by up to and including 50 percent.

Commencing on the tenth anniversary date of first delivery and continuing through the 15th anniversary date thereof, the State has the right to reduce the quantity of royalty gas available for sale under Section 3.1 by up to and including 75 percent.

Commencing on the 15th anniversary date of first delivery and continuing until termination of the agreement, the seller has the right to reduce the quantity of royalty gas available for sale under Section 3.1 by up to and including 100 percent.

Reductions by the State of the quantity of royalty gas available for sale and delivery shall not become effective until after 12 months have elapsed from the date that the State gives written notice to the buyers of its desire to reduce deliveries.

It is further provided that the State may change the percentages set forth above at any time during the term of the gas sales agreement, but such changes cannot become effective prior to the expiration of 24 months following the State's written notice to the buyer of its modification of the percentages.

Section 3.5 limits the State's rights of withdrawal of royalty gas volumes by stating that the rights of the State "shall be for the sole purpose of the State meeting the intrastate domestic and industrial needs of the State of Alaska ...." It will be recalled that the phrase "domestic and industrial needs of the State of Alaska" is specifically defined in the "General Terms and Conditions." The right of the State to withdraw gas from the contract for certain uses is further explained by the following provision in Section 3.5:

> "This provision shall not limit the right to export from the State any products manufactured from said gas."

Section 3.6 requires the State to reduce, pro rata, deliveries to all three purchasing companies in the event that a State decision to withdraw gas from any of the contracts is made.

Section 3.7 has the effect of granting to the buyers an option on State royalty gas other than that produced under the leases identified on Exhibit A to the gas sales agreement. Under

the provisions of 3.7, if the State in fact withdraws royalty gas to meet State needs and if, during the term of this agreement and five years thereafter, the State has additional royalty gas which is surplus to State needs, and which will be transported by a trans-Alaska pipeline, then the State agrees to offer to sell to the buyers under the provisions of this agreement (except as to price and term) such additional and excess royalty gas. The option is granted to the three purchasers ratably. As to such "option gas," the price to be paid is the highest price available to the State for such gas from any other interstate bona fide purchaser; if there are no other such purchasers, the price for such "option gas" will be the price then being paid under the instant gas sales agreement.

Under Section 3.7(b), an additional right of first refusal is granted to the buyers. If royalty gas becomes available to the state which, in the State's sole discretion, is determined to be surplus to the intrastate domestic and industrial needs of the State of Alaska, the buyers under the instant agreement are given a right of first refusal to purchase additional royalty gas from the State to the extent of one-half times the volume that the State's exercise of its rights of withdrawal under Sections 3.3

and 3.4 in fact diminishes the amount of gas the buyer would otherwise have purchased and received under the instant agreement.

Section 3.8 permits the State to take and dispose of its royalty gas produced under the leases identified in Exhibit A at any time after the effective date of the instant agreement and prior to the time of first deliveries hereunder; the State may utilize, market or otherwise dispose of its royalty gas in any manner it choses, at its own expense, so long as such taking or disposition does not prevent the State from making available for sale to the buyers on the date of first deliveries the quantity of gas committed under the contract.

Section 3.9 commits the State to the burden of advising the buyer at the beginning of each calendar year its best estimate of volumes which will be available under the agreement during each calendar year of the next succeeding five calendar years.

Section 3.10 expresses the agreement of buyer and seller to cooperate in minimizing "any charges levied on gas liquefied and transported from Alaska to the contiguous 48 states."

Section 3.11 provides that if the State exercises its rights of withdrawal of gas from the agreement, then the State will reimburse the buyer for a percentage of any then undepreciated investment made by the buyer in any facilities upstream of the

pipeline. The percentage of reimbursement is the percentage that the State's reserved gas is of the total gas which otherwise would have been sold to the buyer under the agreement.

Article IV of the royalty gas sales agreement deals with delivery points and delivery pressures. Section 4.1 provides that the State's royalty gas shall be delivered at the point where the working interest owners of the leases make delivery of gas to their purchaser, or at any other point mutually agreed upon by the buyer and seller under this agreement.

Section 4.2 provides that if the State is required to take delivery of its royalty gas at a point upstream from the delivery point determined under Section 4.1, then the buyer under this agreement is required to accept delivery at the point where the State receives its royalty gas.

In Section 4.3, it is provided that gas sold and delivered by the State under this agreement shall be received by the buyers at the same pressure as the pressure the working interest owners deliver their gas to their purchasers, or at the pressure the State receives its gas from the working interest owners if delivery is made upstream of the specified delivery point.

Section 4.4 reserves to the State the right to receive all liquids removed from the gas prior to its delivery to the

pipeline, whether the liquids are removed before or after delivery of the gas to buyer.

Article V of the royalty gas sales agreement specifies that the gas delivered by the State shall conform to the quality specifications applicable to the gas sold by the working interest owners at the same delivery point.

Article VI of the royalty gas sales agreement is concerned with price. Three alternate methods of determining the sales price are set forth in Sections 6.2, 6.3 and 6.4. Price redetermination rights are set forth in Section 6.5. Irrespective of which section governs the manner of establishing price, the sales price is subject to two important limitations:

Section 6.6 requires that the sales price reflect 1,000 Btu's per cubic foot, and if the heating value of the gas actually delivered is either greater than or less than 1,000 Btu's per cubic foot, then the price will be adjusted upward or downward.

Secondly, and more importantly, Section 6.1 sets forth an absolute upper limit on the price paid to the State. It is there provided that the price paid the State shall never be higher than the price which the buyer is permitted to retain in its jurisdictional

resale rates "so long as such rates are subject to regulation by the Federal Power Commission ...."

The four alternative methods of pricing are as follows:

Section 6.2 provides that if at the time of first delivery of gas, the price of gas purchased under the contract is subject to FPC regulation because of the Commission's authority to regulate resale rates, then the initial price to be paid shall be the highest rate allowed by the Commission to be paid by any interstate gas purchaser to any working interest owner in the leases identified in Exhibit A under contracts where at least 50 Bcf of gas are sold. Thereafter, the price to be paid would change in accordance with the applicable and governing portions of the rules and regulations of the Federal Power Commission. In the event any producer sells gas from the leases identified in Exhibit A at a price higher than the generally applicable FPC ceiling rates, through utilization of FPC special pricing procedures, then the State sales price would escalate to that higher price. In no instance will the State receive less than the price paid producers for their gas from the same reservoir for same or similar sales in interstate commerce.

Section 6.3 provides that if at the time of first deliveries of gas under the agreement the price of gas sold from the leases

identified in Exhibit A is not regulated by the FPC, then the initial price for gas delivered under the agreement shall be the highest price being paid by any interstate gas purchaser for gas under contracts of at least 50 Bcf and produced from the leases identified in Exhibit A.

Section 6.4 deals with the eventuality of deregulation at the federal level; if the FPC ceases to exercise jurisdiction over interstate sales for resale after having once commenced jurisdiction, and if deregulation is in such form that it prevents the FPC from excluding the price the buyer pays under this agreement from its cost of service, then the State may elect, by the giving of written notice, to call for redetermination of the sales price as permitted in Section 6.5.

Section 6.5 sets forth redetermination rights of both buyer and seller. Each party has the option to cause the price being paid for gas sold under the agreement to be redetermined every 12 months, such redetermination to be effective on the anniversary of such redetermination. If either party requests redetermination, the parties shall attempt to agree on a new price, and in doing so shall observe the following: The redetermined price shall be the higher of (1) the highest price being paid for gas sold in interstate commerce from Prudhoe Bay of Alaska under a

contract selling at least 50 Bcf of gas executed in the previous 12 months, or (2) the highest price being paid under a renegotiation or redetermination clause of any contract for gas sold in interstate commerce from the North Slope covering the sale of at least 50 Bcf of gas. If there are no comparable contracts executed in this one year period, or no contracts under which the price has been renegotiated or redetermined, then the parties are to attempt to agree to a new price, but failing this, the matter will be submitted to arbitration as provided in Article VII of the royalty gas sales agreement. In no event shall the redetermined price be less than the price being paid to the State immediately preceding the initial redetermination.

Article VII of the royalty gas sales agreement covers arbitration procedures. Any dispute arising under the agreement can be settled by arbitration if either party requests arbitration. Normal arbitration procedures are set forth, whereby each party names one arbitrator and the two so named select a third. The action of a majority of the board of arbitrators and their decision on matters submitted to them for adjudication shall be final and binding on the parties.

Article VIII of the agreement specifies that the agreement shall become effective upon execution and approval, and shall

continue for twenty years from the date of first deliveries or until the base volumes of gas set forth in Section 3.2 have been delivered, whichever is earlier. Earlier termination can occur if, for any reason, a decline in production is sustained to the extent that further production of gas would no longer be profitable for the State, or further operation of the transportation facilities would no longer be profitable to the buyer.

Article IX reserves certain rights to the State. The State retains the right to process the gas or have the gas processed before and/or after delivery to buyer for the recovery of liquefiable hydrocarbons other than methane; the State agrees that such processing shall not reduce the heating content of the residue gas below 1,000 Btu's per cubic foot, and the State agrees to reimburse the buyer for all transportation charges, liquefaction charges and regasification charges attributable to volumes removed by processing, including fuel and shrinkage.

Article X of the royalty gas sales agreement specifies the form of notices to be used in those instances where formal notification is required by the agreement.

Article XI specifies certain "conditions precedent." First, the buyer has no obligation to perform any of its undertakings in the agreement, other than its agreement to support the government's

selection of a trans-Alaska pipeline, unless and until all necessary government approvals for building, construction and operation of the pipeline are granted. The only exception here is that any costs incurred by the State by reason of the State's election to take its royalty in kind shall be reimbursed by the buyer as provided in Section 2.2.

Second, if all necessary regulatory approvals have not been issued and accepted by December 31, 1978, either party to the agreement may thereafter terminate the agreement by giving 10 days written notice.

Third, after approval of the agreement by concurrent resolution of a majority of each house of the Alaska State Legislature, the buyer is to proceed with diligence in the filing and prosecution of such pleadings and applications with the FPC as may be required to obtain all necessary rate, tariff and certificate authorizations related to the buyers' obligations under the agreement.

Fourth, it is provided in Section 11.4 that prior to the time that a Federal Power Commission order granting a certificate of public convenience and necessity to the pipeline becomes final and nonappealable, the Governor of the State may give written notice to the buyer of his decision to support a project other than the trans-Alaska pipeline as defined and identified in the

agreement. Such notice is not a default by the State under the agreement, but if the buyer decides not to concur in the Governor's change of position, then the buyer may terminate the agreement in its entirety. If the buyer agrees to support the project designated in the Governor's notice, the new project shall be considered the "pipeline," and the agreement remains in force.

Fifth, the royalty gas sales agreement may be terminated by directive of the Governor and service of notice on the buyer if the Federal Power Commission denies the El Paso-Alaska application in Docket No. CP75-96, or if the Commission grants a certificate of public convenience and necessity to a project or system other than the "pipeline" as defined in the agreement.

Finally, it is stipulated that the agreement shall not take effect until approved by concurrent resolution of a majority of each House of the Alaskan Legislature.

Article XII incorporates the general terms and conditions and Exhibit A into the agreement and makes them a part of the agreement for all purposes.

LEGAL ANALYSIS OF ISSUES RELATING TO NATURAL GAS TRANSPORTATION

Prepared for the Joint Gas Pipeline Impact Committee of the Legislature of the State of Alaska

Submitted by
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CONTENTS

Page

I. THE FEDERAL-STATE RELATIONSHIP.....1-39
A. Federal Regulation of Natural Gas.....1-8
1. General Description of Federal Authority....1
2. Detailed description of Federal regulation..3

B. State Control of Natural Gas.....9-39
1. State regulatory powers.....9
2. State ownership rights.....15
3. State powers of taxation.....17
4. The power of the State to construct and operate a pipeline.....30

II. SELECTED NATURAL GAS ISSUES-PERMITTED AND PROHIBITED STATE ACTIONS.....40-100
1. The State may not embargo the movement of gas in interstate commerce through the exercise of conservation powers.....43
2. The State may not establish a natural gas pricing structure for gas sold for resale in interstate commerce.....45
3. The State may not accomplish by indirection that which is prohibited as direct action.....48
4. The State may not effectively block construction of an interstate pipeline by denying permission to cross state lands.....55
5. The State may not block construction of an interstate pipeline by assertions of police or zoning power.....60
6. If the State initially elects to take its royalty in value rather than in kind, the State probably could not thereafter withdraw the royalty share from interstate commerce without FPC approval.....64
7. While this issue is not free of doubt, the State probably may sell for resale or transport natural gas in interstate commerce without FPC authorization.....73
8. While the issue is not free of doubt, it is arguable that the state may, in its capacity as the owner of natural gas, retain State-owned gas for in-state use through appropriate leasing provisions.....79

9. The State may, for valid conservation reasons, protect oil and gas deposits from physical waste by prescribing reasonable regulations governing production, including regulatons requiring gas re-injection or re-cycling for pressure maintenance or reservoir protection.....85

10. It is probable that the State is able to require that a producer of natural gas extract liquid hydrocarbons before the gas enters interstate commerce.....94

I.

THE FEDERAL-STATE RELATIONSHIP

A. Federal Regulation of Natural Gas

1. General Description of Federal Authority.

Federal regulatory authority over natural gas arises from the Constitutional grant to Congress of the exclusive power "To regulate Commerce. . .among the several States." U.S. Const., Art. I, Sec. 8. Congressional exercise of its authority is reflected principally in the Natural Gas Act, 15 U.S.C. 717(a) et. seq.

The Natural Gas Act does not reflect Congressional intent to occupy the natural gas field to the full extent which the Commerce Clause of the Constitution would permit; rather, the Act contemplates only partial Federal regulation which is pre-emptive only within the limits of the Act. The Supreme Court, in Panhandle Eastern Pipe Line Co. v. Public Service Commission, 332 U.S. 507 (1947), has said:

> [T]he essence of [appellant's] position, apart from standing directly on the commerce clause, is that Congress by enacting the Natural Gas Act has "occupied the field," i.e., the entire field open to federal regulation. . . .
>
> "The exact opposite is the fact, Congress, it is true, occupied a field. But it was meticulous to take in only territories which this Court had held the states could not reach." 332 U.S. at 519 (footnote omitted).

The Court in Panhandle also emphasized that under Section 1(b) of the Gas Act:

"Three things and three only Congress drew within its own regulatory power, delegated by the Act to its agent, the Federal Power Commission. These were: (1) the transportation of natural gas in interstate commerce; (2) its sale in interstate commerce for resale; and (3) natural gas companies in such transportation or sale." 332 U.S. at 516.

The Courts have on several occasions rejected non-legislative attempts to expand the jurisdiction of the FPC beyond the bounds fixed by the Gas Act. In Mobil Oil Corp. v. FPC, the FPC contended that it had jurisdiction over the sale of the royalty owner's interest in a natural gas stream sold in interstate commerce. The FPC argued that such jurisdiction was necessary to protect the consumer against unreasonable demands by the royalty owner. Rejecting that argument, the Court said:

"The FPC is to be commended for attempting to further that objective, but it is not sufficient justification upon which to base an expansion of the Act to activities clearly not within its term. Congress did not give the FPC carte blanche to take whatever action it might consider appropriate infurtherance of this purpose. The FPC is limited by the provision establishing its jurisdiction, and we do not find in that provision, rooted as it is in a sale in interstate commerce, any basis for reaching out to cover the landowner's lease or its royalty payments." 149 U.S. App. D.C. 310, 317, 463 F.2d 256, cert. denied, 406 U.S. 976 (1972).

The Court reached a similar conclusion as to the limits of the Gas Act in another case of the same name, Mobil Oil Corp. v. FPC, involving the question of whether the FPC's jurisdiction over interstate transportation of natural gas gave it jurisdiction over the rate for transporting natural gas liquids. The Court said:

"The Commission cannot gain jurisdiction over an activity simply by characterizing it as a part of a "total transaction" of which another part happens to be subject to the FPC's control. The Commission has jurisdiction over sales of natural gas at the wellhead for resale in interstate commerce." 157 U.S. App. D.C. 238, 245, 483 F.2d 1238, 1248 (1973) (footnotes omitted).

Congress, by its limited grant of authority to the FPC under the Gas Act, undertook only to fill the hiatus created by lack of state authority constitutionally to regulate aspects of interstate sales and transportation of natural gas and did so with "unusual legislative precision." Panhandle Eastern Pipe Line Co. v. Public Serv. Comm'n., 332 U.S. 507, 516, 517 (1947).

The legislative history of the Gas Act is explicit on this point:

"The States have, of course, for many years regulated sales of natural gas to consumers in intrastate transactions. The States have also been able to regulate sales to consumers even though such sales are in interstate commerce, such sales being considered local in character and in the absence of congressional prohibition subject to State regulation. . .There is no intention in enacting the present legislation to disturb the States in their exercise of such jurisdiction. . . The basic purpose of the present legislation is to occupy this field in which the Supreme Court has held that the States may not act.

". . .The bill takes no authority from State commissions and is so drawn as to complement and in no manner usurp State regulatory authority." H.R. Rep. No. 709, 75th Cong., 1st Sess. 12 (1937) (citations omitted).

2. Detailed Description of Federal Regulation.

The Commission's power to regulate interstate transportation, sales for resale in interstate commerce, and

persons engaged in such transportation or sales is exercised through five basic mechanisms:

1. Rate regulation pursuant to Sections 4 and 5 of the Natural Gas Act.

2. Service regulation pursuant to Section 7 of the Act.

3. Curtailment regulation pursuant to Sections 1, 4 and 5 of the Act.

4. Import and export regulation pursuant to Section 3 of the Act.

5. Reporting and accounting regulation pursuant to Sections 6, 8, 9, 10, and 14 of the Act.

For the purposes of this analysis, attention is centered upon the service and import/export areas.

a. Section 7--Control Over Service and Facilities.

It is through Section 7 of the Natural Gas Act that the FPC exercises its greatest degree of control over natural gas sales, transportation and marketing.

Through the language of Sec. 7(c), the Commission controls the following activities:

1. All sales for resale in interstate commerce;

2. All transportation of natural gas in interstate commerce; and

3. All facilities needed to make a sale or effect a transportation.

This control is exercised through the power to grant, deny, or conditionally grant a "certificate of public convenience

AGO 667623

and necessity" to one who proposes to engage in interstate sales or services. Without a certificate, the activity is unlawful.

Thus, before a producer may sell to an interstate pipeline, the producer must obtain a certificate from the Commission. Before an interstate pipeline may install facilities to receive gas from a producer, to transport gas, or to effect a sale to a customer, it must obtain a certificate from the Commission. Before an interstate pipeline may use its existing facilities to transport gas for someone else, it must obtain a certificate from the Commission. See, Atlantic Refining Company v. Pub. Serv. Comm. of N. Y., 360 U.S. 378 (1959); FPC v. Transcontinental Gas Pipe Line Corp., 365 U.S. 1 (1961); Illinois Natural Gas Co. v. Central Illinois Pub. Serv. Co., 314 U.S. 498 (1942).

The Commission's powers of certification are not exercised through strict application of readily determinable rules; while Commission action must not be arbitrary, and must have support in substantial evidence, "public convenience and necessity" is a shifting standard which has meaning only in terms of the incumbent commissioners' perception of the public interest. The Commission's actions in the certification area are largely discretionary. See, California Gas Producer's Association v. FPC, 383 F.2d 645 (C.A. 9, 1967); International Paper Co., v. FPC, 438 F.2d 1349 (C.A.N.Y., 1971) cert. denied 404 U.S. 827.

In this connection, the discussion in Henry v. FPC, 513 F.2d 395 (C.A.D.C., 1975) is particularly significant. In that

case the Court reviewed a Commission order which disclaimed jurisdiction over a coal gasification facility, but which asserted jurisdiction under Sec. 7 to certificate the movement of commingled artifical and natural gas. The court noted:

> "Of particular and almost paramount significance for the subject under discussion is FPC v. Transcontinental Gas Pipe Line Corp., 365 U.S. 1, 81 S.Ct. 435, 5 L.Ed.2d 377 (1961), where the Court expressly held that the Commission's power under § 7 to consider matters of the public interest when deciding whether to issue a certificate for jurisdictional facilities extends generally to a consideration of "all factors bearing on the public interest," and specifically extends to matters that are excluded from the direct regulatory jurisdiction of the Commission. That case involved an application for the certification of the transportation by an interstate pipeline of gas to be sold directly by a Texas producer to a New York purchaser for use under boilers for the production of steam. The Court held that § 7(e) of the Act embraces FPC consideration, when passing on an application for certification, first, of the end use of the gas to be transported and its possible preemption of reserves to the detriment of domestic consumers--though the FPC has neither general allocation authority nor jurisdiction to regulate direct sales to industrial consumers once the facilities are certificated; and second, of the prospect that the high price of the sale would be an upward lever on natural gas prices in general--even though the Commission had no jurisdiction over the underlying sale or any authority to regulate its price.
>
> "Although Justice Harlan, joined by Justices Frankfurter and Stewart, dissented from another feature of the decision, he joined in the ruling now under discussion, and indeed put the matter so succinctly as to merit quotation. See 365 U.S. at 36-37, 81 S.Ct. at 453-454 (footnotes omitted):
>
> "Basically, I think it was open to the Commission to decide whether the particular transportation service before it would tend to waste gas, unduly preempt pipeline capacity, or raise field prices. I think the Commission can properly assert this

AGO 667625

more limited power as an incident of its transportation certificating powers. It is quite true of course that Consolidated Edison need not have resorted to the Federal Power Commission if the purchase transaction had been possible without the interstate transportation of the gas in jurisdictional pipelines, since this was not a purchase of natural gas for resale.

"'However, it does not follow that the Commission had to blind itself to the effects of the purchase and use of the gas when its authority to certificate the transportation of the gas was invoked. To recognize that the transaction was, as a practical matter, impossible without the use of jurisdictional facilities for the interstate transportation of the purchased gas is to acknowledge that this transportation is an integral a part of the transaction as was the sale itself. Whether the adverse effect of the transaction be a waste of a scarce resource, or pre-emption of pipeline capacity, or a substantial boosting of field prices, the transportation is as responsible for the effects as is the original sale. I see no reason why the Commission must certify, as in accord with the "public convenience and necessity," transportation which tends materially to further such undesirable results which are within the area of the Commission's legitimate concern when it is considering the public convenience and necessity of certificating a jurisdictional sale.' (Emphasis added.)"

The Commission's powers under Sec. 7 of the Natural Gas Act do not end with the mere issuance or denial of a certificate of public convenience and necessity. Of perhaps equal significance are the provisions of Sec. 7(b) and 7(e) of the Act.

Under Sec. 7(e), the Commission can attach any conditions to a certificate that it finds are required by "the public convenience and necessity", and under Sec. 7(b), the Commission may require the continuance of a certificated

service until it determines that "the public convenience and necessity" will permit abandonment.

The conditioning power, and the abandonment power, each operate to supplant private contractual arrangements between producer and pipeline, and pipeline and customer. Atlantic Refining Co. v. Public Service Commission of N. Y., 360 U.S. 378 (1959); Sunray Mid-Continent Oil Co. v. FPC, 364 U.S. 137 (1960); United Gas Pipe Line Co. v. FPC, 385 U.S. 83 (1966).

b. Section 3--Imports and Exports of Natural Gas.

Under Sec. 3 of the Act, Commission approval must be obtained for any natural gas import into or export from the United States. The Commission is to approve such import and export applications unless it finds that the proposal "will not be consistent with the public interest." The Commission is empowered to prescribe terms and conditions to any import or export if such are found to be "necessary or appropriate."

The generalities of Sec. 3 have seldom been construed and applied by the Commission or the Courts, but it is reasonable to conclude at this time that the Commission has the power, and probably the inclinaton, to treat import/export cases substantially the same as Sec. 7 certification cases. Distrigas Corp. v. FPC, 495 F.2d 1057 (C.A.D.C. 1974). Accordingly, the discussion under subsection (a) immediately above is applicable to the import/export power and need not be restated.

B. State Control of Natural Gas

1. State Regulatory Powers

Since the earliest days of oil and gas production the states have promulgated conservation legislation designed to regulate the production of oil and gas. There have been innumerable court challenges to such legislation; however, the courts have generally approved conservation legislation on one of three theories: (a) it is within the police power of the state to pass legislation protecting the correlative rights of owners of land within a common source of supply of oil and gas; (b) it is within the police power of the state to safeguard the public interest in oil and gas by preventing waste of such natural resources of the state; and (c) the state may exercise its police power to prevent or abate surface nuisances resulting from the production of oil and gas. The states have adopted a broad variety of conservation statutes generally granting a state agency the authority to regulate such matters as well spacing, proration of production, plugging of abandoned wells, and compulsory pooling and unitization. See e.g., Summers, Oil and Gas § 106; Williams and Meyers, Oil and Gas Law, §§ 940-948.

The Supreme Court of the United States has made it clear that state conservation legislation is a valid exercise of the state's police power even though the oil or gas is intended

to be, or is in fact, immediately placed into interstate commerce:

> "Plaintiff contends that the Act and proration orders operate to burden interstate commerce in crude oil and its products in violation of the commerce clause. It is clear that the regulations prescribed and authorized by the Act and the proration established by the commission apply only to production and not to sales or transportation of crude oil or its products. Such production is essentially a mining operation and therefore is not a part of interstate commerce even though the product obtained is intended to be and in fact is immediately shipped in such commerce. Oliver Iron Co. v. Lord, 262 U.S. 172, 178. Hope Gas Co. v. Hall, 274 U.S. 284, 288. Foster Packing Co. v. Haydel, 278 U.S. 1, 10. Utah Power & Light Co. v. Pfost, supra. No violation of the commerce clause is shown."

Champlin Refining Co. v. Corporation Commission, 286 U.S. 210, 235 (1932). See also Thompson v. Consolidated Gas Utilities Corp., 300 U.S. 55, 77 (1937).

It may be helpful to note the types of conservation statutes and administrative orders which have been upheld by the courts as valid exercises of State power to prevent waste and protect correlative rights:

(a) Well Spacing: see, Brown v. Humble Oil & Refining Co., 126 Tex. 296, 83 S.W.2d 935, motion for reh. overr'd. 126 Tex. 314, 87 S.W.2d 1069 (1935); Patterson v. Stanolind Oil & Gas Co., 182 Okla. 155, 77 P.2d 83, app. dismd., 305 U.S. 376 (1939); Hawkins v. Texas Co., 146 Tex. 511, 209 S.W.2d. 338 (1948); Oxford Oil Co. v. Atlantic Oil & Producing Co., 22 F.2d 597 (5th Cir.); cert. den. 277 U.S. 585 (1928).

(b) Proration of Production: see, Henderson Co. v. Thompson, 300 U.S. 258 (1937); Thompson v. Consolidated Gas Utilities Corp., 300 U.S. 55 (1937); Bandini Petroleum Co. v. Superior Court, 284 U.S. 8 (1931); Texas v. Donoghue, 302 U.S. 284 (1937).

(c) Plugging of Abandoned Wells: see, Commonwealth v. Trent, 117 Ky. 34, 77 S.W. 390 (1903); Gant v. Oklahoma, 150 Okla. 86, 6 P.2d 1065, app. dism'd. 284 U.S. 594 (1932); Guffey v. Stroud, 16 S.W.2d 527 (Tex.Comm.App. 1929, opinion adopted) Atkinson v. Virginia Oil & Gas Co., 72 W.Va. 707, 79 S.E. 647 (1913); Martel v. Hall Oil Co., 36 Wo. 166, 253 P. 862, 255 P. 3 (1927); Clarke v. Blue Licks Springs Co., 184 Ky. 827, 213 S.W. 222 (1919).

(d) Compulsory Pooling and Unitization: see, Hunter Co. v. McHugh, 202 La. 97, 11 So.2d 495, app. dism'd, 320 U.S. 222 (1943); Crichton v. Lee, 209 La. 561, 25 So.2d 229 (1946); Superior Oil Co. v. Foote, 214 Miss. 857, 59 So.2d 85, error overr'd, 59 So.2d 844 (1952); Palmer Oil Corp. v. Phillips Petroleum Co., 204 Okla. 543, 231 P.2d 997, app. dism'd., 343 U.S. 390 (1952).

(e) Restrictions on Use: Ohio Oil Co. v. Indiana, supra; Henderson Co. v. Thompson, supra; Herkness v. Irion, 278 U.S. 92 (1928); Walls v. Midland Carbon Co., supra, Thompson v. Consolidated Gas Utilities Corp.; supra.

(f) Secondary Recovery and Gas Recycle: Champlin Refining Co. v. Corporation Comm., supra; Railroad Comm'n of Texas

v. Manziel, 361 S.W.2d 560 (Tex.Sup.Ct. 1962); Corzelius v. Harrell, 143 Tex. 509, 186 S.W.2d 961 (1945); Syverson v. North Dakota State Industrial Comm'n, 111 N.W.2d 128 (N.D.Sup.Ct. 1961); Jackson v. State Corp. Comm'n, 186 Kan. 6, 348 P.2d 613 (Kan.Sup.Ct. 1960). See, Bandini Petroleum Co. v. Superior Court, supra; Brown v. Humble Oil & Refining Co., supra; Henderson Co. v. Thompson, supra; Ohio Oil Co. v. Indiana, supra; Commonwealth v. Trent, supra; Shannon v. Shaffer Oil & Refining Co., 51 F.2d 878 (10th Cir. 1931).

The question of whether state oil and gas conservation statutes and regulations can be applied to leases of Federal lands has been decided in the affirmative by Texas Oil and Gas Corp. v. Phillips Petroleum Corp., 277 F.Supp. 366 (W.D. Okla.); aff'd, 406 F.2d 1303, cert. denied, 396 U.S. 829 (1969). Plaintiffs owned oil and gas leases on Federal lands in Oklahoma, which leases were executed pursuant to the Federal Mineral Leasing Act, 30 U.S.C. § 181 et seq. By way of request to quiet title, plaintiffs sought to challenge an order of the Corporation Commission of the State of Oklahoma whereby the reservoir underlying plaintiffs' leases were forced into a pool for purposes of production.

In holding that the leases were subject to regulation by the State of Oklahoma, the Court explained as follows:

> "Article IV, Section 3, Clause 2 of the United States Constitution provides:

'Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States;***.'

"This clause does not place the exclusive control of the federal public domain in the United States Government. It only confers this power on Congress and leaves to Congress the determination of when and where and to what extent this power will be exercised. United States v. Hatahley, (10 Cir. 1955). 220 F.2d 666, reversed on other grounds, 351 U.S. 173, 76 S.Ct. 745, 100 L.Ed. 1065 (1956). Therefore, we must look to the acts of Congress and specifically those relied upon by the Plaintiffs as above set out to ascertain if the Congress has undertaken to exercise exclusive control over federal lands which have been leased by the Government for oil and gas mining purposes.

"Nothing in these cited statutes (nor the entire Act itself) specifically indicates that Congress has undertaken to reserve unto itself exclusive control over federal lands leased for oil and gas development to the exclusion of the States.

"Section 187 does provide that no lease issued under the said Act shall be assigned or sublet except with the consent of the Secretary of the Interior, and authorizes the Secretary of the Interior to promulgate rules for the prevention of undue waste and that the lease shall contain a provision that such shall be observed. However, said Section further provides at the end thereof that: 'None of such provisions shall be in conflict with the laws of the state in which the leased property is situated.' This language is not aimed at putting the lands under the exclusive control of the Federal Government to the exclusion of the States. Contrary to the position of the Plaintiffs, the Federal Mineral Leasing Act of 1920, as amended, seems to leave to the States the power to exercise State police power over Federal oil and gas leases. For instance, Title 30, United States Code, Section 189 of said Act provides:

'Nothing in said sections shall be construed or held to affect the rights of the States or other local authority to exercise any rights which they may have, including the

right to levy and collect taxes upon improvements, output of mines, or other rights, property, or assets of any lease of the United States.'

"Furthermore, the authorities treating with the matter of exclusive control of federal lands by the Federal Government clearly and definitely hold that State law and the State police power extends over the federal public domain unless and until Congress has determined to deal exclusively with the subject. State of Colorado v. Toll, 268 U.S. 228, 45 S.Ct. 505, 69 L.Ed. 927 (1925); McKelvey v. United States, 260 U.S. 353, 43 S.Ct.132, 67 L.Ed. 301 (1922); International Bridge Company v. People of the State of New York, 254 U.S. 126, 41 S.Ct. 56, 65 L.Ed. 176 (1920); Omachevarria v. State of Idaho, 246 U.S. 343 38 S.Ct. 323, 62 L.Ed. 763 (1918); United States v. Hatahley, supra.

"But whereas the Congress may not desire to assume exclusive control over the federal lands it may desire to prescribe certain limited controls. From an examination of the said Federal Mineral Leasing Act the Court concludes that the Congress has not undertaken to assume exclusive control of federal mineral lands under the Act but it has imposed two significant controls which must be satisfied before the State police power in the area of conservation may ultimately attach. One is that a federal mineral lessee may not assign his lease without the consent of the Federal Government. 30 U.S.C. § 187. Another is that a pooling or communitization agreement involving federal and non-federal lands must be approved by the Federal Government. 30 U.S.C. § 226(j). . . ." Id., pp. 368-369.

The result in Texas Oil and Gas Corp. is consistent with Wallis v. Pan American Petroleum, 384 U.S. 63 (1966), wherein the Supreme Court ruled that state law governs transactions between private parties with respect to an oil and gas lease validly issued under the Mineral Leasing Act. The Mineral Leasing Act is, of course, generally applicable to

federal lands in the State of Alaska. Cf., Udall v. Tallman, 380 U.S. 1 (1965); Standard Oil Co. of California v. Hickel, 317 F.Supp. 1192 (D. Alaska); aff'd 450 F.2d 493 (9th Cir. 1971).

2. State Ownership Rights

The rights of a State as an owner of property should be no less than the rights of the Federal government as an owner of property; in this contest, the Supreme Court has held:

> "The power of Congress to dispose of any kind of property belonging to the United States 'is vested in Congress without limitation'. . . 'For it must be borne in mind that Congress not only has a legislative power over the public domain, but it also exercises the powers of the proprietor therein. Congress may deal with such lands precisely as an ordinary individual may deal with. . .property. It may sell or withhold them from sale.' Article 4, Section 3, Cl. 2 of the Constitution provides that 'The Congress shall have power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States.' The power over the public land thus entrusted to Congress is without limitations. And it is not for the Courts to say how that trust shall be administered. That is for Congress to determine."

Alabam v. Texas, Rhode Island v. Louisiana, 347 U.S. 272 (1954) at 273-274, citations omitted.

The Supreme Court of California has said:

> "In the absence of Constitutional limitations, and there is none here, the Legislature is free to dispose of the state's. . .lands in any way deemed by it from time to time to be for the public interest."

South San Joaquin Irrig. Dist. v. Neumiller, 42 P.2d 64 (1935). See also Ashwander v. Tenn. Valley Authority, 297 U.S. 288 (1936).

State powers arising from property ownership are probably thus more extensive than State regulatory powers. While the latter are subject to Constitutional limitations relating to the supremacy of Federal law, and control of interstate commerce, ownership powers are arguably not so limited. See U.S. v. California, 281 F.2d 726 (C.A. 9, 1960), where the Court said:

> "If the State had seen fit to impose conditions upon issuance or upon transfer of property it has wholly created, that is the state's prerogative so long as its demands are not arbitrary or discriminatory. The federal government has no power to command the state in this area. It has no power to direct that property be created by the state for the purpose of federal seizure." 281 F.2d at 728, emphasis supplied.

I would not imply that State ownership powers are totally without limits. In the Neumiller opinion, supra, it was said that the State's actions must not be "arbitrary" or "discriminatory." I would judge that the Courts may well proceed substantially in accord with the Ashwander discussion:

> "The constitutional provision [Art. 4, Sec. 3, Cl.2] is silent as to the method of disposing of property belonging to the United States. That method, of course, must be an appropriate means of disposition according to the nature of the property, it must be one adopted in the public interest as distinguished from private or personal ends, and one may assume it must be consistent with the foundation principles of our dual system of government and must not be contrived to govern the concerns reserved to the States."

297 u.s., at 388. Language such as this may be construed to mean that a State may not exercise its ownership to "contrive" to "govern the concerns reserved" to the Federal government; that is to say that Federal supremacy may still be a controlling doctrine when aligned against State ownership actions repugnant to a Federal interest.

3. State Powers of Taxation

A brief summary of certain generally accepted principles of state taxation may serve as parameters for discussion of specific issues:

(a) The taxing power may be exercised solely for public purposes;

(b) Uniformity and equality of rates and valuation between similarly situated parties is generally required by state law although distinctions based upon classification of property rights, business endeavors and the like, are permissible if not palpably arbitrary or capricious.

(c) Extreme flexibility in state taxation is the rule, but due process, equal protection and other federal constitutional rights or prerogatives can be effective limitations.

(d) Taxing schemes that burden (by discrimination or otherwise) interstate commerce, or have even incidental regulatory effects, are suspect.

(e) Tax structures that on their face conflict with federal constitutional interests or areas of federal preemption will nearly always be invalidated, but a similar and constitutionally valid effect might be achieved indirectly.

(f) Since the invalidation of a taxing statute results in total and irrevocable loss of several years' revenues, a conservative approach is preferable.

(g) Tax statutes are strictly construed against the taxing authority.

(h) The current trend in public policy is to permit state and local tax jurisdictions greater latitude in the face of spiraling local fiscal needs.

The specific tax questions which we have considered are as follows:

A. What are the limits of the power of a state to impose severance taxes?

1. Amount: The only apparent limitations on the amount of a tax are the due process and equal protection clauses of the 14th Amendment. However, even these limitations may be questioned in light of Magnano Co. v. Hamilton, 292 U.S. 40 (1934), wherein a state tax on oleomargarine, which had a destructive effect on the oleomargarine industry, was upheld aginst due process attacks.

> "Except in rare and special instances, the due process of law clause...is not a limitation upon the taxing power conferred upon Congress by the Constitution...and no reason exists for applying a different rule against a state...That clause is applicable to a taxing state...only if the act be so arbitrary as to compel the conslusion that it does not involve an exertion of the taxing power, but constitute in substance and effect, the direct exertion of a different and forbidden power, as for example, the confiscation of property...Nor may a tax within the lawful power of the state be judicially stricken down under the due process clause simply because its enforcement may or will result in restricting or even destroying particular occupations

> or businesses...unless....its necessary interpretation and effect be such as to plainly demonstrate that the form of taxation was adopted as a mere disguise, under which there was exercised, inreality, another and different power denied by the Federal constitution to the State."
> 292 U.S. at 44-45.

See also, Veazie Bank v. Fenno, 75 U.S. 533 (1869); Lehnhausen v. Lake Sho e Auto Parts Co., 410 U.S. 356 (1973).

2. Property Ownership considerations:

a. Generally, a state may levy a tax upon the severance of natural resources regardless of the ownership of the fee to the realty. There are, however, several special situations in which ownership by the United States or ownership or production by Indians could impose a ban to certain applications of such a tax.

b. No severance tax may be levied in a state where the property from which the minerals are severed is considered to be within the exclusive jurisdiction of the federal government by virtue of Article 1, Section 8, Clause 17 of the United States Constitution. Humble Pipeline Co. v. Waggoner, 376 U.S. 369 (1964). Such lands are those purchased from

a state for certain purposes (for example, military bases). "Purchase" has been held to include acquisition by gift, Humble Pipeline Co. v. Waggoner, supra, and Mississippi Power Fuel Corp. v. Cocreham, 382 F. 2d 929 (1967) cert. denied, 390 U.S. 1014 (1968). The determinative factors are: (i) acquisition from a state: (ii) for specific purposes; (iii) by purchase or gift. Indeed, absent special waiver or prior reservation by the state of power to tax a state may levy only income or gross receipts taxes with respect to these lands. 4 U. S. C. A. §104 - 110 (the "Buck Act").

Most federal lands including national forests and Indian lands, are generally not subject to exclusive federal jurisdiction; therefore, private lesses may be subjected to severance taxes. International Paper Co. v.

County of Siskiyou, 515 F. 2d 285 (9th Cir. 1974); Wilson v. Cook, 327 U.S. 474 (1946).

c. Severance taxes apparently may not be levied where Indians are producing gas from Indian lands. In Moses v. Kinnear, 490 F. 2d 21 (9th Cir. 1973), the Court, in construing 28 U.S.C.A. §1341, said, "The United States has a special interest in its ward Indians, with respect to which the government 'has charged itself with moral obligations of highest responsibility and trust' Seminole Nation v. U.S., 316 U.S. 310 (1942). This 'special interest" has manifested itself in the form of a federal policy to protect Indians and Indian property from state taxation...'State laws generally are not applicable to tribal Indians on an Indian reservation except where Congress has expressly provided that state law shall apply. It follows that Indians and Indian property on an Indian reservation are not subject to state taxation except by virtue of express authority conferred upon the state by act of Congress." McCalanhan v. Arizona State Tax Commission, 411 U.S. 164 (1973). (See also, cases collected in footnote 5 to text of Agua Caliente Ban of Mission Indians v. County of Riverside, 442 F. 2d 1184 (9th Cir. 1971),

cert. denied, 405 U.S. 933 (1972), rehearing denied, 405 U.S. 1033 (1972), rehearing denied, 409 U.S. 901 (1972), where Indian lands are said to be federal instrumentalities).

Under these rules, Indian producers from Indian lands should be exempt from severance taxes. It has been held, however, that non-Indian lessees of Indian property may be subjected to state taxes since such taxation is not a tax upon Indian property per se, United States v. Detroit, 355 U.S. 466 (1958). Note, however, that the view has been expressed that the prohibition of a direct tax also bars an indirect tax. See, Dissenting opinion, Agua Caliente Band of Mission Indians v. County of Riverside, supra.

3. Federal Instrumentalities: A state-imposed severance tax would be inalid if applied to property, instrumentalities, or agents of the United States, and clearly the tax could not be assessed against the federal government as a mineral lessee or producer. McCullough v. Maryland, 4 Wheat. 316 (1819); United States v. Detroit, supra.

4. Taxes levied only on natural gas: A state is not required to tax the severance of all minerals equally. A tax levied only upon the severance of natural gas, or levied upon natural gas at a rate different from that imposed upon the severance of other natural resources, will usually be free of federal constitutional problems, Charleston Federal Savings and Loan Association v. Alderson, 324 U.S. 182 (1945).

B. Can a very high severance tax be imposed, coupled with some form of rebate or tax credit to Alaskan users, or would such be struck down as a burden to interstate commerce?

1. Direct Rebates or Credits: Any plan under which a producer is given severance tax rebate for sales of reserves to intrastate users, where interstate commitments do not entitle the producer to substantially similar rebates, will be struck down as clearly discriminatory against interstate commerce. "In each case, it is our duty to determine whether the statute under attack, whatever its name may be, will in its practical operation work discrimination against interstate commerce." Best and Co. v. Maxwell, 311 U.S. 454, 455-456 (1940). See also Pennsylvania v. West Virginia, 262 U.S. 553 (1923). A tax levied only upon lessees of federal lands would of course be discriminatory and palpably arbitrary. International Paper Co. v. County of Siskiyou, supra; Phillips Chemical Co. v. Amos Independent School District, 361 U.S. 376 (1960) rehearing denied, 362 U.S. 937 (1960).

2. Indirect rebates or credits: A taxing statute under which deductions or credits for the cost of the severance tax are allowed against unrelated taxes that are born primarily by Alaskan residents, will probably be valid

if carefully constructed. Even if such tax credit should be held invalid, the severance tax itself ought not be affected. Thus the effect of invalidation would be to increase the burden on Alaskan residents and increase revenues.

Example: Alaska could grant a deduction or credit against its state income tax for expenses of a consumer of natural gas which are attributable to "passed-on" severance taxes. The producer would pay the severance tax to the state. The consumer would in effect reimburse the producer through a commensurate increase in the purchase price of the gas, perhaps being billed separately for the cost to the producer of the severance tax. The consumer would be made "whole" by the credit against the state income for the cost to him of ultimately bearing the severance tax. If the Alaskan income tax liabilities of the producers/consumers for interstate sales were such that a deduction or credit for "passed-on" severance taxes would be of small value, then, in effect, only interstate gas would bear the cost of severance taxes.

A simpler approach would be to lower by the amount of the anticipated revenues from the severance tax the rate of an unrelated tax which is now borne primarily by Alaskan residents. The overall effect of such reduction would be to lower the burden of residents.

C. How, and in what forms, can a state tax an interstate pipeline?

1. Franchise taxes: It is clear that a state may levy and collect franchise taxes even on a purely interstate pipeline, if such taxes are reasonable and non-discriminatory, i.e. payable by all corporations of the same legally valid classification (see subparagraph III. (d) below) doing business in the state. Colonial Pipeline Co. v. Traigle, 421 U.S. 10 (1975); Memphis Gas Co. v. Stone, 335 U.S. 80 (1948). The tax must be properly apportioned, or based solely on in-state pipeline property (and not on commodities actually in commerce; i.e., the gas being transported), in order to be reasonable and non-discriminatory. Methods of apportionment and valuation are not within the scope of this memorandum. However, the primary consideration is that Alaska tax only that portion of the pipeline's activities which are attributable to endeavors within the state.

2. Ad Valorem taxes: It is equally clear that the pipeline and accompanying right-of-way may be subject to a property tax, even though the pipeline carries gas in purely interstate commerce.

3. Income taxes: The state income tac may also be imposed upon an interstate business, provided that a proper allocation formula is employed, Northwestern States Portland Cement Co. v. Minnesota, 358 U.S. 450 (1959).

4. Separate classification for tax purposes of natural gas pipeline: While a state may subject an interstate gas pipeline operating within its borders to its general tax laws as indicated above, the state may wish to place a separate tax on such business which is not applicable to other businesses within the state. A separate tax will be valid as long as its purpose is to regulate the business, and the amount of the tax is reasonably limited to the costs of such regulation. However, where the purpose of the tax is to produce revenue, the classification of the business into a separate category from all other businesses must be justified both under state law requirements that taxation be equal and uniform and under equal protection clause of the federal constitution.

As far as the equal protection clause of the federal constitution is concerned, the Supreme Court has displayed a consistently lenient attitude toward the states' powers to single out specific types of businesses for separate taxation. See, e.g. Independent Warehouses, Inc. v. Schule, 331 U.S. 70 (1946) (upholding annual franchise or license tax applicable only to commerical storage facilities, where only one such facility existed in the taxing municipality); New York Rapid Transit Corporation v. New York, 303 U.S. 573 (1938) (Upholding taxation of public utilities at higher rate than was imposed upon business generally); Illinois Cent. R. Co. V Minnesota, 309 U.S. 157 (1940) (gross receipts tax levied on railroads but not other business).

Thus a tax should have a reasonable chance of surviving an attack on Constitutional grounds as long as it is applicable generally to all corporations similarly situated throughout the state (e.g., all corporations doing business in the state whose business consists of operating a natural gas pipeline) even if, at the time in question, there is only one corporation in the state which falls within the category of corporations subject to the tax. See Independent Warehouses, Inc. v. Schule, supra. However, we have found no decision in which not only was a single corporation subject to the statute, but that corporation was engaged exclusively in interstate commerce. It may be that the combination of the classification of the single business along with the effect on interstate commerce would cause a court to invalidate such a tax. If such a tax were upheld a court might find that the amount thereof must bear some reasonable relationship to the value of the privelege being granted, and that the principles of Magnano Co. V. Hamilton, supra Part 1 (a), which didnot involve a taxpayer involved solely in interstate commerce, are not applicable.

On balance, we believe that such a tax would probably withstand constitutional attacks, but that a more reliable subject of a high tax rate is the severance tax.

D. If gas reserves are contractually committed to an interstate pipeline, and dedicated to interstate service through an FPC certificate, can the value of the reserves be taxed as an asset of the pipeline?

While a state, under the strictures of Article 1, Section 10 of paragraph 2, of the United States Constitution, may not levy a tax on an item of property by reason of its exportation, a tax levied generally upon all property is nevertheless valid unless the property is "in commerce". See 71 Am. Jur. 2d, State and Local Taxation, Sections 117-121 and the authorities discussed therein. Moreover, it is believed that gas would not be "in commerce" until it begins to move in commerce and that a contractual right to withdraw could never be deemed "in commerce". See Kosydas v. National Cash Register Co., 417 U.S. 62 (1974); Cornell v. Coyne, 192 U.S. 418 (1904).

A state may classify property in multiple categories for taxation purposes and such classification will be upheld absent a finding of "palpable arbitrariness". Alaska might provide than an FPC certificate creates a separate property interest in real property or minerals, which interest would then be subject to an ad valorem tax. For an example of a separate estate in non-severed resources, see, International Paper Co. v. County of Siskiyou, supra (standing timber. By attributing taxable value to the con-

tractual right to the reserves, it seems likely that value of the reserves to the holders of the legal title thereof would be commensuratley reduced. If both interests in the reserves are considered as separate estates in the real property, it will probably be necessary to tax them at the same rate. If, however, the pipeline's contractual right to purchase the reserves can be son idered an "intangible" property right under Alaskan law, it may be possible to tax such right at a higher rate, since there is authority which approves of differing tax rates for tangibles and intangibles. See Randolph v. Simpson, 410 F. 2d 1067 (5th Cir. 1969) (Intangibles taxed at lower rate than tangibles). It seems clear that such intangibles would have a "situs" in Alaska within the rule of Wheeling Steel Corporation v. Fox, 298 U.S. 193 (1936), that intangibles may be taxed at other than the owner's domicile if such intangibles have be ome an integral part of some "local business".

E. Can a State require payment of a tax in any form other than money? For example, could a state impose a 4% tax on severed minerals and require delivery of 4% production in kind?

No; see 31 U.S.C.A. §392, (Supp. 1965), the predecessor of which was held constitutional in Guaranty Trust Co. of New York v. Henwood, 307 U.S. 247 (1939). Section 392 reads in relevant part as follows:

"All coins and currencies of the United States... shall be legal tender for all debts, public and private, public charges, taxes...." (emphasis added)

4. The power of the State to construct and operate a pipeline.

(a) May the State of Alaska create a State instrumentality to (1) purchase North Slope gas, (2) transport such gas by pipeline to Southern Alaska, (3) make resales of gas along the route and at the southern terminus to intrastate users, and resell the surplus for delivery in interstate commerce?

(b) If such were done, which aspects, if any, would be subject to Federal regulation, by whom, and to what extent?

(c) Could such a state-owned entity obtain rights-of-way over Federal lands, by condemnation or otherwise?

A. Power of a State to Own and Operate a Pipeline System.

There are no apparent legal impediments precluding enactment of legislation authorizing the creation of a State instrumentality to purchase, transport and resell North Slope gas.

The texts often describe a general rule that states have no power to authorize municipal corporations to engage in business of a private nature. 12 McQuillin, Municipal Corporations §36.01 et seq. (1970 Revised Vol.); 56 Am. Jur. 2d, Municipal Corporations, etc. §210 (1971) 64 C.J.S., Municipal Corporations §1842 (1950). This "rule" is based upon a series of 19th Century cases which apply the doctrine that the power of taxation possessed by governmental bodies is limited to taxation for a public purpose. See e.g. Loan Association v. Topeka, 87 U.S. (20 Wall) 655 (1874), Parkersburg v. Brown, 106 U.S. 487 (1882) (bonds issued to encourage establishment of manufacturing plants held invalid). However, even in the Topeka case the Supreme Court recognized the possibility that a municipality could engage in such activities if funds were available from a non-tax source.

> "If these municipal corporations, which are in fact subdivisions of the State, and which for many reasons are vested with quasi legislative powers, have a fund or other property out of which they can pay debts which they contract, without resort to taxation, it may be within the power of the legislature of the

State to authorize them to use it in aid of projects strictly private or personal but which would in a secondary manner contribute to the public good."

Over the years, the "rule" that municipal corporations may not engage in business of a private nature, as a result of everbroadening concepts of public purpose. For example, by 1937, public programs to assist in the establishment of manufacturing plants was found to be sufficiently related to the public interest to withstand constitutional challenges. Albritton v. Winona, 178 So 799, (Miss., 1938), app. dismissed 303 U.S. 627 (1938). Similarly, the public ownership of a yard for the sale of wood, coal and other fuels which, during the 19th century, was private business in which municipalities were not permitted to engage, In Re Opinion of Justices, 30 N.E. 1142 (Mass., 1892), was, by 1917, a public purpose for which taxes could be levied without violating the 14th Amendment to the Constitution. Jones et al. v. Portland, 245 U.S. 217 (1917).

The question of what is a "public purpose" has long been recognized as a question which is susceptable to local differences. The Supreme Court has indicated that in considering such matters great deference must be given to legislative and state court determinations. Jones et al. v. Portland, 245 U.S. 217 (1917); Green v. Frazier, 253 U.S. 233 (1920); and Carmichael v. Southern Coal Co., 307 U.S. 495 (1937).

The question of Constitutional authority for a state-owned natural gas pipeline system should be easily resolved. There can be little doubt that natural gas pipelines perform a public purpose. Indeed, the grant to privately-owned pipeline companies of the power of eminent domain must necessarily be grounded upon their public nature. The authority of municipalities to own and operate electric utilities and gas distributions systems, absent state statutory or constitutional restrictions, has long been clear. See e.g. 12 McQuillin Municipal Corporations, 3rd Ed. (1970) §35.04. The authority of the Federal Government to own and operate wholesale power systems has similarly been sustained. Tennessee Electric Power Company v. TVA, 306 U.S. 118 (1939) Aswander v. TVA, 297 U.S. 288 (1936).

The statutes of at least two states authorize state-owned natural gas pipeline systems. La. Rev. Statutes §30.557 et seq.; Miss. Code 1942 Annotated §5950.

The nature of the Alaskan project is such that it is feasible to construct only a single facility to bring North Slope gas to market. Since the deliverability required to make the line feasible will far exceed anticipated intrastate demand, it is inevitable that the bulk of the gas delivered through the system will be sold interstate. The question this suggests is whether, assuming the state ownership of a pipeline facility is generally permissible, such

ownership is permissible where the vast majority of the gas is destined for ultimate consumption outside of the state. No reported case addresses this issue. However, if the State can argue that its ownership of the facilities is necessary to assure service to its citizens, it should be able to argue that the service to interstate markets is merely incidental to the performance of services for its citizens.

B. Federal Regulation of Natural Gas Pipeline Companies.

Federal regulation of natural gas pipeline companies is accomplished primarily under the Natural Gas Act, 15 U.S.C. §717 et seq. and the Natural Gas Pipeline Safety Act, 49 U.S.C. §1671 et seq. Under the Natural Gas Act the Federal Power Commission has plenary jurisdiction to regulate natural gas pipeline companies which transport or sell for resale gas in interstate commerce. The Natural Gas Pipeline Safety Act provides for the establishment and enforcement of Federal minimum safety standards for natural gas pipelines.

As discussed in greater detail in Part II of this analysis, the construction and operation of pipeline facilities by a state instrumentality would probably be exempt from regulation by the FPC under the Natural Gas Act. As noted in that discussion, the operative sections of the Natural Gas Act are phrased in terms of regulation of "natural gas companies". The relevant terms under the Natural Gas Act,

i.e. "natural gas company", "person", "corporation", and "municipality" when read together would seem to exclude state-owned pipeline systems from the definition of "natural gas company" and thus from FPC regulation. 15 U.S.C. §717a, but see, FPC v. Corporation Commission of the State of Oklahoma, 362 F.Supp. 522 (W.D. Okla. 1973), aff'd 415 U.S. 961 (1974).

Although a literal reading of the Natural Gas Act would seem to preclude FPC jurisdiction over state-owned pipeline facilities, the assertion of such jurisdiction cannot be ruled out. Indeed, in view of (1) the willingness of the Court in the Oklahoma case essentially to ignore the definitions, in order to find that the Corporation Commission was a "person" which could be sued by the FPC under the Natural Gas Act, (2) the existence of two competing applications before the FPC at this time to construct pipeline facilities to bring North Slope gas to the United States, including one application involving a line through the State of Alaska, presumably along or close to the route which a State system would traverse, (3) the natural inclination of regulatory agencies to attempt to protect their own jurisdiction, and (4) the economic interest of the pipelines proposing to build systems to attach North Slope gas, it seems unlikely that the State would be able to construct and operate its facilities without litigating the issue of FPC jurisdiction.

AGO 667654

Assuming that the FPC does not have jurisdiction over the facilities, the most significant Federal regulation would be pursuant to the Natural Gas Pipeline Safety Act, 49 U.S.C. §1671 et seq. Under the Act, the Secretary of Transportation is authorized to establish minimum Federal safety standards for the transportation of gas and for pipeline facilities. The standards apply to the design, installation, inspection, testing, construction, operation, extension, replacement and maintenance of such facilities and are set out at 40 C.F.R. §190.1 et seq. Each person engaging in the transportation of gas or who owns or operates pipeline facilities is required to comply with the applicable safety standards and to file and comply with a plan of inspection and maintenance. 49 U.S.C. §1677. Unlike the Natural Gas Act, the term "person" in the Pipeline Safety Act specifically includes states and municipalities. 49 U.S.C. §1671. The Act provides an exemption for certain pipeline facilities and the transportation of gas not subject to FPC jurisdiction. To qualify however the safety standards and practices applicable to the facilities must be regulated on essentially the same basis as under the Act. The state agency must submit an annual certification that (1) it has regulatory jurisdiction over the pipeline facilities or transportation, (2) has adopted and is enforcing each of the Federal safety standards applicable to such facilities and transportation (3) has the authority to require record maintenance reporting an

inspection substantially as provided under the Pipeline Safety Act, and (4) that state law provides for the enforcement of safety standards by way of injunctive and monetary sanctions substantially the same as provided under the Pipeline Safety Act. The Pipeline Safety Act provides both civil penalties (not to exceed $1,000 per day for each violation or $200,000 for a related series of violations) and the authority to obtain injunctive relief to restrain violations of the Act including the restraint of transportation of gas or the operation of a pipeline facility. 49 U.S.C. §1678, 1679. States are authorized to establish a more stringent safety standard applicable to intrastate facilities but are precluded from doing so with respect to interstate transmission facilities. 49 U.S.C. §1672. United Gas Pipe Line Company v. Terrebonne Parish Police Jury, 319 F.Supp. 1138 (D.C. La. 1970) aff'd 445 F.2d 301 (5th Cir. 1971).

Unless Alaska creates an agency with jurisdiction to regulate and enforce safety standards for the transportation of natural gas within the state, which agency would have the authority over the proposed state-owned pipeline, the pipeline would be subject to regulation by the Secretary of Transportation. If the State adopts such a regulatory scheme, the regulatory authority of the Secretary of Transportation would probably be ousted.

C. Methods by Which the State Could Obtain Rights-of-Way Over Federal Lands.

As an initial matter, it should be noted that the law seems clear that the rights of a state to obtain property by condemnation could not be used to obtain such rights-of-way over federal land. In Utah Power and Light Co. v. U.S., 243 U.S. 389 (1917) the U.S. Supreme Court noted that the Federal Government has the full power under the Constitution "to protect its lands, to control their use and to prescribe in what manner others may acquire rights in them". 243 U.S.C. 404. The Court went on to state that:

> "State laws, including those relating to the exercise of eminent domain, have no bearing upon a controversy such as is here present, save as they may have been adopted or made applicable by Congress."

I have found no indication that Congress has authorized the condemnation of Federal lands by states for pipeline rights-of-way. If the State determines to construct its own pipeline system, it could probably obtain right-of-way over Federal lands under the provisions of the Mineral Leasing Act, and several other Federal Statutes.

The basic statutory provisions authorizing rights-of-way for pipeline through Federal lands are contained in the Mineral Leasing Act 30 U.S.C. §185. Under the Act

> "Rights-of-way through any Federal lands may be granted by the Secretary of the Interior or appropriate agency head for pipeline purposes for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any refined product produced therefrom to any applicant possessing

> the qualifications provided in Section 181 of this title in accordance with this section. 30 U.S.C. §185(a).

Although it is not clear that a State agency would be "an applicant possessing the qualifications provided in Section 181" it seems unlikely that the right to acquire rights-of-way would be denied to it. Section 181 provides that rights-of-way may be granted to

> ". . . citizens of the United States, or to associations of such citizens, or to any corporation organized under the laws of the United States, or of any State or Territory thereof, or in the case of coal, oil, oil shale, or gas, to municipalities. Citizens of another country, the laws, customs or regulations of which deny similar or like privileges to citizens, or corporations of this country, shall not by stock ownership, stock holding, or stock control, own any interest in any lease acquired under the provisions of this chapter."

Under the Act, a right-of-way may be obtained through all lands owned by the United States except those "lands in the National Park System, lands held in trust for an Indian or Indian Tribe, and lands on the Outer Continental Shelf". 30 U.S.C. §185(b)(1). It should be noted that there is separate statutory authorization for oil and gas pipeline rights-of-way through National Wildlife Refuges. 16 U.S.C. §668(d), and Indian Reservations 25 U.S.C. §321. General provisions authorizing the grant of oil and gas pipeline rights-of-way through national parks, are not apparent, nor do the specific statutory provisions relating to the National Parks within Alaska authorize such rights-of-way. If the proposed pipeline must cross national park lands,

separate congressional authorization of the rights-of-way would be required.

II.

PERMITTED AND PROHIBITED STATE ACTIONS

As we have seen in Section I, certain aspects of natural gas production, transportation, and marketing are subject to Federal control, while others lie within the sphere of State control. What happens when Federal and State interests conflict? The potential for conflict is well illustrated in FPC v. Transcontinental Gas Pipe Line Corp., 365 U.S. 1 (1961), where it was said:

> "When Congress initially enacted the Natural Gas Act in 1938, all the indications were that Congress intended the States to be the primary arbiters of conservation problems. The 1938 Act was based on a 1936 report rendered by the Federal Trade Commission and the section in that report devoted to conservation stresses the powers of state bodies to adopt corrective measures. The final recommendation of the Federal Trade Commission in regard to conservation contemplated primary state authority, with federal agencies being relegated to a reporting function. This recommendation formed the basis for § 11 of the Act as ultimately passed and that section reveals a secondary role for the Commission in this regard.
>
> "However, in 1940, the Commission reported its dissatisfaction with the limited scope of §7. The 1938 version of § 7 restricted the Commission's jurisdiction to certification of transportation into areas where the market was already being served by another natural gas company; if a pipeline wished to extend service into virgin territory, the Commission had no power to act. The Commission felt that this limitation barred it from considering "the broad social and economic effect of the use of various fuels" in a § 7 proceeding, Kansas Pipe Line & Gas Co., 2 F.P.C. 29, 57, and, in its 1940 Annual Report, the Commission urged that the restriction be deleted in order that conservation considerations might be weighed.

The Commission implemented its recommendation by submitting to Congress a proposed amendment to § 7 with the restrictive language eliminated, and an amendment substantially similar to the one drafted by the Commission was enacted in 1942.

". . .

"There is a broader principle here which also stands in opposition to respondents' contentions. When Congress enacted the Natural Gas Act, it was motivated by a desire 'to protect consumers against exploitation at the hands of natural gas companies.' Sunray Mid-Continent Oil Co., v. Federal Power Commission, 364 U.S. 137, 147, 80 S.Ct. 1392, 1398, 4 L.Ed.2d. 1623. To that end, Congress 'meant to create a comprehensive and effective regulatory scheme.' Panhandle Eastern Pipe Line Co. v. Public Service Commission, 332 U.S. 507, 520, 68 S.Ct. 190, 197, 92 L.Ed. 128. See Public Utilities Commission of Ohio v. United Fuel Gas Co., 317 U.S. 456, 467, 63 S.Ct. 369, 375, 87 L.Ed. 396. It is true, of course, that Congress did not desire comprehensive federal regulation; much authority was reserved for the States. But, it is equally clear that Congress did not desire that an important aspect of this field be left unregulated. See Panhandle Eastern Pipe Line Co. v. Public Service Commission, supra. Therefore, when a dispute arises over whether a given transaction is within the scope of federal or state regulatory authority, we are not inclined to approach the problem negatively, thus raising the possibility that a 'no-man's land' will be created. Compare Guss v. Utah Labor Relations Board, 353 U.S. 1, 77 S.Ct. 598, 603, 1 L.Ed.2d 601. That is to say, in a borderline case where congressional authority is not explicit we must ask whether state authority can practicably regulate a given area and, if we find that it cannot, then we are impelled to decide that federal authority governs.

In this case, the dispute is over the "economic" waste of gas which has been committed to transportation in interstate commerce outside the producing State. The Commission has not attempted to exert its influence over such "physically" wasteful practices as improper well spacing and the flaring of unused gas which result in the entire loss of gas and are properly of concern to the producing State; nor has the Commission attempted to regulate the "economic" aspects of gas used within the producing State. Respondents contend that, even in this posture, the Commission has usurped the functions of state regulating bodies but we cannot agree.

> In the 1936 Federal Trade Commission Report, upon which respondents so heavily rely, there was some mention of control of the end use of gas and, as we have said, this report was strongly oriented towards state regulation. However, as the Court of Appeals pointed out, the primary emphasis was on physical waste of gas within the producing State and the reference to end use probably contemplated the use of gas in gasoline extraction and the manufacture of carbon black. 271 F.2d at page 947. There is no indication that the Federal Trade Commission or Congress was thinking in terms of state-controlled "economic" conservation of gas committed to interstate commerce. Moreover, it is questionable whether any State could be expected to take the initiative in enforcing this type of "economic" conservation. A producing State might wish to prolong its gas reserves for as long as possible but producing States have no control over the use to which gas is put in another State. See Michigan-Wisconsin Pipe Line Co. v. Calvert, 347 U.S. 157, 74 S.Ct. 396, 98 L.Ed. 583, Com. of Pennsylvania v. State of West Virginia, 262 U.S. 553, 43 S.Ct. 658, 67 L.Ed. 1117; State of Oklahoma v. Kansas Natural Gas Co., 221 U.S. 229, 31 S.Ct. 564, 55 L.Ed. 716. Consuming States may control the end use of gas, Panhandle Eastern Pipe Line Co. v. Michigan Public Service Commission, 341 U.S. 329, 71 S.Ct. 777, 95 L.Ed. 993, but the deficiencies of this system in the present context are apparent--unless all States cooperate in enforcing a common regulation, the producer may pick a State which is sufficiently anxious for this scarce resource that it will take gas irrespective of the use. Therefore, it appears that, consistent with the congressional purpose of leaving no "attractive gap" in regulation, we must conclude that the "end-use" factor was properly of concern to the Commission.

We have, therefore, a system of dual regulation but one which the Court recognizes has no hard and fast lines of demarcation. Since the areas of present and future Federal-State conflict cannot be mapped with precision, it would perhaps be instructive to look at a number of specific issues to see which State actions may be permissible, and which State actions are probably prohibited.

1. The State may not embargo the movement of gas in interstate commerce through the exercise of conservation powers. The Supreme Court has consistently struck down state legislation designed to prohibit or limit the exportation of oil and gas to other states even where the state alleges that the supply of gas is no longer sufficient to meet the state's needs and that the legislation is necessary to conserve the resources of the state:

> "We turn now to the principal issue, whether a State wherein natural gas is produced and is a recognized subject of commercial dealings may require that in its sales and disposal consumers in that State shall be accorded a preferred right of purchase over consumers in other States, -- when the requirement necessarily will operate to withdraw a large volume of the gas from an established interstate current whereby it is supplied in other States to consumers there. Of course, in the last analysis, the question is whether the enforced withdrawal for the benefit of local consumers is such an interference with interstate commerce as is forbidden to a State by the Constitution. The question is an important one; for what one State may do others may, and there are ten States from which natural gas is exported for consumption in other States. Besides, what may be done with one natural product may be done with others, and there are several States in which the earth yields products of great value which are carried into other States and there used. But, notwithstanding the importance of the question, its solution is not difficult. The controlling principles have been settled by many adjudications, -- some so closely in point that the discussion here may be relatively brief.
>
> "By the Constitution, Art. I, § 8, cl. 3, the power to regulate interstate commerce is expressly committed to Congress and therefore impliedly forbidden to the States. The purpose in this is to protect commercial intercourse

from invidious restraints, to prevent interference through conflicting or hostile state laws and to insure uniformity in regulation. It means that in the matter of interstate commerce we are a single nation -- one and the same people. All the States have assented to it, all are alike bound by it and all are equally protected by it. Even their power to lay and collect taxes, comprehensive and necessary as that power is, cannot be exerted in a way which involves a discrimination against such commerce. Ward v. Maryland, 12 Wall. 418, 430; Welton v. Missouri, 91 U.S. 275, 280; Webber v. Virginia, 103 U.S. 344, 350; Coe v. Errol, 116 U.S. 517, 525-526; Guy v. Baltimore, 100 U.S. 434, 442-443; Robbins v. Shelby County Taxing District, 120 U.S. 489, 498.

"Natural gas is a lawful article of commerce and its transmission from one State to another for sale and consumption in the latter is interstate commerce. A state law, whether of the State where the gas is produced or that where it is to be sold, which by its necessary operation prevents, obstructs or burdens such transmission is a regulation of interstate commerce, -- a prohibited interference. West v. Kansas Natural Gas Co., 221 U.S. 229; Public Utilities Commission v. Landon, 249 U.S. 236, 245; United Fuel Gas Co. v. Hallanan, 257 U.S. 277; Dahnke-Walker Milling Co. v. Bondurant, 257 U.S. 282, 290-291; Lemke v. Farmers Grain Co., 258 U.S. 50; Western Union Telegraph Co. v. Foster, 247 U.S. 105; Minnesota v. Barber, 136 U.S. 313; Brimmer v. Rebman, 138 U.S. 78. The West Virginia act is such a law. Its provisions and the conditions which must surround its operation are such that it necessarily and directly will compel the diversion to local consumers of a large and increasing part of the gas heretofore and now going to consumers in the complainant States, and therefore will work a serious interference with that commerce."

Pennsylvania v. West Virginia, 262 U.S. 553, 595-597 (1923); and see Haskell v. Kansas Natural Gas Co., 224 U.S. 217 (1912); West v. Kansas Natural Gas Co., 221 U.S. 229 (1911).

2. The State may not establish a natural gas pricing structure for gas sold for resale in interstate commerce. Any attempt by a State to establish minimum or maximum prices for gas produced in the State but sold in interstate commerce would be invalidated by the courts. The decision in F.P.C. v. Corporation Commission of Oklahoma, 362 F.Supp. 522 (W.D. Okla.), aff'd 415 U.S. 961 (1974), establishes beyond question that the States cannot directly or indirectly affect the price of gas sold in interstate commerce:

> "The State has no authority, either directly or indirectly, to fix the price at which natural gas is sold in interstate commerce. The Supreme Court stated in Northern Natural Gas Co. v. State Corporation Commission of Kansas, 1963, 372 U.S. 84, 83 S.Ct. 646, 9 L.Ed.2d 601 that:
>
> ...[O]ur inquiry is not at an end because the orders do not deal in terms with prices or volumes of purchases, cf. Dayton-Goose Creek R. Co. v. United States, 263 U.S. 456, 478, 44 S.Ct. 169, 172, 68 L.Ed. 388. The Natural Gas Act precludes not merely direct regulation by the States of such contractual matters...
>
> The federal regulatory scheme leaves no room either for direct state regulation of the prices of interstate wholesales of natural gas, Natural Gas Pipeline Co. v. Panoma Corp., 349 U.S. 44, 75 S.Ct. 576, 99 L.Ed. 866, or for state regulations which would indirectly achieve the same result. pp. 90-91, 83 S.Ct. p. 650.
>
> "In Phillips Petroleum Co. v. Wisconsin, supra, it was argued that Peerless and Phillips Petroleum Co. v. Oklahoma, 1950, 340 U.S. 190, 71 S.Ct. 221,

95 L.Ed. 204, established that the states could regulate interstate sales, and, therefore, such sales were not within the gap which the Natural Gas Act was intended to fill. The Supreme Court, however, was of a different view:

> Those cases upheld as constitutional state minimum price orders, justified as conservation measures, applying to sales of natural gas in interstate commerce. But it is well settled that the gap referred to is that thought to exist at the time the Natural Gas Act was passed, and the jurisdiction of the Commission is not affected by subsequent decisions of this Court which have somewhat loosened the constitutional restrictions on state activities affecting interstate commerce, in the absence of conflicting federal regulation. [Citation omitted] The Federal Power Commission did not participate in the Cities Service and Phillips Petroleum cases, the appellants there did not assert a possible conflict with federal authority under the Natural Gas Act, and consequently we expressly refused to consider at that time '[w]hether the Gas Act authorizes the Power Commission to set field prices on sales by independent producers, or leaves that function to the states...'

"Shortly after the decision in Phillips the Supreme Court was called upon in Natural Gas Pipeline Co. v. Panoma Corporation, 1955, 349 U.S. 44, 75 S.Ct. 576, 99 L.Ed. 866 to review the validity of certain minimum price orders of the Oklahoma Corporation Commission. The Supreme Court of Oklahoma had affirmed the orders, reasoning that they were primarily conservation measures, rather than pricing regulations, and that it was immaterial that they would have an incidental effect on prices. Natural Gas Pipeline Co. v. Corporation Commission, et al., 1954, Okl. 272 P.2d 425. The United States Supreme Court reversed, holding that the case was controlled by Phillips, supra. Holding essentially that Peerless was no longer authority for states to regulate interstate natural gas prices, the High Court stated:

> We disagree with the contention of the appellees that Cities Service Gas Co. v. Peerless Oil

and Gas Co., 340 U.S. 179, 71 S.Ct. 215, 95 L.Ed. 190, and Phillips Petroleum Co. v. Oklahoma, 340 U.S. 190, 71 S.Ct. 221, 95 L.Ed. 204, are applicable here. In those cases we were dealing with constitutional questions and not the construction of the Natural Gas Act. The latter question was specifically not passed upon in those cases. p. 45, 75 S.Ct. p. 576.

"In Federal Power Commission v. Transcontinental Gas Pipeline Corp., 1961, 365 U.S. 1, 9-20, 81 S.Ct. 435, 5 L.Ed.2d 377, it was held that the Federal Power Commission, through its certification power, could prevent the waste of gas committed to its jurisdiction. In so holding, the Court noted a distinction between 'economic waste' and 'physically wasteful practices'. The former involves a general monitoring of natural gas supply through manipulations of rate structure and determinations of gas use priorities, while the latter involves such matters as improper well spacing and the flaring of unused gas. The regulation of 'economic waste' is properly within the jurisdiction of the Federal Power Commission, leaving the state authority to regulate 'physically wasteful practices,' so long as such do not interfere with Federal jurisdiction.

"In Northern Natural Gas Co. v. State Corporation Commission of Kansas, 1965, 372 U.S. 84, 83 S.Ct. 646, 9 L.Ed.2d 601, the Kansas Corporation Commission had issued orders which required an interstate pipeline company to purchase natural gas ratably from all wells connecting to its pipeline system. The United States Supreme Court reversed an affirmance of the order by the Kansas Supreme Court. In so doing, the High Court held that a purpose, 'however legitimate to conserve natural resources, does not warrant direct [or indirect] interference by the States with the price[s] of natural gas wholesales in interstate commerce.' [Italics ours] The orders were struck down because they necessarily impaired the ability of the Federal Power Commission to regulate comprehensively and effectively the transportation and sale of natural gas and to achieve the uniformity of regulation which was the objective of the Natural Gas Act.

"The problem in Northern Natural, supra, as here, was:

...not as to the existence or even the scope of a State's power to conserve its natural

AGO 667666

resources; the problem is only whether the Constitution sanctions the particular means chosen by...[the state] to exercise the conceded power if those means threaten effectuation of the federal regulatory scheme. [Emphasis supplied]

"The Defendant also relies upon Section 1(b) of the Natural Gas Act, 15 U.S.C. § 717(b), which states in part that the provisions of the Act 'shall not apply...to the production and gathering of natural gas.' Accordingly, Order No. 93,381, paragraph 19, states that:

> All we do is prohibit the production of gas under circumstances which we find will produce waste; and to prevent that waste, we will order wells to be shut in. Our Order and our regulatory action is complete before any sale takes place.

"The state courts, which were reversed in Panoma and Cities Service, had relied upon identical rationale in upholding state minimum price orders. The Oklahoma Supreme Court had observed in affirmance that 'the sale is made before any movement of any kind starts and before any thing in the nature of interstate commerce occurs.' supra, 272 P.2d at 431. Similarly, the Kansas Supreme Court had observed the order of the Kansas Commission 'fixed a minimum price to be paid for gas before cessation of production.' 180 Kan. 454, 304 P.2d 528 at 535.

"In the case at bar, the Defendant seeks to do precisely what the United States Supreme Court held that the Kansas Corporation Commission could not do. Here, as there, a certain price level must be satisfied as a condition precedent to production. The High Court said in the Northern, supra, case, 'It has been consistently held that 'production' and 'gathering' are terms narrowly confined to the physical acts of drawing the gas from the earth and preparing it for the first stages of distribution.' The Defendant is not concerned herein with the mere physical problem of production; it is concerned with the price of the sale." Id., pp. 538-540.

3. A State may not accomplish by indirection that which is prohibited through direct action. The courts have not been hesitant to disregard a state contention that a statute

or regulation was designed to promote conservation where the court determines that the state's real intent was otherwise. A good example of this is the attempt by the State of Texas to force interstate pipelines to purchase ratably from all producers in a field. The Common Purchaser Act of 1931 compelled the purchase of gas from all producers in the field, and was held unconstitutional in Texoma Natural Gas Co. v. Railroad Commission, 59 F.2d 750 (W.D.Tex. 1932). The State of Texas then attempted to accomplish the same goal by indirection through the issuance of proration orders. Proration orders designed to prevent waste have been held to be a constitutional exercise of the state's police power. In this instance, the interstate pipelines owned their own gas wells and were able to satisfy the needs of the pipeline through their own production. The result of the proration orders was to so decrease the amount of production from all wells, including the pipeline-owned wells, that the pipeline was forced to purchase from other producers in order to fill the pipeline. The State contended that the action was necessary to prevent correlative rights of owners in a common reservoir -- approximately 20% of the gas in the reservoir was owned by persons who had no market other than the interstate pipelines, and the only way these owners could prevent drainage would be to produce oil and gas for which there was no market. However, the Supreme Court ruled that the State's action was an impermissible interference with interstate commerce:

"...We assume that the prohibition of any wasteful conduct, whether primarily in behalf of other owners of gas in the common reservoir, or because of the public interests involved, is consistent with the Constitution of Texas and that of the United States, and that to prevent waste production may be prorated. We assume, also, that the State may constitutionally prorate production in order to undue drainage of gas from the reserves of well owners lacking pipe line connections. If proration were lawfully applied for any such purposes, the fact that thereby other private persons would incidentally and gratuitously obtain important benefits would present no constitutional obstacle. And the fact that plaintiffs' gas is to be sold in interstate commerce would not preclude such exercise of the State's power. Compare Champlin Refining Co. v. Corporation Commission, 286 U.S. 210, 235.

"But the sole purpose of the limitation which the order imposes upon the plaintiffs' production is to compel those who may legally produce, because they have market outlets for permitted uses, to purchase gas from potential producers whom the statute prohibits from producing because they lack such a market for their possible product. Plaintiffs' operations are neither causing nor threatening any overground or underground waste. Every well owner in the field is free to produce the gas, provided he does as appears, physically free to provide himself with a market and with transportion and marketing facilities. There is no basis for a claim that his right, or opportunity, will be interfered with by a disproportionate taking by any one of those who may legally produce."

Thompson v. Consolidated Gas Utilities Corp., supra, at pp. 76-77. (Footnotes omitted).

The prohibition on attempted State direct action which conflicts with the Federal regulatory scheme is also reflected in Northern Natural Gas Co. v. Kansas Corp. Comm., 372 U.S. 84 (1963), where the Supreme Court ruled invalid an order of the Kansas State Corporation Commission requiring

an interstate pipeline to purchase gas ratably from all wells in each field within the State where the pipeline's facilities were located. The Court held that while the proration of production was a legitimate exercise of the State's police power, the means chosen conflicted with the federal regulatory scheme:

> "The danger of interference with the federal regulatory scheme arises because these orders are unmistakably and unambiguously directed at purchasers who take gas in Kansas for resale after transportation in interstate commerce. In effect, these orders shift to the shoulders of interstate purchasers the burden of performing the complex task of balancing the output of thousands of natural gas wells within the State, cf. Miller Bros. Co. v. Maryland, 347 U.S. 340 - a task which would otherwise presumably be the State Commission's. Moreover, any readjustment of purchasing patterns which such orders might require of purchasers who previously took unratably could seriously impair the Federal Commission's authority to regulate the intricate relationship between the purchasers' cost structures and eventual costs to wholesale customers who sell to consumers in other States. This relationship is a matter with respect to which Congress has given the Federal Power Commission paramount and exclusive authority. See Federal Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 610. The prospect of interference with the federal regulatory power in this area is made even more acute by the fact that criminal sanctions imposed by state statute for noncompliance fall upon such purchasers and not upon the local producers. Therefore, although collision between the State and federal regulation may not be an inevitable consequence, there lurks such imminent possibility of collision in orders purposely directed at interstate wholesale purchasers that the orders must be declared a nullity in order to assure the effectuation of the comprehensive federal regulation ordained by Congress."

Justice Harlan, dissenting with two other Justices, noted that enforcement of proration orders through the pipelines was the most efficient way to accomplish the State's

purpose, and argued that any threat to federal regulation from such an order was no different than that resulting from other valid conservation measures. Justice Harlan also argued that all conservation legislation constituted an interference with interstate commerce; therefore, the ultimate effect of the majority's ruling would be to invalidate all conservation powers of the states.

> "The ratable take orders here were intended as conservation measures -- to protect the correlative rights of producers taking gas from a common source of supply by preventing drainage from underproduced wells to overproduced wells. It has always been recognized that the States possess the power to conserve scarce resources such as natural gas and to prevent unfair and discriminatory production of this resource by some wells at the expense of others. See, e.g., Patterson v. Stanolind Oil & Gas Co., 305 U.S. 376; Lindsley v. Natural Carbonic Gas Co., 220 U.S. 61; Ohio Oil Co. v. Indiana, 177 U.S. 190. It is difficult to imagine any exercise of this conservation power that would not carry with it the possibility of affecting the costs incurred by those who purchase gas from producers. Regulations requiring the casing of wells, prohibiting the use of pumps, restricting production to a certain percent of a well's 'open flow,' imposing a particular gas-oil ratio, controlling drilling operations and pipeline pressure, prescribing the permissible spacing of wells, and enforcing pooling or unitization may reduce the amount of gas available for sale by a particular producer (at least in the short run) and thus force a purchaser to buy from it or someone else probably at greater cost. Yet it has never been suggested that such state measures are for the reason invalid.
>
> "Indeed, the most direct interference with the availability of gas for interstate sale is the 'allowable' order. It places a ceiling on the amount of gas that may be produced by a particular well during a given period of time and inevitably makes pipelines

spread their demand among many wells. Obviously its possible effect on cost is precisely the same as that which may be caused by a ratable take order, for the two orders are merely variations of the same regulatory measure; both are designed to prevent the disproportionate taking of gas from some wells to the disadvantage of others.

"In Champlin Refining Co. v. Corporation Comm'n, 286 U.S. 210 (1932), this Court sustained, against a challenge under the Commerce Clause, a state allowable order. Since the States had the power to issue such an order at the time the Natural Gas Act was passed, nothing in that Act can now be considered to withdraw it. This is so because it is beyond dispute that when Congress enacted the Natural Gas Act in 1938 it did not intend to deprive the States of any regulatory powers they were then deemed to possess under the Constitution. Rather, the Act was intended only to fill the 'gap . . . thought to exist at the time the Natural Gas Act was passed' by providing for federal regulation of those aspects of the natural gas business that the States were at that time believed to be constitutionally incapable of regulating. Phillips Petroleum Co. v. Wisconsin, 347 U.S. 672, 684, 685-687. As was specifically stated in the House Committee Report, the Act 'takes no authority from State commissions, and is so drawn as to complement and in no manner usurp State regulatory authority.' H.R. Rep. No. 709, 75th Cong., 1st Sess., p. 2.

"If an allowable order is now valid, what is the distinction between such an order and the ratable take orders in the present case? The Court points to no difference in terms of effect on cost structure, but only to the fact that the orders here are directed at purchasers and not producers. For reasons already discussed, supra, pp. 100-102, this difference is illusory.

"Quite apart from the absence of any significant difference between the possible general cost ramifications of an allowable and a ratable take order, the very facts of the case before us demonstrate the folly of determining whether or not the jurisdiction of the Federal Power Commission has been invaded on the basis of general possibilities unsupported by specific data. Appellant is paying a higher price for gas to Republic than to any other producer in the Kansas Hugoton Field. If appellant could reduce its take from Republic wells without contractual liability, the over-all cost of its

gas purchases would in all likelihood decrease. Surely such a beneficial effect on appellant's cost structure is not inconsistent with the purposes of the Natural Gas Act. And we have no way of knowing the extent to which the same is true of other Kansas purchasers. The lurking danger of collision with federal regulation that the Court fears may be completely nonexistent. Yet on this insecure foundation the Court builds a rule that, if consistently applied, may well destroy the conservation powers of the States. And this in the name of an Act expressly intended to preserve existing state powers." Id., pp. 103-106. (Footnotes omitted).

The most important aspect of Justice Harlan's pessimistic outlook for the future is his recognition that the states' traditional control over conservation can be eroded under the preemption doctrine. While a particular conservation statute or regulation may not be held unconstitutional as an interference with interstate commerce, that same statute or regulation may be invalid if it conflicts with an area preempted by the Federal government. This is illustrated again by reference to F.P.C. v. Corporation Commission of Oklahoma, supra, wherein the District Court discusses the fact that state regulations establishing minimum prices for the sale of natural gas in interstate commerce were originally upheld by the Supreme Court as valid conservation matters. However, in the wake of the Phillips case wherein the Court determined that the FPC had jurisdiction over producers the attempts by the states to set minimum prices were held invalid in light of conflicting federal regulation. Thus, it must be concluded that Congress could act to preempt any state control over production and that such legislation would probably be constitutional.

4. The State May Not Effectively Block Construction of an Interstate Pipeline by Denying Permission to Cross State Lands.

The power of eminent domain granted to an interstate natural gas pipeline is found in Sec. 7(h) of the Natural Gas Act, 15 U.S.C. § 717(f), which is as follows:

> "When any holder of a certificate of public convenience and necessity cannot acquire by contract, or is unable to agree with the owner of property to the compensation to be paid for, the necessary right-of-way to construct, operate, and maintain a pipe line or pipe lines for the transportation of natural gas, and the necessary land or other property, in addition to right-of-way, for the location of compressor stations, pressure apparatus, or other stations or equipment necessary to the proper operation of such pipe line or pipe lines, it may acquire the same by the exercise of the right of eminent domain in the district court of the United States for the district in which such property may be located, or in the State courts. The practice and procedure in any action or proceeding for that purpose in the district court of the United States shall conform as nearly as may be, with the practice and procedure in similar action or proceeding in the courts of the State where the property is situated: Provided, that the United States district courts shall only have jurisdiction of cases when the amount claimed by the owner of the property to be condemned exceeds $3,000."

As can be seen from the foregoing quote, Sec. 7(h) makes no reference to public or state owned lands; moreover, there appear to be no reported cases which specifically address the issue of whether Sec. 7(h) provides the authority to condemn state owned lands.

It has been determined that the power of eminent domain under the Federal Power Act, 16 U.S.C. § 814, includes

the power to condemn state owned property. In State of Missouri ex rel. v. Union Electric Light & Power Co., 42 F.2d 692 (C.D. Mo. 1930), the State of Missouri brought an action to enjoin construction of a hydroelectric project which had been approved by the FPC. The State alleged that construction of the project would result in the accumulation of a large body of water which would submerge "both public and private property, including the courthouse and the jail in the village of Linn Creek, a large number of school districts, and at sundry points inundate the public highways." In response to the State's allegation that the utility company could not appropriate land already dedicated to public use the Court stated as follows:

> "9. While it is well settled that the Legislature may authorize the taking of property already devoted to a public use, it is equally well established that a general delegation of the power of eminent domain does not authorize the taking of property already devoted to a public use, 'unless it can clearly be inferred from the nature of the improvements authorized or from the impracticability or constructing them without encroaching upon such property that the legislature intended to authorize such a taking.' 10 R.C.L. § 169; Western Union Telegraph Co. v. Pennsylvania R.R. Co., et al., 195 U.S. 540, 25 S.Ct. 133, 49 L.Ed. 312, 1 Ann. Cas. 517. In this connection it cannot be questioned but that the Congress had the power to confer the right of eminent domain upon the defendant Union Electric Light & Power Company. 10 R.C.L. § 167.
>
> "In the instant case the Congress must have contemplated this identical situation; hence the requirement of notice. Moreover, the proposed improvements could not be accomplished, except through the exercise, if necessary, of eminent domain against property already

dedicated to public use. To deny the right of eminent domain as against this public property would not only defeat the functions of the national government, but would run contrary to the obvious intent of the Congress as expressed in the Water Power Act. Stockton, Attorney General v. Baltimore & New York R.R. Co. (C.C.) 32 F.9; 20 C.J. § 90, P. 602; Vermont Hydro-Electric Corporation v. Dunn et al., 95 Vt. 144, 112 A. 223, 12 A.L.R. 1495; Imperial Irrigation Co. v. Jayne, 104 Tex. 395, 138 S.W. 575, Ann. Cas. 1914B, 322." Id., at p. 698.

While this case appears to be the only one to have ever addressed the issue at hand, it is clearly consistent with other cases holding that the federal government can condemn state lands:

"The power of eminent domain is essential to a sovereign government. If the United States has determined its need for certain land for a public use that it is within its federal sovereign powers, it must have the right to appropriate that land. Otherwise, the owner of the land, by refusing to sell it or by consenting to do so only at an unreasonably high price, is enabled to subordinate the constitutional powers of Congress to his personal will. The Fifth Amendment, in turn, provides him with important protection against abuse of the power of eminent domain by the Federal Government.

"While in its early days the Federal Government filed its condemnation cases in the state courts, this Court, in Kohl v. United States, 91 U.S. 367, disposed of the idea that this was necessary. In that case, which has become the leading case on the federal power of eminent domain, Mr. Justice Strong also said:

'It has not been seriously contended during the argument that the United States government is without power to appropriate lands or other property within the States for its own uses, and to enable it to perform its proper functions. Such an authority is essential to its independent existence and perpetuity. These cannot be preserved

if the obstinacy of a private person, or if any other authority, can prevent the acquisition of the means of instruments by which alone governmental functions can be performed. The powers vested by the Constitution in the general government demand for their exercise the acquisition of lands in all the States...'." United States v. Carmack, 329 U.S. 230, 236-237 (1946).

It is noteworthy that the Natural Gas Act did not provide interstate pipelines with the power of eminent domain until the Act was amended in 1947 to add Section 7(h). The legislative history of the 1947 amendment makes it clear that Congress intended to confer on interstate pipelines the same power of eminent domain as contained in the Federal Power Act:

> "In some States the right of eminent domain is expressly denied to companies which may have qualified under the Natural Gas Act. For instance, in the State of Arkansas the State constitution provides that a foreign corporation shall not have the power to condemn private property (Constitution of Arkansas 1874, as amended, art. 12, sec. 11). The State of Wisconsin grants the right of eminent domain to only those gas companies which are Wisconsin corporations (Wisconsin Statutes, 1945, ch. 32.02(6)). Nebraska grants the right of eminent domain to gas pipe line companies distributing gas within the State (Nebraska Rev. Stat., 1943, ____).
>
> "Therefore, the Congress of the United States in carrying out its constitutional authority to regulate interstate commerce should correct this deficiency and omission in the Natural Gas Act by the passage of Senate bill 1028 which confers the right of eminent domain upon those natural gas companies which have qualified under the Natural Gas Act to carry out and perform the terms of any certificate of public convenience and necessity acquired from the Federal Power Commission under the act.
>
> * * *
>
> "It has also been suggested that the granting of the right of eminent domain is a matter peculiarly within the

legislative and constitutional purview of the States and that it is proper that such rights should rest with the States in order that the States may therefore be in a position to require a natural-gas pipeline company entering the State to serve the people of that State as a condition to obtaining the right of eminent domain. This argument defeats the very objectives of the Natural Gas Act. Under the Natural Gas Act, the Federal Power Commission is given exclusive jurisdiction to regulate the transportation of natural gas in interstate commerce, the sale in interstate commerce of natural gas for resale for ultimate public consumption for domestic, commercial, industrial, or any other use, and natural gas companies engaged in such transportation or sale. The Commission, through its certificate power, is authorized to grant certificates of convenience and necessity for the construction of interstate natural-gas pipe lines from points of supply to certain defined and limited markets. If a State may require such interstate natural-gas pipe lines to serve markets within that State as a condition to exercising the right of eminent domain, then it is obvious that the orders of the Federal Power Commission may be nullified.

"As stated above, it is within the constitutional authority of Congress to regulate interstate commerce. In the performance of that constitutional authority, it is proper for the Congress to furnish proper and necessary protection of the free flow of interstate commerce. S. 1028 is designed for that purpose with respect to the movement of natural gas in interstate commerce and the sale in interstate commerce of natural gas for resale for ultimate public consumption, and is identical to congressional protection granted under the Federal Power Act with respect to licensees under that act for the construction, maintenance, or operation of any dam, reservoir, diversion structure, or the works appurtenant or necessary thereto.

"S. 1028 does not invade or interfere with the right of the States to impose any proper regulation upon intrastate activities, since its application is limited to exclusive interstate operations with respect to which the States may not constitutionally legislate." Roach and Gallagher, Natural Gas Act Legislative History, Part II, pp. 886-888. (Emphasis added.) And see, Nichols on Eminent Domain, supra, pp. 5-272; Doggett "Exercise of the Power of Eminent Domain As Authorized By the Natural Gas Act," 1969 Eminent Domain Inst. 33, 38.

It must be assumed that Congress was aware of the State of Missouri v. Union Electric Light & Power Co., supra, when it amended the Natural Gas Act to give interstate pipelines the same power of eminent domain as contained in the Federal Power Act:

> "It is interesting to note that the procedural and jurisdictional portions of the new subsection were copied verbatim (with minor insignificant exceptions) from the section of the Federal Power Act which grants to hydro-electric licensees the power to condemn property for dams and related facilities. The importance of the similarity of language lies in the fact that the pertinent section of the Power Act had been on the statute books since 1920 and had been interpreted numerous times by the courts. Under well-recognized rules of construction, by adopting substantially the same language at a later time, Congress must be presumed to have put its stamp of approval on the prior decisions. It cannot be denied that Congress was aware of the similarity of language, because the House Committee Report contained a letter from the chairman of the Federal Power Commission specifically calling attention to the fact." Doggett, supra, pp. 37-38 (Footnotes omitted).

Consequently, one must conclude that an interstate pipeline would have the power to condemn state lands if necessary to fulfill the obligations of its certificate of public convenience and necessity.

5. The State May Not Block Construction of an Interstate Pipeline by Assertions of Police or Zoning Powers.

The courts have determined that § 717f(h) is a constitutional exercise of congressional power. Tennessee Gas Transmission Co. v. Thatcher, 180 F.2d 644, cert. denied 340 U.S. 829 (1950). Moreover, the courts have consistently

enjoined municipalities from enforcing zoning ordinances which prohibit the construction of interstate pipelines within the city limits. After concluding that the Natural Gas Act had not totally preempted the states' exercise of police power over natural gas pipelines, the court in Transcontinental Gas Pipe Line Corp. v. Borough of Milltown, 93 F.Supp. 287 (D.N.J. 1950), concluded that the municipality's zoning ordinance could be sustained only if reasonable, justifiable and not an undue burden on interstate commerce. The municipality argued, to no avail, that the ordinance was reasonable because the pipeline could be rerouted around the town:

> "The defendant stands only upon the suggestion of its mayor that other routes are available, which is corroborated by another witness. Neither is qualified to testify as to the engineering feasibility of the transportation of natural gas with relation to the installation of the pipe line or the maintenance and operation thereof. The only efficacy of this testimony rests in the statements that the pipe line could be otherwise routed. This is almost axiomatic for as one of the defendant's witnesses on cross examination admitted a pipe line can be laid practically anywhere, including the side of the Empire State Building if expense is of no consideration.
>
> "On the other hand the plaintiff has shown logical, efficient and economical reasons for following the right-of-way of the Public Service Electric and Gas Company in this particular congested industrial portion of this state. By doing so it insures a minimum of inconvenience to, and destruction of, property of others.
>
> "In a somewhat similar situation dealing with the condemnation of land for pipe line purposes the court in the case of Williams v. Transcontinental Pipe Line Corp., supra, stated:

'The claim is merely that, in the exercise of its rights, the defendant should have run its line across the property of some one else, or crossed petitioners' property at a different place.

'It is obvious that such a contention must fail. If a landowner, merely by showing that it would be possible for a utility line or highway to avoid crossing his property, could compel the condemnor to relocate its line, no power line, railroad, pipe line, or highway could ever be located properly to serve the public. The determination of what property is needed to accomplish the public purpose for which the right of eminent domain is given must of necessity rest primarily with the agency charged with carrying out the public work. There may be cases where the condemnor so abuses its discretion or acts in such bad faith in locating its line that the court would be justified in intervening; but usually no Judge would take upon himself the burden of deciding the best location for a utility line.' 89 F.Supp. 488-489.

"This reasoning is equally applicable to this plaintiff, although it was not necessary for it to exercise its right of eminent domain in the instance under question here. The fact remains that the mere claim by defendant that its ordinance requires plaintiff to locate its pipe line in an alternative route, suggested as available, does not fortify it with power to impede the plaintiff in the prosecution of its legal objective in the field of interstate commerce. Such an attempt to obstruct interstate commerce under guise of an assertion of exercise of the police power must fail." Id., p. 295. (Footnotes omitted)

Nor can the State assert, successfully, a supervening interest in public safety; the State has no power to control safety standards for interstate natural gas pipelines. The Natural Gas Pipeline Safety Act, 49 U.S.C. § 1671 et seq., provides that:

"§ 1672(a)* * *

(b) Not later than twenty-four months after August 12, 1968, and from time to time thereafter, the Secretary

shall, by order, establish minimum Federal safety standards for the transportation of gas and pipeline facilities. Such standards may apply to the design, installation, inspection, testing, construction, extension, operation, replacement, and maintenance of pipeline facilities. Standards affecting the design, installation, construction, initial inspection, and initial testing shall not be applicable to pipeline facilities in existence on the date such standards are adopted. Whenever the Secretary shall find a particular facility to be hazardous to life or property, he shall be empowered to require the person operating such facility to take such steps necessary to remove such hazards. Such Federal safety standards shall be practicable and designed to meet the need for pipeline safety. In prescribing such standards, the Secretary shall consider -

(1) relevant available pipeline safety data;

(2) whether such standards are appropriate for the particular type of pipeline transportation;

(3) the reasonableness of any proposed standards; and

(4) the extent to which such standards will contribute to public safety.

Any State agency may adopt such additional or more stringent standards for pipeline facilities and the transportation of gas not subject to the jurisdiction of the Federal Power Commission under the Natural Gas Act as are not incompatible with the Federal minimum standards, but may not adopt or continue in force after the minimum Federal safety standards referred to in this subsection become effective any such standards applicable to interstate transmission facilities."

The act has been construed as preempting any state or local control over pipeline safety regulations with respect to interstate natural gas pipelines. United Gas Pipe Line Co. v. Terrebonne Parish Police Jury, 319 F.Supp. 1138 (D.C.La.), affirmed 445 F.2d 301 (5th Cir. 1971).

6. If the State Initially Elects to Take Its Royalty in Valu. Rather Than In Kind, The State Probably Could Not Thereafter Withdraw the Royalty Share From Interstate Commerce Without FPC Approval. Section 7(b) of the Natural Gas Act provides as follows:

> (b) No natural-gas company shall abandon all or portion of its facilities subject to the jurisdiction of the Commission, or any service rendered by means of such facilities, without the permission and approval of the Commission first had and obtained, after due hearing, and a finding by the Commission that the available supply of natural gas is depleted to the extent that the continuance of service is unwarranted, or that the present or future public convenience or necessity permits such abandonment. 15 U.S.C. §717 (b)

Under this language, once a producer or pipeline commences jurisdictional service, it cannot thereafter terminate the service, without abandonment authorization from the Commission. United Gas Pipe Line Company v. FPC, 385 U.S. 83 (1966). This is true whether or not there are valid contractual agreements with respect to the service.

Unless and until the State has exercised its right to take gas in kind, the producer owns and is legally entitled to dispose of all gas in interstate commerce. His obligation to the State is to pay royalties in value, such being calculated on the basis of a percentage of the value of the production obtained from the lease. In at least the conventional situation where royalty is paid in value, the

payment of royalty has been held by the Courts to be a non-jurisdictional transaction. Mobil Oil Corporation v. FPC, 463 F.2d 256 (D.C. Cir. 1972). In that case the Court stated that an economic interest in the proceeds of sale unaccompanied by authority to determine the incidents of sale does not make one a seller. 463 F.2d at 262.

If the producer undertakes to sell all of the gas produced from the lease and is issued a certificate authorizing the sale of all of the gas from the lease, the producer may not be able to thereafter release the royalty gas for a taking in kind. Superior Oil Company, Docket No. CI71-879 (Letter Order issued 6/13/75). In Superior, the State of Texas had the right under its leases to take its royalty gas in kind. Initially the gas was sold by Superior Oil Company under Certificates of Public Convenience and Necessity issued by the Federal Power Commission. When the State decided to commence taking its royalty gas in kind, it notified the Federal Power Commission asserting, among other things, that an FPC Order issued February 11, 1975 in Docket G-5354, et al, had authorized the State to take its gas in kind. The Commission responded that "the February 11, 1975, Order did not authorize either Superior or the State of Texas to divert natural gas from interstate commerce" and advised the State that:

"before any natural gas produced from the leases dedicated under Superior's contract dated May 7, 1971, as amended June 25, 1974, with Natural Gas Pipeline Company of America can be diverted from interstate commerce Superior must file for and receive abandonment authorization from this Commission in accordance with requirements from Section 7 (b) of the Natural Gas Act and the Commission's regulations thereunder. Any action by the State of Texas which would require Superior to take action inconsistent with said Act and regulations would be in violation of the Supremacy Clause Doctrine (Northern Natural Gas Company v. State Corporation Commission of Kansas, 372 U.S. 84)."

While it is therefore clear that the Commission will take the position that abandonment authorization is required before a State can exercise its right to take royalty gas in kind after delivery of the full gas stream in interstate commerce has once commenced, the validity of the Commission's assertions has not yet been ruled upon by a Court. The issues involved are: (1) the extent to which the certification and abandonment requirements of Section 7 of the Natural Gas Act can be construed as permitting, or indeed requiring, a natural gas company to continue to dispose of property where it has no contractual or legal rights (other than such rights as may be created by the Natural Gas Act) to do so; and (2) the extent to which a royalty owner may be bound by agreements made and actions taken by its lessee. Similar issues are, however, before the Courts at this time. See e.g., Southland Royalty Company, et al. v. FPC (5th Cir. Case No. _____, filed July __, 1975).

The first case to present these issues to the Commission was El Paso Natural Gas Company v. Perry R. Bass,

et al., 48 FPC 1269, Opinion No. 638 (1972). In that case Bass had farmed out certain acreage to Shell Oil Company retaining a 1/8th overriding royalty convertible to a 50% working interest on payout. The agreement expressly provided that during any period that both parties had working interests either party could take its gas in kind and that nothing contained in the agreements could be construed as giving Shell the right to sell or otherwise dispose of Bass' share of the gas without express authorization to do so. Shell entered into agreements to sell gas from the properties to El Paso. During the period prior to payout all of the gas from the lease was, in fact, sold to El Paso pursuant to certificates of public convenience and necessity issued by the Commission. On discovering that payout had occurred, Bass exercised its right to convert its overriding royalty to a working interest, and entered into agreements for the sale of its gas to Natural Gas Pipeline Company of America. El Paso filed a complaint and sought a Declaratory Order requiring Bass to obtain Section 7(b) abandonment authorization before diverting any gas to Natural. The Commission concluded that El Paso's right to purchase gas from the lease could rise no higher than Shell's right to sell. Since the lease agreements precluded Shell from selling gas attributable to Bass' working interest without permission and Shell had only purported to sell "gas from its properties" the Commission

AGO 667686

concluded that neither party could be heard to say that the contract between Shell and El Paso impaired the pre-existing rights of Bass to take and dispose of its gas.

In Bass, the Commission seemed to recognize that sales of gas by a producer under the Natural Gas Act would not destroy pre-existing rights of other parties to the gas. With respect to rights to gas acquired after a producer has commenced jurisdictional sales, the Commission in a series of cases has made clear that those rights may be subject to and restricted by the abandonment provisions of the Natural Gas Act. See, for example, Blair-Vreeland, ____ FPC ____, Opinion No. 724 (March 18, 1975) reh. denied, Opinion No. 724-A (May 14, 1975); Mitchell Energy Corporation, ____ FPC ___, Opinion No. 733 (June 11, 1975); United Gas Pipe Line Co. v. Billy J. McCombs, et al, ____ FPC ___, Opinion No. 740 (August 20, 1975) reh. denied, Opinion No. 740-A (November 7, 1975). In each of those cases, the new interest owner acquired his rights from a producer which had previously made jurisdictional sales from the properties. Since, in each case, the rights were acquired after the property had become dedicated to interstate commerce, the conclusion that the property remained dedicated in the hands of the new owners is not necessarily inconsistent with the holding in Bass.

There is one recent case, however, which is clearly inconsistent with Bass; See El Paso Natural Gas Co., et al,

____ FPC ____, Opinion No. 737 (July 11, 1975) reh. denied, Opinion No. 737-A (September 3, 1975), on appeal sub nom, Southland Royalties Co. vs. FPC, 5th Cir. Case No. ___ filed July __, 1975, referred to here as the "Southland" case. Southland involved the question of the rights of certain mineral interest owners to dispose of gas after termination of leases. In 1925, Gulf Oil Corporation had acquired a fifty-year lease to the properties. Gulf developed oil and gas reserves on the property and sold gas produced from the properties to El Paso in transactions subject to FPC jurisdiction. On July 14, 1975 Gulf's lease expired. The question of the right of the mineral interest owners to possession of the properties was adjudicated in State court proceedings. Gulf Oil Corp. v. Southland Royalty Co., 496 S.W.2d 547 (1973). The mineral interest owners who, on expiration of the lease, were entitled to possession of the property and all gas produced therefrom, agreed to sell that gas to an intrastate pipeline company.

In response to petitions for declaratory order filed by El Paso and Texaco, Inc., the Commission concluded that all gas produced from the properties remained dedicated to interstate commerce notwithstanding the termination of the leases. The Commission held that the leasees, owners, and the operators of the plant in which the gas was processed, all must obtain abandonment authorization prior to disposing of the gas to other purchasers. The Commission stated

"Because of the termination of the fifty-year leases the leaseholders, Gulf et al., lose their leases and their rights pass to Southland, et al. in one case and to Goldsmith, et al. and Texaco in the other case. Of course we have determined that gas may not be withdrawn from interstate commerce by the assignment of leases from one lessee to another." Cumberland Natural Gas Company, 34 FPC 132 (1965); Blair-Vreeland, ____ FPC ____, Opinion No. 724, Docket No. CI 74-331, March 18, 1975. But we do not rest our conclusion on these cases, but on the principle established by Section 7(b) that 'service' may not be abandoned without our permission. Thus it makes no difference whether a lease is transferred or terminates, the obligation of service imposed upon the dedicated gas continues. As said in Hunt v. FPC, 306 F.2d 334, 342 (C.A.5, 1962), rev'd on other grounds, 376 U.S. 515 (1964), the duty to continue to serve is like an ancient covenant running with the land." Opinion 737 mimeo at 6.

On rehearing, the Commission stated that

"Here, however, we are solely concerned with the service commenced by Gulf to El Paso in interstate commerce. Under Section 7(b) of the Natural Gas Act this service may not be abandoned without the permission of the Commission. Nor, as we said in Opinion No. 737, can this service be discontinued by transfer to a successor interest. For the practical purposes of the Act it makes no difference whether the successors happen to be assignees, purchasers or reversionary interests. While the contractual right to control and sell the reserves herein involved has passed from Gulf to the various mineral interests, this does not mean that under the Natural Gas Act the gas flowing in interstate commerce may be diverted to the intrastate market. As said in Huber Corp. v. FPC, 236 F.2d 550, 558 (C.A. 3, 1956), Congressional power to regulate interstate commerce in natural gas includes authority to regulate abandonment of sales." Opinion 737-A mimeo at 2.

In its initial opinion in Southland, the Commission distinguished the Bass case describing the latter as involving a situation in which only a part of the interest (i.e., Shell's

interest) in the property was dedicated to interstate commerce. By contrast, it concluded that Gulf had dedicated all of the reserves from the properties. On rehearing, the Commission again attempted to distinguish Bass, emphasizing that in Bass, the sale agreement "pointedly made it clear that Shell was only selling gas from its interests in the properties involved". Opinion 737-A mimeo at ____. However, to the extent that Bass might not be distinguishable, the Commission stated:

> "To the extent, however, that Bass can be said to stand for the proposition that the service initiated by the leaseholder based upon certain gas reserves covered by the lease can be terminated without Commission approval, it is overruled. It should be noted that Bass did not involve the shift of gas reserves from interstate to intrastate commerce and did involve the public interest in the encouragement of farmouts, and these circumstances, in part, explain the result in Bass." Opinion 737-A mimeo at 3.

In responding to arguments that the Commission's holding unconstitutionally deprived the mineral interest owners of property without due process of law, the Commission responded that since the leases contemplated that the lessors would develop and sell oil and gas produced from the properties, the lessees were bound by the legal consequences of such sales.

> ". . .the essence of the argument appears to be that we are in error in holding that the leaseholders, Gulf, et al., had power to encumber the property with the result that the mineral leaseholders are forced to enter into an interstate sale against their will. We assume that in 1925, when the leases were made the lease owners did not contemplate that the Natural Gas Act would

be enacted with a provision that service might not be abandoned without approval of the Commission. They clearly did contemplate that the leaseholders would drill for oil and gas and sell oil and gas to outside parties, and there was no reason that these sales could not be in interstate commerce, and may have had a duty to do so under the facts in law at that time. After the Natural Gas Act was enacted in 1938 and the Phillips case was decided in 1954 the interstate sales of gas became subject to FPC jurisdiction. The leaseholders who had a duty to exploit the wells were the appropriate parties to seek FPC certification. Upon the commencement of interstate sales under FPC certification, the sales became imbued with the public interest. The law of Texas preserved for the leaseowners their property interests, and we do not change this, but Section 7(b) of the Act will not permit the abandonment of interstate sales without our authority once such sales have commenced. The mineral lease owners who entered into a lease that permitted the leaseholders to make interstate sales are not deprived of this property by being required to permit such sales to continue, and they will be compensated under the just and reasonable rates promulgated under the Natural Gas Act." Opinion 747 mimeo at 4.

In view of the Commission letter order in Superior Oil, supra and its decision in Southland, it seems most probable that the FPC will assert that abandonment authorization must be obtained if the State of Alaska allows lessees of state property to commence sales of gas in interstate commerce and thereafter seeks to take a portion of the gas in kind. It is conceivable that the agreements between the producer and the purchaser could be structured to bring the transaction within the rationale of the Bass decision, but in view of the Commission's recent arguments and holding in Southland, it seems likely that Bass has been

overruled and that the Commission will require the producer to obtain abandonment authorization notwithstanding such agreements.

7. While the issue is not free of doubt, the State probably may sell for resale or transport natural gas in interstate commerce without F.P.C. authorization. The operating sections of the Natural Gas Act by their terms apply to the regulation of transactions involving natural gas companies. For example, Section 7(c) of the Natural Gas Act which requires certification of any transportation or sale provides as follows:

> "(c) No natural-gas company or person which will be a natural-gas company upon completion of any proposed construction or extension shall engage in the transportation or sale of natural gas, subject to the jurisdiction of the Commission, or undertake the construction or extension of any facilities therefor, or acquire or operate any such facilities or extensions thereof, unless there is in force with respect to such natural-gas company a certificate of public convenience and necessity issued by the Commission authorizing such acts or operations:. . . 15 U.S.C. §717f(c). (emphasis added)

Similarly, Section 7(b) of the Act provides that

> "no natural-gas company shall abandon all or any portion of its facilities subject to the jurisdiction of the Commission, or any service rendered by means of such facilities, without the permission and approval of the Commission first had and obtained. . . " 15 U.S.C. §717f(b).

Similarly, Sections 4 and 5 of the Act which provide for regulation of rates charged for jurisdictional sales and

AGO 667692

services, are by their terms applicable to rates and charges of "natural-gas companies".

The term "natural-gas companies" is defined in Section 2 of the Natural Gas Act to mean a "person engaged in the transportation of natural gas in interstate commerce or the sale in interstate commerce of such gas for resale". 15 U.S.C. §717a(6). The term "person" is defined to include "an individual or a corporation". The term individual is not defined in the Act, however, "corporation" is defined as including "any corporation, joint stock company, partnership, association, business trust, organized group of persons, whether incorporated or not, receiver or receivers, trustee or trustees of any of the foregoing, but shall not include municipalities as hereinafter defined". 15 U.S.C. §616a(2) Municipality is then defined to mean "a city, county, or other political subdivision or agency of a State". 15 U.S.C. §717a(3)

This series of definitions leads to the conclusion that the sale of gas by a state agency (if not by the State itself) is not subject to the jurisdiction of the Federal Power Commission. In the only reported case of which we are aware, the Commission after reviewing the above-quoted series of definitions stated

> "[f]rom this it is clear that municipalities cannot be 'natural-gas companies' as that term is used by the Act. We are not, therefore, vested with jurisdiction to regulate municipalities, even though they are engaged in the

sale of natural gas to interstate pipeline companies." Panhandle Eastern Pipe Line Company v. City of Rolla, Kansas, 26 FPC 736 (1961).

In that case, the issue involved was the rate which should be paid by Panhandle to Rolla for gas produced from natural gas units in which the townsite of Rolla was included. Panhandle was the operator of the unit and under the unitization agreement was obligated to pay Rolla a "proportionate share of the runs from said well at the minimum price established by order of the Kansas Corporation for natural gas in the Hugoton Field of Kansas" 26 FPC at 737 (emphasis in original).

The language of the Act and the Commission's holding in Panhandle suggests that one alternative under which the State could allow interstate sales to commence without precluding later diversion of the gas to intrastate markets if circumstances then demanded would be for the State to exercise its right to take gas in kind, ab initio. Even if the State sold the gas initially to an interstate pipeline company, under the language above-discussed, the sale would appear to be nonjurisdictional and abandonment authorization would not be a precondition to later diversion of the gas to an intrastate market. The agreements between the state and the interstate pipeline company would, of course, have to permit such diversion. It must be remembered, however, that the pipeline would still require FPC certificates for

necessary facilities, and FPC certificate authority to perform interstate transportation services. Thus the Commission would be in a position of exercising indirect control of State transactions cf. FPC v. Transcontinental Gas Pipeline Corp., 365 U.S. 1 (1961).

Despite the apparent clarity of the definitions, and the holding in Panhandle, there is no assurance that the Commission would not assert jurisdiction over the transactions particularly if it viewed such jurisdiction as necessary to prevent diversion of gas from the interstate to the intrastate market. In one case, the Clorts have concluded that a state agency is a "person" within the meaning of at least one section of the Natural Gas Act. Federal Power Commission v. Corporation Commission of the State of Oklahoma, 362 F.Supp. 522 (W.D. Oklahoma, 1973) aff'd 415 U.S. 961 (1974). That case involved the validity of a minimum price order issued by the Oklahoma Corporation Commission relating to the wellhead price of natural gas. The Federal Power Commission contended that the orders impinged upon the FPC's jurisdiction, and were an unconstitutional burden on interstate commerce and used to enjoin enforcement of the order. Under Section 20 of the Natural Gas Act the Commission is authorized to bring suit

> "whenever it shall appear to the Commission that any person is engaged or about to engage in any acts or practices which constitute or will constitute a violation of the provisions

> of this Act, or of any rule, regulations, or order thereunder. . . to enjoin such acts or practices and to enforce compliance with this Act or any rule, regulation, or order thereunder. . . " 15 U.S.C. §717s(a).

The Oklahoma Commission argued, among other things, that as an agency of the state it is immune from suit under Section 20. The Court concluded that the Oklahoma Commission's orders were unconstitutional, and that the Oklahoma Commission was not immune from suit. To accomplish this result, the Court emphasized the difference between the use of the words "means" and "includes" in defining terms under the Natural Gas Act. It viewed the word "means" as a verb of limitation and the terms "includes" as a verb of enlargement. Since the term "person" is defined as <u>including</u> an individual or a corporation, it reasoned that the term is not limited to individuals and corporations. Thus it argued that

> "an 'agency of the state' is excluded from the definition of 'corporation' but is not excluded from the word 'person' . . . Whether the defendant Oklahoma Corporation Commission is a non-individual 'person' against which the Plaintiff may proceed, is to be determined by the 'legislative environment'." 362 F.Supp. 544.

The Court then reviewed two cases, one involving taxes on "persons" selling intoxicating liquors, the other involving the meaning of a "person" entitled to sue under Section 7 of the Sherman Act. The Court made no attempt to discuss the legislative history of the Natural Gas Act.

The District Court's opinion in the Oklahoma Corporation Commission case was affirmed on appeal to the Supreme Court without opinion. However, Mr. Justice Rehnquist, joined by Justices Stewart and Powell, dissented solely on the grounds that the Oklahoma Commission was not a "person" which could be sued under Section 20 of the Natural Gas Act.

> "I do think the convoluted statutory construction of the District Court withstands analysis. The Federal Power Commission is given statutory authority to sue any 'person,' defined in the Act to include an 'individual' or a 'corporation'. While use of the word 'include' would in some circumstances permit suits against 'persons' who could not fairly be classified as either 'individuals' or 'corporations', the term hardly can be said to cover an agency with corporate characteristics which is nevertheless specifically excluded from the definition of 'corporation'". 415 U.S. at 967.

In a footnote, Justice Rehnquist noted that an examination of the use of the term "person" in other sections of the Act clearly indicates that regulatory agencies were not intended to fall within that definition. Among the sections he noted as examples in which "person" clearly could not be defined to include a state regulatory agency was the definition of "natural gas company".

> "Furthermore, in the same section, 'natural gas company' is defined to mean a 'person engaged in the transportation of natural gas in interstate commerce of such gas for resale.' (emphasis added) Obviously, inclusion of a state regulatory body within the definition of 'person' in that section would be meaningless." 415 U.S. at 967.

Justice Rehnquist also noted that under Section 19 of the Act any "person, State, municipality, or State commission" aggrieved by the Commission order may apply for a rehearing. He reasoned that if States, State commissions, or municipalities were included within the term "person" the specific inclusion of those terms in Section 19 would be superfluous.

8. Again, while the issue is not free of doubt, it is arguable that the State may, in its capacity as the owner of natural gas, retain State-owned gas for instate use through appropriate leasing provisions. As previously noted, the general rule is that a State may not restrict or interfere with the sale of gas in interstate commerce. Pennsylvania v. West Virginia, 262 U.S. 553 (1923); Oklahoma v. Kansas Natural Gas Company, 221 U.S. 229 (1911); and Northern Natural Gas Company v. State Corporation Commission of Kansas, 372 U.S. 84 (1963).

The Federal courts have invalidated: (1) state attempts to regulate the price of gas sold in interstate commerce, whether directly, FPC v. The Corporation Commission of Oklahoma, 362 F.Supp. 522 (W.D. Okla.), aff'd 415 U.S. 961 (1974), Cities Service Gas Company v. State Corporation Commission, 355 U.S. 391 (1958), Natural Gas Pipeline of America v. Panna Corp., 340 U.S. 44 (1955); or indirectly Northern Natural Gas Co. v. State Corporation Commission of Kansas, 372 U.S. 84 (1963); (2) attempts to require an interstate pipeline company to make sales or connections

for sales within a state where no FPC certification has been granted, Illinois Natural Gas Co. v. Central Illinois Public Service Co., et al., 314 U.S. 498 (1942); (3) attempts to require state approval for the transfer of facilities by companies subject to the jurisdiction of the Federal Power Commission, Cabot Corp., et al. v. Public Service Commission of West Virginia, 332 F.Supp. 370 (S.D. West Virginia 1971); (4) efforts by municipalities to preclude construction of interstate pipeline facilities through the use of zoning ordinances, Transco Gas Pipeline Corp. v. Borough of Milltown, 93 F.Supp. 287 (D.N.J. 1950); New York State Natural Gas Corp. v. Town of Elma, 182 F.Supp. 1 (W.D.N.Y. 1960) and (5) orders requiring interstate pipeline companies to take ratably from all wells connected to its systems in a field, Northern Natural Gas Co. v. State Corporation Commission of Kansas, 372 U.S. 84 (1963).

While the above-cited cases would most certainly prohibit any attempt by the State of Alaska to directly or indirectly restrict interstate access to natural gas produced within the State, it is not clear that Alaska cannot restrict such access with respect to state royalty gas and, perhaps, other gas produced from state leases. The most recent session of the Texas Legislature passed a statute designed to achieve the latter result. V.A.T.S. Article 5382F. The statute made it unlawful for certain state agencies and

officers empowered to execute oil, gas and mineral leases on the various categories of state lands, to execute any such leases which did not contain provisions that none of the natural gas or casinghead gas produced from the mineral estate could be sold or contracted for sale for ultimate use outside the State of Texas unless and until the Texas Railroad Commission found that such gas was not needed for certain designated purposes within the State. Although the statute clearly affects and restricts interstate access to natural gas produced in Texas, it is not clear that the restriction is constitutionally invalid. As discussed below, the nature of state activity in executing oil, gas and mineral leases is proprietary, not governmental.

In Foster-Fountain Packing Co. v. Haydel, 278 U.S. 1 (1928) the Court held unconstitutional a Louisiana statute which would have prohibited interstate shipment of shrimp from which the head and hulls had not been removed but would have allowed such shipment after the shrimp had been hulled and de-headed. The purpose of the Act was to cause a shift in the shrimp processing industry from Mississippi to Louisiana. The Court had no trouble concluding that the statute violated the commerce clause of the Constitution.

> ". . . Interstate commerce includes more than transportation; it embraces all of the component parts of commercial intercourse among States. And a state statute that operates directly to burden any of its essential elements is invalid. Dahnke-Walker Company v. Bondurant, 257 U.S. 282, 290. Shafer v. Farmers Grain Co., supra, 199. A State

AGO 667700

is without power to prevent privately owned articles of trade from being shipped and sold in interstate commerce on the ground that they are required to satisfy local demands or because they are needed by the people of the state. Penna. v. West Virginia, 262 U.S. 553, 596. Oklahoma v. Kansas Nat. Gas Co., 221 U.S. 229, 255." 278 U.S. at 10-11.

The Court indicated, however, that on the basis of cases such as Geer v. Connecticut, 161 U.S. 519 which holds that a state owns and has a right to control all of the game and fish within its boundaries, Louisiana could have retained all of the shrimp for consumption and use within the state.

". . .As the representative of its people, the State might have retained the shrimp for consumption and use therein. But, in direct opposition to conservation for intrastate use, this act permits all parts of the shrimp to be shipped and sold outside of the state." 278 U.S. at 13.

In a separate concurring opinion Mr. Justice Reynolds stated

"Manifestly, Louisiana has full power absolutely to forbid interstate shipments of shrimp taken within her territory. These crustaceans belong to her and she may appropriate them for the exclusive use and benefit of citizens. If the state should conclude that the best interests of her people require all shrimp to be canned or manufactured therein before becoming part of interstate commerce, nothing in the Federal Constitution would prevent appropriate action to that end. This would not interfere with any right guaranteed to an outsider. How wildlife may be utilized in order to advantage her own citizens is for the producing State to determine." 278 U.S. at 15.

In an earlier case, the Court had concluded that the state of New Jersey could constitutionally prohibit the transportation of water outside the State. Hudson Water Co. v. McCarter, 209 U.S. 349 (1908). The stated purpose of the Act was to

preserve New Jersey's fresh water for the benefit of New Jersey citizens. The Court upheld the statute on the theory that the state, on behalf of its people, owned rights to all of the water in question and could prohibit its interstate transportation.

While these cases certainly do not suggest that States may regulate interstate access to natural gas in general, they may suggest that the more limited control of access to those minerals which are actually owned by the State may be a permissible form of state action. An argument can be made that a State, as owner of the minerals, has as much right to develop and dispose of those minerals, whether in intrastate or interstate commerce as does an individual. That a state may choose to develop its resources by leasing them to others, need not necessarily destroy its right to dictate their disposal, particularly, where the state has retained such a right in the leases themselves.

The Courts have consistently held that governmental bodies in dealing with their lands have essentially the same latitude as similarly situated individuals. For example in United States v. General Petroleum Corporation, 73 F.Supp. 225 (S.D.Cal., 1946) a case involving the right of the Secretary of Interior to establish the minimum value for royalty gas (the lease so permitted in certain circumstances), the Court stated:

> "In resolving the foregoing issue it must be remembered that the government's role is taken to be no different from that of any private lessor

> or proprietor, for while the Kettleman Hills lands involved are public mineral lands, and as such until their disposition are under supervision and control of Congress, the government as to such lands acts in a proprietary capacity, and treats with them in the same way as does a private landowner. Regardless of the type of lease Congress might authorize, a lease executed in accordance with what it has authorized becomes a private contractual matter and is to be interpreted according to the general rules of law respecting contracts between individuals. And regardless of what Congress has authorized, unless the authorized provision is mandatory, it may not be 'read in' if the Secretary omitted to include it." 73 F.Supp. at 234 (footnote omitted).

In determining the validity of the Texas Relinquishment Act of 1925, V.A.T.S. Art. 5367 et seq., the Supreme Court of Texas noted that

> "A sale or lease by the state is subject to the same rules of law that are applied to ordinary business or commercial leases." Greene v. Robison, 8 S.W.2d 655, 662 (Tex. S.Ct. 1928)

The reported cases where State "embargo" actions were held invalid all dealt with situations in which the State was attempting to regulate the manner in which its citizens or citizens of other States may carry on transactions in interstate commerce. Insofar as the recent Texas statute (V.A.T.S. Article 538v) purports to restrict only the disposition of gas from State-owned lands, and to do so only in the context of newly-executed lease agreements, it may be distinguishable. While it cannot be said with assurance that the Act is valid, there is at least a chance that it would be upheld.

9. The State may, for valid conservation reasons, protect oil and gas deposits from physical waste by prescribing reasonable regulations governing production. The State of Alaska may have primary interest in conservation legislation with respect to regulations which would require the reinjection of all or a portion of, natural gas in order to maintain proper reservoir pressure. This issue will be of principal importance if it develops that the failure to reinject a sufficient portion of gas to maintain reservoir pressure will cause a loss of gas drive in the reservoir and a resulting loss of oil reserves otherwise recoverable.

Under the traditional principles of law discussed earlier, it would appear that the State of Alaska can, by regulation, require the recycle of gas in order to prevent waste. In this regard, the very early proration statutes and/or regulatory orders had as their basic purpose the prevention of waste due to loss of reservoir pressure, as may be seen from the description in Champlin Refining Co. v. Corporation Commission of Oklahoma, supra:

> "Crude oil and natural gas occur together or in close proximity to each other, and the gas in a pool moves the contents toward the point of least resistance. When wells are drilled into a pool the oil and gas move from place to place. If some of the wells are permitted to produce a greater proportion of their capacity than others, drain ge occurs from the less active to the more active. There is a heavy gas pressure in the Oklahoma City field. Where proportional taking from the wells in flush pools is not enforced, operators who do

not have physical or market outlets are forced to produce to capacity in order to prevent drainage to others having adequate outlets. In Oklahoma prior to the passage of the Act, large quantities of oil produced in excess of transportation facilities or demand therefor were stored in surface tanks, and by reason of seepage, rain, fire and evaporation enormous waste occurred. Uncontrolled flow of flush or semi-flush wells for any considerable period exhausts an excessive amount of pressure, wastefully uses the gas and greatly lessens ultimate recovery. Appropriate utilization of gas energy is especially important in the Oklahoma City field where, because of the great depth of the wells, the cost of artificially recovering the oil would be very high." Id., p. 228.

Also see, Bandini Petroleum Co. v. Superior Court, 284 U.S. 8 (1931); Brown v. Humble Oil & Refining Co., 126 Tex. 296, 83 S.W.2d 935, motion for reh. overr'd, 126 Tex. 314, 87 S.W.2d 1069 (1935); Henderson Co. v. Thompson, supra; Ohio Oil Co. v. Indiana, 177 U.S. 190 (1900); Commonwealth v. Trent, 117 Ky. 34, 77 S.W. 390 (1903); Shannon v. Shaffer Oil & Refining Co., 51 F.2d 878 (10th Cir. 1931).

The subject of gas recycle is generally regarded as indistinguishable from other secondary recovery operations such as waterflooding. See e.g., Williams & Meyers, supra § 204.5; Methvin, Secondary Recovery Operations: Rights of the Non-Joiner, 42 Tex. L.Rev. 364 (1963-64).

Williams & Meyers note that fluid injection is generally regulated by the states and may not be undertaken without approval of the appropriate state regulatory agency, and quote as an illustration Rule 701 of the North Dakota Industrial Commission:

> "Permit for Injection of Gas, Air or Water
>
> "Where correlative rights of all operators are protected and waste will not occur:
>
> "(a) The injection of gas or air or water into any reservoir for the purpose of maintaining reservoir pressure, for secondary recovery operations or for water disposal, shall be permitted only by order of the Commission after notice and hearing. Orders approving the application will not be made within 15 days of the filing of the application unless the written consent of all persons entitled to notice is filed with the Commission within such time. . . ." Id., pp. 58-59.

An order by the North Dakota Commission permitting water injection despite the objection of certain owners in the unit was sustained by the Supreme Court of North Dakota, where the Court held that the parties who refuse to join into a voluntary unitization and pressure maintenance program should not be allowed to frustrate legitimate conservation efforts. Syverson v. North Dakota State Industrial Commission, 111 N.W.2d 128 (N.D. Sup. Ct. 1961); accord, Arnstad v. North Dakota State Industrial Commission, 122 N.W.2d 857 (N.D. Sup. Ct. 1963). The Syverson case was among the cases quoted with approval by the Supreme Court of Texas in affirming orders of the Railroad Commission of Texas which likewise approved a

permit for waterflooding over the objection of a lease owner who objected to the order. Railroad Commission v. Manziel, 361 S.W.2d 560, 570 (Tex.Sup.Ct. 1962):

> "These authorities, in principle, support our view that it was the purpose of the Legislature in adopting our conservation laws that in any oil or gas field the Commission should have power, even the duty, to prevent undue drainage of oil across lease lines. The Commission has two primary duties in the administration and control of our oil and gas industry. It must look to each field as a whole to determine what is necessary to prevent waste while at the same time countering this consideration with a view toward allowing each operator to recover his fair share of the oil in place beneath his land. In carrying out these duties, there has devolved upon the Commission the power to promulgate rules, orders and regulations that control the industry, and such are issued pursuant to the police power of the state, and that power may invade the right of the owner of the land to the oil in place under his land as long as it is based on some justifying occasion, and is not exercised in an unreasonable or arbitrary manner. See: Brown v. Humble Oil and Refining Co., 126 Tex. 269, 83 S.W.2d 935, 87 S.W.2d 1069, 99 A.L.R. 1107, 101 A.L.R. 1393 (1935).
>
> "The rules of ownership are of prime importance, but in this consideration the rights of one do not exceed the rights of another. As to oil and gas, the surface proprietors within the field have the coequal right to take from the common source of supply. It follows from the nature of oil and gas that the use by one of his power to seek to convert a part of the common reservoir to actual possession may result in an undue portion being attributed to one of the possessors of the right to the detriment of the other. Hence, it is within the Commission's power to protect the vested rights of all the collective owners, by securing a just distribution, and to reach the like end by preventing waste.
>
> "There is no dispute as to the necessity of injecting larger amounts of water into the reservoir to prevent waste in the field, ..." Id., pp. 571-572.

The Railroad Commission's orders in Manziel were issued pursuant to its powers under Articles 6029 and 6008b Tex.Civ.Stat. The former provides the Commission the power to make and enforce rules to prevent waste, and the latter specifically authorizes the Commission to approve voluntary unitization and secondary recovery operations:

> "Article 6029: The Commission shall make and enforce rules, regulations or orders for the conservation of crude petroleum oil and natural gas and to prevent the waste thereof, including rules, regulations or orders for the following purposes: . . . ."
>
> "Article 6008b, § 1: Subject to approval of the Railroad Commission of Texas * * * persons owning or controlling production, leases, royalties, or other interests in separate properties in the same oil field, gas field, or oil and gas field, may voluntarily enter into and perform agreements for the following purposes:
>
> "(A) To establish pooled units necessary to effect secondary recovery operations for oil or gas, including those known as cycling, recycling, repressuring, water flooding, and pressure maintenance and to establish and operate cooperative facilities necessary for said secondary operations; . . . "

As stated above, gas recycle is generally indistinguishable in theory from other secondary recovery operations, and the Manziel case appears to be one of the few cases to address the question of whether the state may order the undertaking of secondary recovery in order to prevent waste.

Corzelius v. Harrell, 143 Tex. 509, 186 S.W.2d 961 (1945) is worthy of mention. The facts of the case are summarized by the Supreme Court of Texas as follows:

> "The Bammel Field was classed primarily as a gas field, and covered about 3200 acres. The Bammel Field was practically all under lease to Harrell in 1939, when he applied to the Railroad Commission for a permit to install a recycling plant. Under authority from that body, the operations were begun by drilling production wells around the periphery of the field and two injection wells in the center. The gas was taken from the production wells through the recycling plant, where the liquid hydrocarbons were extracted; then the dry gas was pumped back into the producing sand through the injection wells. The recycling plant had a capacity of thirty-five million cubic feet of gas per day, but because of an unavoidable loss of two million dubic feet per day, only thirty-three million cubic feet were reinjected into the reservoir. This continuous process had the effect of pushing the wet gas from the center of the field toward the

edges where it could be produced and processed, the purpose being to extract practically all of the valuable liquids from the gas and leave only dry gas in the reservoir, with the only drop in pressure being that entailed by the daily loss of two million cubic feet of the gas. Harrell intended to forego producing the dry gas for light and fuel purposes until the recycling process had progressed to a point where it would no longer be economically feasible. In fact, the reinjected dry gas fingered out unevenly into the wet gas area, and a certain amount of blending of the wet and dry gas took place.

"In October of 1941 leases belonging to Harrell on approximately four per cent of the field lapsed, and Corzelius acquired control of this acreage. He drilled one well thereon and began production in January of 1942, supplying gas to two distributing corporations owned by him, through a pipe line from the well to Houston. This was the first time that any permanent withdrawals had been made from the field to supply a light and fuel market, and to the time of trial it was the only outlet to a market. The average daily market demand amounted to four or five million cubic feet. By a relatively simple process, Corzelius extracted a portion of the liquids from the gas he produced before delivering it to the pipe line. This process did not recover as great a percentage of the liquids as did the recycling process.

"Harrell applied to the Railroad Commission for an order prohibiting permanent withdrawals from the field until the conclusion of the recycling process; and in the alternative he asked that withdrawals be prorated. Upon a hearing the Commission found that production up to twenty million cubic feet daily would entail no appreciable waste. Therefore withdrawals up to that amount were authorized. This order was extended from time to time. After several futile attempts to obtain mandatory relief from the Supreme Court (see Harrell v. Thompson, 140 Tex. 1, 165 S.W.2d 81), Harrell filed this suit in the form of an appeal from the above-mentioned order and the various extensions thereof." Id., p. 970.

On appeal the Court of Civil Appeals enjoined Corzelius from further production. Following that decision the Commission

effectively mooted the issue by vacating its earlier order and issuing a new order regarding production of gas in Bammel Field. Thus, the order complained of was no longer effective and no one appealed from the subsequent order, which included, inter alia, the following requirement:

> "(4) That all gas produced from the Bammel Field shall be processed for its liquid hydrocarbons and condensates therein efficiently extracted and the residue gas either returned to said sand from which it was produced or utilized for light and fuel and other lawful uses as provided by Article 6008, Revised Civil Statutes of Texas, as amended. Provided, however, that not more than 20,000,000, cubic feet per day of the allowed production from the same Bammel Field shall be utilized for light and fuel and other lawful purposes." Id., p. 971.

Despite the fact that the case was moot, the Supreme Court ruled that the Court of Appeals had erred, reversed the Court of Civil Appeals' decision, and dismissed the case, so as not to leave any doubt as to whether the Commission could regulate production in Bammel Field.

In sum, there are a number of cases which extend the states' power to enact conservation laws and regulations to secondary recovery operations, including gas recycle. These cases are premised on the well established principle that a state may exercise its police powers to prevent the physical waste of oil and gas. It is therefore arguable that the State of Alaska can require the reinjection of all gas so long as it can be shown that such action is necessary to prevent waste of oil in the reservoir. This is clearly the implication of Henderson Co. v. Thompson, 300 U.S. 258

The leading case is Walls v. Midland Carbon Company, 254 U.S. 300 (1920). Wyoming had enacted a statute which provided that:

> "The use, consumption or burning of natural gas taken or drawn from any natural gas well or wells, or borings from which natural gas is produced for the products where such natural gas is burned, consummed or otherwise wasted without the heat therein contained being fully and actually applied and utilized for other manufacturing purposes or domestic purposes is hereby declared to be a wasteful and extravagant use of natural gas and shall be unlawful when such gas well or source of supply is located within ten miles of any incorporated town or industrial plant." Wells at 309.

In addition, Section 2 of the statute prohibited "the use, sale or other distribution of natural gas, the product of any well owned, leased or managed by any person, for the purpose of manufacturing or producing carbon or other resultant products from the burning or consumption of such gas, without the heat therein being fully and actually utilized for other manufacturing purposes or domestic purposes". Walls at 310.

The statute was attacked on the grounds that (i) the statute transcended the police power of the State of Wyoming, in that its purpose and effect was not to regulate and conserve natural gas but to prohibit the use thereof; (ii) the statute made a discrimination between owners having equal rights, and thereby violated Article I, §10 of the United States Constitution and the Fourteenth Amendment thereof; (iii) the law deprived the companies of their property by the ruin of their business, and (iv) the statute impaired the obligation of pre-existing contracts.

(1937), wherein the Supreme Court of the United States upheld a Texas statute prohibiting the use of sweet gas in the production of carbon black. Although the State did not prohibit production from the wells in question, the effect was the same because there was no other market for the sweet gas at that time.

10. It is probable that the State may be able to require that a producer of natural gas extract liquid hydrocarbons from the gas before the gas enters an interstate pipeline.

No cases have dealt with the precise issue here under consideration, and accordingly an unconditional opinion cannot be given. There is, however, an abundance of authority recognizing that a State may validly regulate production of oil and gas by virtue of the police power inherently possessed by the State. Summers, The Law of Oil and Gas, § 106 (1927). These authorities are set out above in the discussion of the general power of a State to control production of oil and gas.

The cases dealing with questions most closely related to the one at hand were decided by the United States Supreme Court in 1920 and 1937. Those cases dealt with the authority of a State to regulate and/or prohibit the use of natural gas for the manufacture of carbon black.

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> "The use, consumption or burning of natural gas taken or drawn from any natural gas well or wells, or borings from which natural gas is produced for the products where such natural gas is burned, consummed or otherwise wasted without the heat therein contained being fully and actually applied and utilized for other manufacturing purposes or domestic purposes is hereby declared to be a wasteful and extravagant use of natural gas and shall be unlawful when such gas well or source of supply is located within ten miles of any incorporated town or industrial plant." Wells at 309.

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The United States Supreme Court held that while the prohibition contained in the statute is upon the use or consumption of the natural gas, and not the production thereof, the statute was constitutional. Unfortunately, the Supreme Court's opinion is dedicated to a detailed analysis of the facts, and the opinion cites little authority and few principles of law in reaching its decision.

The Court stated that while it was clear that carbon black has many uses and great utility, this fact is of incidental importance.

> "The determining consideration is the power of the State over, and its regulation of a property in which others besides the companies may have rights in and which the State has an interest to adjust and preserve, natural gas being one of the resources of the State. And in this consideration it is more important to consider not for what a particular owner uses the gas, but the proportion of his use to that of others, or it may be, the prevention of the use by others. . . ." Walls at 319.

The Court also said that Wyoming was not "required by the Constitution of the United States to stand idly by while these resources were disproportionately used, or used in such a way that tended to their depletion, having no power of interference." Walls at 324.

The decision in Walls was re-affirmed in Henderson Company v. Thompson, 300 U.S. 258 (1937). Again, the Supreme Court's opinion cited little authority, its decision resting upon a finding that the facts demonstrated that the legislature had acted reasonably.

In Henderson, the plaintiff attacked the validity of orders entered by the Railroad Commission of the State of Texas pursuant to a statute prohibiting the use of "sweet gas" for the manufacture of carbon black. Sweet gas was defined by the statute as any natural gas containing more than one and one-half grains of hydrogen sulfide per 100 cubic feet, or more than 30 grains of total sulphur per 100 cubic feet of gas, or "gas which in its natural state is found by the Commission to be unfit for use in generating light or fuel for domestic purposes." Henderson at 260, n.1. Once again a claim was made that the statute violated the equal protection clause of the Fourteenth Amendment, as well as that the statute violated the due process and contract clauses of the United States Constitution.

The Supreme Court cited Walls for the proposition that "the needs of conservation are to be determined by the Legislature." Henderson at 264. While the plaintiff conceded this, it urged that in the absence of waste, the legislature of the State of Texas lacked the power to regulate production, since in that State the law gives the owner of land title to the gas in place and to that which may migrate to formations under his land. The Court rejected this argument, stating:

> "One principal established by the Walls case is that the Legislature may, for the purpose of conserving natural resources, regulate their production and use. The findings of the district court in this case

AGO 667716

support the reasonableness of the present statute on that basis. It is also urged that there is this vital difference in the facts: that in the Panhandle field [Texas] the challenged prohibition will not prevent waste, or conserve the supply of sweet gas, since the sweet gas, if not used, will drain into the sour gas area, because of the lower pressures there. Moreover, it is insisted that, unlike the Walls case, there is here in the record convincing evidence that the use of sweet gas in the manufacture of carbon black is not wasteful. Our decision in that case rested upon no particular theory of the nature of the carbon black industry. It was based simply upon the determination that the statute in question was not shown to have been an arbitrary exercise of legislative power." Henderson at 267 (emphasis added).

Thus, there is authority from the United States Supreme Court that a State may, under its police powers, regulate the use, as well as the production, of oil and gas for purposes of conservation. The State has discretion in deciding what is wasteful production and use. However, in both Walls and Henderson, the Court took great effort in discussing the facts to demonstrate that the legislature had not acted unreasonably in prohibiting the use of the gas for the manufacture of carbon black. And in each case the States of Wyoming and Texas were able to demonstrate that the statutes involved were reasonably related to conservation measures.

It is arguable that, under the authority of Walls and Henderson, a State could require that liquid hydrocarbons be removed from any natural gas produced as long as it reasonably could be demonstrated that such a requirement

would prevent waste or otherwise would be in the interest of conservation. For example, if it could be demonstrated that the dry gas (after the liquids had been removed) was of sufficient B.T.U. content to generate enough heat for its needed uses, and that the extracted liquids themselves could then be used as an energy source, or as a valuable raw material or feedstock, waste is prevented (and conservation is thereby served) - that is, more total utility is derived from the gas produced than if the liquids were not so extracted. Obviously, the questions of whether conservation will be served and waste prevented, are scientific, fact questions which will have to be answered by qualified experts, and accordingly the power to require extraction should be vested by the Legislature in the State's conservation agency where decisions may be reached with appropriate protection of the rights of all.

The Walls case has been cited many times by Courts for the proposition that a state has complete authority to regulate the use, as well as the production, of natural gas. One case cites Walls in stating that "its [the gas] extraction and use is subject to regulation, or even complete restriction or suppression, by the state." Herkness v. Irion, 11 F.2d 386, 388 (E.D. La. 1926).

One Texas case was found wherein the Supreme Court of Texas upheld the general authority of the Railroad Commission to regulate the production of oil and gas through

proration and other orders. One of the orders entered by the Railroad Commission directed "that all of the gas from the Bammel Field shall be processed for its liquid hydrocarbons and condensates therein efficiently extracted and the residue gas either returned to said sand from which it was produced or utilized for light and fuel and other lawful uses. . . ." Unfortunately, this order was not attacked in the Courts, and therefore the Texas Supreme Court never ruled on the enforceability of the order. However, the Court was aware of the order and made clear that the Railroad Commission did have the power to regulate the manner of production in the Bammel Field. Corzelius v. Harrell, 186 S.W.2d 961, 971 (Tex. 1945).

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

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December 10, 1975

The Joint Gas Pipeline Committee
of the Legislature of the
State of Alaska
c/o Legislative Affairs Agency
Pouch Y
Juneau, Alaska 99801

Attention: Mr. Gregg K. Erickson
Director of Research Services

Gentlemen:

This will constitute my interim progress report on the preparation of a legal analysis undertaken pursuant to your request and authorization concerning natural gas transportation issues and related concerns of the State of Alaska.

At the outset, I should express my belief that no action should be taken by the State with respect to permanent commitment to any particular course of action concerning natural gas development, sale, or transportation until mature consideration has been given, and a reasoned decision reached, with respect to a number of interrelated problems. My work thus far leads me to the conviction that the State has several very significant, and very difficult, decisions to make; and that, unfortunately, clear-cut, black-and-white answers do not always present themselves. I think it premature to commit State royalty gas at this time; or to lend unqualified support to either pending application for transport of North Slope gas.

Legal?

I believe further that it is imperative to secure as satisfactory an answer as possible to the questions raised by Interior's study concerning the effect of gas production on recoverable oil reserves. I hope your December hearings provide answers, but if not, I offer the unsolicited advice that this matter should be vigorously and immediately pursued. An informed judgment on this issue is basic to development of policies which will best serve the State.

Legal?

AGO 667734

I expect to have the legal analysis completed by January 31, 1976. Much of the preliminary research and briefing is now behind us. I attach copies of the research papers which have been completed thus far; please bear in mind that these are unrefined and still subject to further work. The enclosures do not necessarily reflect any final opinions, but are submitted to you to indicate the work which is in progress.

I have begun a draft of the final report, and am now in the process of drawing together the research and analysis which has been completed as well as seeing that additional research is completed and correlated.

In general, I expect to offer advice on the options which are open for State consideration with respect to natural gas; I will attempt to delineate between those State actions which are permissible and those which are prohibited. I will address the specific questions posed in Mr. Erickson's "Issues in Natural Gas Policy Requiring Legal Analysis", but it will probably be necessary to move beyond this framework to articulate a full range of issues for the Legislature's consideration.

In sum, the analysis is proceeding on schedule and will, I hope, be of assistance to the Committee.

Very truly yours,

Rush Moody, Jr.

RM:lmp

cc: Martin A. Farrell, Jr.

Alaska State Legislature

LEGISLATIVE AFFAIRS AGENCY

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December 17, 1975

The Honorable John Rader, Chairman
Joint Gas Pipeline Impact Committee
Box 2068
Anchorage, Alaska 99501

Dear John:

Enclosed is a copy of Rush Moody's interim report. The most significant items are found in his letter and in the analysis of "Topic 6" by Jay Golub.

I am sending copies of the letter (but not the accompanying memos) to all committee members. The memos themselves, however, will be on file at the committee's office in Anchorage, and here in Juneau, for any members who wish to review them.

I will be in Mr. Moody's office in Washington next week on Monday and Tuesday, the 22nd and 23rd. If you have any questions or would like to discuss this material with us I would suggest that you contact us then. I will be back in my office on Monday, the 29th.

Best wishes for a happy holiday.

Cordially yours,

Gregg K. Erickson
Director of Research Services

GKE:jm
Enclosure

cc: Eric Eckholm

AGO 667736

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January 14, 1976

Senator John Rader, Chairman
Joint Gas Pipeline Impact Committee
The Legislature of the State of Alaska
Juneau, Alaska 99801

Dear Senator Rader:

Your Committee has asked me to address certain issues relative to the transportation of Alaska natural gas, assuming for the purpose of my analysis that there will be gas available for sale from the North Slope. 1/

I propose to set forth in this letter the conclusions that I have reached as a result of my research and my knowledge of the Federal Power Commission, together with certain alternatives which the State might wish to consider. To this letter I will append the legal analysis which leads to the conclusions expressed herein.

1/ You are aware of the possibility that natural gas production for sale may have a detrimental effect on the recovery of oil. Studies conducted by the Department of the Interior and by H.K. Van Poolen and Associates raise questions in this regard which are now being examined by the Committee. This issue is, I agree, of critical importance to State consideration of natural gas transportation issues, inasmuch as the State may find it necessary, for reasons of conservation, to limit natural gas production or require reinjection of associated natural gas for maintenance of reservoir pressure. Such conservation actions are, in my opinion, legally permissable if necessary to prevent waste, see pp. 85-94 of attached analysis, but might result in an indefinite postponement of a natural gas transportation system.

From the outset, I need to make clear my recognition, that State policy relative to natural gas will develop, as it should, through processes of government, and that these policy decisions will involve consideration of far more than questions of law and Federal policy. What I offer can be only a part of the whole which the State will consider as the State moves forward to a sound an productive policy of resource management. 2/

As a substantive starting point in my report to you, it is my judgment that the State should, from the standpoint of legal consequences, decide as quickly as possible the ultimate goals of State natural gas policy. If the State has a strong concern for a retention of a portion of Alaska gas for future Alaska needs, affirmative and aggressive State action will be necessary. Non-action by the State with respect to disposition and transportation of North Slope natural gas threatens permanent loss of the gas resources insofar as Alaska consumers are concerned; non-action creates a risk that natural gas produced in Alaska will not be available to fulfill future Alaska residential or industrial needs.

Let us assume that the El Paso, Trans-Alaska transportation route is authorized. Non-action by the State will result, sooner or later, in producer sales of eight-eighths of the natural gas stream in interstate commerce, either to an interstate pipeline, to distributors in the lower 48 states, or to direct users in the lower 48 states; and non-action by the state will result in the construction and operation of an interstate transportation system designed for, and financed on, the expectation of the flow of eight-eighths of the deliverable natural gas from the North Slope. If the State permits, by non-action, these developments, then certain legal consequences may be expected.

2/ I would ask it to be understood that my opinions do not reflect considerations outside my area of knowledge and training; I have no basis, for example, for advice on environmental or economic factors; nor can I gauge the will of the citizens of Alaska concerning economic growth and industrial development; nor can I estimate how strong will be the demand for revenue because of programs which the State may determine are necessary.

The issues which I address are, therefore, approached only from the relatively narrow standpoint of law and Federal regulation. I do not presume to prescribe what is "right" or "good" for the State. These determinations are peculiarly within the province of this Legislature, which will, I am sure, look to a much broader range of considerations, information, and analysis than are within my capabilities.

1. If producers market Alaska natural gas in interstate commerce, paying the State a one-eighth royalty in cash, the Federal Power Commission can assert jurisdiction over eight-eighths of Alaska production, and thereby attempt to prevent any later efforts by the producers, or by the State, to withdraw the State's one-eighth royalty share for an in-kind taking by the State for use in the State. (pp. 64-73) 3

2. In the event of such a sale by producers to an interstate pipeline, and in the event of FPC denial of a request to withdraw State royalty gas, the only means for securing gas service in Alaska would be through a future demand by Alaska municipalities or distributors for service by the pipeline; such a request may be treated by the FPC, and lower 48 pipeline or distributor customers, as a request for new service which cannot lawfully be authorized. If the pipeline, at the time of the demand, is unable to render adequate service to its non-Alaska customers, or if grant of the Alaska demand would require to enlargement of pipeline transportation facilities, the Commission may be required, by law, to refuse demands for Alaska service -- even for residential and public service needs.

3. If Alaska can successfully claim -- contrary to the hypothesis in Paragraph 2 -- status as an existing customer, pipeline natural gas supplies would be shared by Alaska and non-Alaska customers on the basis of FPC curtailment priorities and allocation orders.

4. In the event of direct sale by producers to end users in the lower 48 states, or sale to distribution companies in the lower 48 states, there is no clear legal mechanism available to the State of Alaska to secure any portion of the natural gas produced in Alaska for future Alaska needs as they may develop.

Non-action by the State, in my judgment, creates serious risk that Alaska natural gas will not be available for future Alaska needs, even if the El Paso transportation proposal prevails. It is not just the

3/ Page references here and later in this letter are to the attached legal analysis.

potential industrial gas demand (which may or may not be a matter of State concern, dependent on the will of the citizenry with respect to industrial development) that is at risk. The needs of Fairbanks, and other communities, for residential service and service to schools, hospitals, and the like is also threatened.

The risk can be lessened by appropriate State action, as hereinafter discussed, if a trans-Alaska routing is authorized. If a trans-Canada routing is selected, whereby North Slope natural gas leaves Alaska north of the Arctic Circle, the State has no means of protecting its future gas needs. The routing question is, therefore, critical to the State -- at least in the context of future availability of Alaska gas for future Alaska needs. 4/

I am of the firm opinion that neither of the present proposals for transportation of North Slope natural gas offers a substantial guarantee that Alaska natural gas needs will be met. If either the El Paso or the Arctic Gas proposal is approved as presently submitted, the State could well find itself unable to draw upon its own gas resources to meet the future needs of the State.

The problems here are inherent in the nature of the applications and the Natural Gas Act: if the Arctic gas proposal prevails, there is no physical means to move gas from North Slope areas to the State's population centers; the Arctic gas routing will simply preclude gas movement within the State since the gas will leave the State north of the Arctic Circle. If, on the other hand, the El Paso proposal prevails on the basis of present filings with the FPC, the full natural gas stream will begin movement in interstate commerce, and even though it may be physically possible to withdraw gas where and when needed in Alaska, it may be legally impermissible to do so.

4/ Whatever the transportation route, natural gas production and transportation may reasonably be expected to contribute significant revenues and economic activity to the State. Accordingly, even if the transportation system which is Federally authorized does not lend itself to serving state natural gas needs, benefits to the State still might result from natural gas production, and transportation. A decision in this regard involves a balancing of economic, environmental, and political considerations which are beyond the scope of the requested analysis, and outside the scope of my knowledge and experience.

The State's present danger stems from the fact that certificates may issue, and interstate service may commence, without formal recognition of the State's needs. Interstate service unconditioned to Alaska's rights, creates grave problems concerning later attempts by the State to withdraw gas from the system -- problems which arise under Granite City Steel Co., v. FPC, 320 F2d 711 (C. A. D. C.. 1963) which suggests that gas customers in Alaska may not be added as pipeline customers if the pipeline is, at the time service to new customers is sought, then unable to meet the needs of existing customers; under Sec. 7(b) of the Natural Gas Act as interpreted by the Commission, which suggests that a partial diversion of the interstate natural gas stream will not be permitted without prior Commission authorization; and under Louisiana Public Service Commission v. FPC, 359 F2 524 (C. A. 5, 1966) cert. den'd. 385 U.S. 833, which holds that commingling of non-jurisdictional natural gas with jurisdictional natural gas results in a single gas stream which is wholly jurisdictional.

It does not follow, however, that Alaska is powerless to influence the movement of North Slope gas in a manner more nearly suited to the State's future gas needs than the proposals now pending. To the contrary, I believe there are reasonable courses of action which the State can pursue.

The State may exercise the option set forth in its oil and gas leases to take royalty gas in kind, and market this production separately from working interest gas; the State need not seek FPC authorization for royalty sales, and should limit the term thereof to the extent possible.

I believe that it would be most unwise, under present circumstances, to permit the producing companies which hold leases on State lands to market the State's royalty share of gas production. If marketing occurs, with the gas moving in interstate commerce, the problems summarized above -- and particularly the Sec. 7(b) abandonment problem -- stand as very real threats to later withdrawal of State royalty gas from the marketing arrangements made by the producers. Most simply put, if 8/8ths of the gas stream is committed to interstate commerce by delivery under an unconditional producer certificate of public convenience and necessity, withdrawal of the royalty 1/8th at a later date may require

FPC approval -- which may, or may not, be forthcoming. This is the lesson of FPC Docket N. C171-879, Superior Oil Company, Letter Order issued June 13, 1975. (pp 64-73).

This particular problem can be mitigated if the State exercises its option, prior to the delivery of any gas, to take its royalty share in kind, with appropriate notice to producer, purchaser, and FPC that the producer is without authority to market the State's natural gas.

The State should, therefore, negotiate for separate sale of its royalty gas or the best terms available, giving due consideration to a relatively short-term sale. The State should take the position that it is not subject to the Natural Gas Act, nor to the jurisdiction of the FPC, and that the State is therefore free to make sales for resale in interstate commerce (or in any other market), without certificate authority, and without restriction as to rates or terms of service. This position, though clouded by the Court decision in FPC v. Corp. Comm. of Oklahoma, 362 F. Supp. 522 (W.D. Okla., 1973) aff'd 415 U.S. 961 (1974) is, I believe, legally sound and legally sustainable.

State marketing of its royalty gas is not a complete answer to the basic problem. That gas must be transported, and the only available means of transport will be through the facilities of an interstate pipeline. The FPC can, therefore, exercise indirect control of royalty gas through its certification powers under Section 7 of the Natural Gas Act, even to the extent of denying the right of transportation if it is opposed to the end-use to which the gas will be put, or the price paid for the gas. See FPC v. Transcontinental Gas Pipeline Corp., 365 U.S. 1 (1961), and pp.3-9 of the attached analysis. Thus, it will still be necessary for the State to involve itself in transportation negotiations and see that FPC approval of transportation arrangements is obtained, even if the State markets its own gas by sale at the wellhead or sale downstream. The protection which the State must have is advance FPC approval of State withdrawal of its gas from interstate commerce, but this approval should be sought and obtained by the transporter in connection with its certificate applications and related tarriff findings.

In suggesting these actions, I hold to the view that the State's power to call upon the gas resource when needed in the future can, in reasonable probability, be exercised if the State's rights and obligations are fully spelled out, fully presented to the FPC, and accepted by the FPC as an integral part of the transportation system which is certified by the FPC.

While all problems relating to future in-State use of State-owned gas may not be wholly solved by advance agreement, and advance FPC clearance, of specific production, transportation, and sales arrangements, it is my judgment that the problems are reduced to the levels of acceptable risk-taking if the FPC, prior to construction and operation of a transportation system, expressly conditions all necessary certificates of public convenience and necessity and pipeline tarrifs to permit and approve such arrangements as are negotiated by the State with respect to its royalty gas.

The State may consider the enactment of legislation to hold State owned resources within the State unless such are surplus to the needs of the state.

Discussed in some detail in the appended legal analysis is a recent Texas statute which is designed to secure for the benefit of the State the resources which are publicly owned. The statute is prospective in operation, and simply requires that all State-issued oil and gas leases shall contain appropriate provisions to prohibit sale of natural gas produced from State-owned lands outside the State unless it is found that such gas is surplus to the needs of the State. (pp. 79-85).

While the State clearly may not "embargo" natural gas through exericse of its regulatory powers, (pp. 43-45) it may be argued that the State's powers incident to ownership of public lands are different from, and greater than, mere regulatory powers. Cannot the State decide to withhold its lands from development? if so, (and about this I can see little argument), does not this right include the lesser right to permit development only upon terms acceptable to the State as a property owner? (pp. 15-17).

I do not offer an unqualified opinion that such legislation would withstand court challenge; I acknowledge that a challenge would probably be forthcoming, and that the legislation might fall as an undue burden on interstate commerce. Nonetheless, there is some chance of upholding protective legislation, and enactment could serve as a clear Legislative expression of Alaska's determination to retain a fair share of Alaska's resources. (pp. 79-85).

The State may consider various means of encouraging conversion of natural gas to methanol, or encouraging extraction of all natural gas liquids, prior to movement of natural gas in interstate commerce.

If North Slope gas is converted to methanol before becoming committed to interstate commerce, the conversion facilities, the methanol itself, and the transportation of methanol would not be subject to FPC control. Since the natural gas would be produced and "consumed" (i.e., converted to something other than natural gas) within the State, the natural gas would never become subject to FPC jurisdiction.

Similarly, if ethane, propane, butane, and other liquids are removed from the natural gas stream prior to transportation or sale in interstate commerce, the extraction facilities, the liquids themselves, and the transportation of the liquids should not be subject to FPC control.

It is beyond the scope of my knowledge to explore the economic feasibility of these alternatives; nor can I judge whether the oil pipeline now under construction can, from an engineering standpoint, serve as a conduit for methanol or other liquids. I believe, however, that the State should be aware that a natural gas stream has enormous potential value other than its obvious value as a heat source. It would be imprudent not to explore all potential uses of the gas stream; particularly where conversion within the State, or liquids extraction within the State, diminishes the range of FPC controls, and where, as here, the use of liquids for generation of heat represents a waste of valuable raw material.

Encouragement of conversion or extraction may be given through legitimate State tax incentives or through dedication, on favorable terms, of State-owned gas to a conversion or extraction project. The most effective means of encouragement should be determined at the time full exploration is made of economic and engineering feasibility.

Legislative action may be considered with respect to extraction operations, but probably may not be considered with respect to a conversion project. The latter situation would almost surely require an impermissable degree of interference with interstate commerce, since any statute directing the flow of natural gas to a con-

version plant would, in actual operation, preclude movement of gas in interstate commerce. Such a restriction would not, in my judgment, withstand Court challenge.

Legislative direction that liquids extraction occur prior to movement of the residue gas in interstate commerce may, on the other hand, be a valid exercise of State regulatory powers to prevent waste. This issue is discussed in some detail in the attached legal analysis (p4-10), and I conclude that mandatory extraction, if based on appropriate finding that extraction is necessary to prevent waste of a natural resource, and if properly applied to preclude the possibility of an unconstitutional confiscation, has a reasonable basis and can, therefore, be defended.

In addition to the foregoing alternatives relating to possible State action to retain a portion of the State's gas resources for State use, other, and different, alternatives exist.

What Actions Can the State Pursue to Achieve Benefit from the State's Gas Resources?

Until this point, we have focused on natural gas transportation issues; I suggest that there are other matters which deserve consideration as the State of Alaska moves toward resolution of its basic energy policies. These other matters are not strictly within the request made of me for legal analysis, and indeed some require far more exhaustive consideration before a firm recommendation can be made; I touch upon each briefly because they are germane to the general issues under discussion, and because some, or all, may emerge as part of an overall State strategy of resource management.

1. State leasing policies should be re-examined.

   (a) The State is presently leasing on the basis of a one-eighth royalty. Other producing states, notably Texas and Louisiana, now demand, and receive, a one-fifth or one sixth royalty. Alaska should re-asses its bargaining position, its revenue needs, and whether the greater degree of control which in-kind royalty permits, justify leasing on terms other than those presently employed.

   (b) Consideration whould be given to the possibility that the leasing of State lands, or the withholding of state lands from leasing, is a valid instrument of State policy which can be used to assist in holding State resources for State needs; for example, can

leasing schedules be tied to changes in intrastate supply and demand? Can development be held until the State needs the resource? Here again revenue considerations and State desires regarding the optimum level of drilling and production activity must be weighed, but I suggest that one of Alaska's greatest strengths lies in its ownership of oil and gas bearing lands; thought should be given to the best use of that strength.

2. State taxing policies should be re-examined.

(a) The State presently provides for a production tax on natural gas of 4% of the gross value at the well; other producing states impose a much higher tax--for example, Texas exacts a severance tax of 7-1/2% of the market value of the gas when produced, and Louisiana imposes a basic severance tax of 7 cents/Mcf on natural gas. In considering whether revision of Alaska production taxes is appropriate, thought should be given to the Louisiana form: Louisiana's revenue levels are not controlled by the FPC, while Texas' are, at least to the extent that Texas gas is sold interstate. A further defect in the Texas structure lies in its requirement, in the final analysis, that Texas consumers bear a higher tax than out-of-state users; since the State tax is tied to value, intrastate sales at higher rates than interstate sales produce a higher tax bill for the intrastate producer than for the interstate producer.

(b) Alaska can consider the enactment of a franchise tax on interstate pipelines. Colonial Pipeline Company v. Traigle, 421 U.S. 100, decided April 28, 1975, upheld a Louisiana statute that imposed a franchise tax on a pipeline coany that was admittedly engaged exclusively in interstate commerce.

In 1969, a Louisiana Court held that the commerce clause of the Federal Constitution was violated by a state tax "payable for the

privelege of carrying on or doing business... in this state." The Louisiana legislature then amended the offending provision by providing that the tax was levied upon "(t)he qualification to carry on or do business in this state in a corporate form". The Supreme Court of Louisiana upheld the tax as constitutional levy for priveleges enjoyed by corporations in the state carrying on business, interstate or local, in the corporate form. 289 So. 2d 93 (1974). The U.S. Supreme Court affirmed. The Court cited Memphis Natural Gas Company v. Stone, 335 U.S. 80 (1948), a case that sustained a similar franchise tax imposed by Mississippi on a foreign pipeline corporation exclusively engaged in interstate business. The Court quoted Justice Reed's opinion in the 1948 case: "This is a tax on activities for which the state, not the United States, gives protection and the state is entitled to compensation when its tax cannot be said to be an unreasonable burden or a toll on the interstate business". The "activities for which the state gives protection" included "protection of... maintaining, keeping in repair, and otherwise manning the facilities of the system," the Court said.

Conclusion

As must be evident, it is my view that from the standpoint of legal consequence, the State should pursue an affirmative, aggressive course of enlightened self-interest if the present and future natural gas needs of the State are to be met. The State must decide what it wants, and then set out to achieve its goals.

My judgment is that the State may reasonably expect success in its negotiations. Consider the pressure points available to the State as bargaining levers:

1. Equity favors the State; it seeks nothing more than a share of the resources which it owns. Further, the State of Alaska alone bears a substantial environmental cost as North Slope resources are developed and transported; since this burden exists, an offsetting benefit should be made available to the people of Alaska.

2. The State has as-yet unused regulatory powers which can materially affect the flow of oil and gas.

3. The State has as-yet unused powers of ownership which can materially affect the flow of oil and gas.

4. The State has as-yet unused powers of taxation which can affect the price of oil and gas.

5. The State probably can retain some control of its royalty gas if the State takes effective action; by non-action the State stands to lose control of its royalty gas. The State's position on its royalty gas is of critical significance because it is doubtful that any North Slope transportation system can go forward without committment of royalty gas to the system, either as part of system supply or as the subject of a continuing transportation agreement. The transportation system needs the royalty gas volumes to support claims of economic viability.

These factors lead me to believe that the State can bargain effectively.

I believe negotiations with both transportation groups are in order. The Arctic Gas proposal has encountered significant opposition, and the FPC staff has only recently concluded that the Arctic Gas group should consider an alternative routing to bring its line down the Alyeska corridor to Fairbanks, and then south eastward. This routing offers an opportunity for physical movement of North Slope gas to, or near, population centers through an Arctic Gas line, a possibility which did not exist so long as Arctic Gas proposed to move eastward out of the State while still within the Arctic Circle.

El Paso should obviously also be approached in definitive negotiations. It has historically supported the principal that a portion of the Alaska gas should be made available for Alaska usage and the El Paso proposal can serve State needs with fewer major revisions than Arctic Gas.

It is, therefore, appropriate for the State to open negotiations with both transportation proponents. It is time to ask, and obtain, positive answers to one basic question: How can Alaska retain the benefit of its natural gas resource under your proposal?

What must be made clear is that the Alaska Legislature and the State Administration, have affirmative duties to ensure, to the fullest possible extent, that the needs of Alaska are served. Others may, and should, consider private interests. But it must be unmistakeably clear that Alaska will judge its present and future position on leasing, regulation, taxation, and royalty gas disposition with due regard to Alaska's present and future needs.

It seems to me that if Alaska can derive no benefit from natural gas produced within its borders in the sense of sharing in the use of the resource, then clearly Alaska can protect its citizen's rights only by looking to natural gas as a source of revenue. Every legitimate means of using gas to raise revenue should be explored. If, on the other hand, Alaska is permitted to share in the benefit of a secure and reliable source of natural gas for use as a non-polluting heat source and as a raw material feedstock, then Alaska need place less emphasis on direct revenue and more emphasis on cooperative development.

If men of good will make an intelligent effort at accommodation and understanding, there is no reason why the mutual problems of producer, transporter, and consumer cannot be solved in a manner which balances fairly their respective interests, and which also serves the interests of national and state government as well.

Respectfully submitted,

Rush Moody, Jr.

RM/ap

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December 3, 1976

Ms. Elke Tallab
Legislative Affairs Agency
State of Alaska
Pouch Y
Juneau, Alaska 99811

Dear Elke:

Advice to the Legislature with respect to the contracts for sale of the State's royalty gas would involve the following:

(1) Review of contracts.

(2) Review of Commissioner Martin's negotiation files, or summaries of those files, to understand the areas of compromise.

(3) Preparation of an analysis of the contracts from the standpoint of the benefits and burdens accruing to the State.

(4) Conferences in Alaska with appropriate legislative and executive department people.

(5) Appearance at a hearing for exposition of my opinions.

It is difficult to assess the time necessary for the accomplishment of these tasks since I do not know what volume of material is involved for an intelligent appraisal of the contracts, and, accordingly, it would be difficult for me to establish a fixed fee for the Legislature's consideration. I would prefer, therefore, to consider this representation on the basis of my standard hourly charge of $100 per hour, plus reimbursement of necessary travel and telephone expense.

On the basis of the best guess that I can make at this time, it seems to me that the total effort should not involve more than 70 to 80 hours. In arriving at this estimate, I am assuming that the Legislature would be interested only in my opinions concerning the contracts as negotiated; if my representation involved redrafting or renegotiation efforts, in conjunction with a possible Legislative conditional approval of the contracts if they are amended in certain respects, then, of course, the time involved could be substantially greater.

If this work is undertaken, I would expect to begin it immediately upon receipt of the necessary documents and files, and I would anticipate that I would be prepared to come to Alaska anytime after February 1, 1977 for the necessary conferences and hearings. I would expect to regard the representation as completed upon exposition of my views to the appropriate Legislative committee. I understand, of course, that it would be wholly inappropriate for me to accept any other representation with respect to these contractual matters while I am representing the State.

Please let me hear from you at your earliest convenience. I can hold my calendar open to meet the time schedules suggested in this letter for a reasonable period of time, but the necessity for other commitments will arise fairly soon.

If you need anything further from me, please do not hesitate to call.

Best regards,

Very truly yours,

Rush Moody, Jr.

RM:bw

SCOMM

#21:6

APPENDIX 1

GLOSSARY OF TERMS USED IN THE PETROLEUM INDUSTRY

Absorption – The penetration of one substance into another, e.g. the taking up of moisture by blotting paper or the solution of a gas in a liquid.

Acetylene – Colourless gas, C_2H_2, generated by action of water on calcium carbide, or by pyrolysis of natural gas or hydrocarbon. The basis of manufacture of vinyl chloride, neoprene synthetic rubber, trichloromethylene, acrylonitrile, vinyl acetate, acetylene black, electrically conductive rubber, plastics, etc.

Acid-Treatment (oil well) – In limestone formations, freedom of movement of fluid towards the well depends upon fissuring and/or permeability. Hydrochloric acid is employed to enlarge these production channels due to the ease with which it will attack the limestone.

Acrylic – Broad term covering materials manufactured from methyl methacrylate.

Additive – An agent used for imparting new, or for improving existing, characteristics of oils.

Adsorption – The taking up of a liquid or gas on the surface of a solid, e.g. the removal of very light liquid petroleum from natural gas by passage over activated carbon whereby the liquid is separated on to the surface of the carbon.

Aerosol – A suspension of fine solid or liquid particles in air or gas, e.g. smoke or fog.

Aliphatic Hydrocarbons – Hydrocarbons in which the carbon-hydrogen groupings are arranged in open chains which may be branched. The term includes paraffins and olefins and provides a distinction from aromatics and naphthenes which have some at least of their carbon atoms arranged in closed chains or rings.

Alkylation – A process in which hydrocarbons with a branched chain or ring structure combine catalytically with an unsaturated hydrocarbon. For example, *iso*-butane combines with butene, in the presence of sulphuric acid, to yield *iso*-octane.

Amorphous Wax – *See* Microcrystalline Wax.

Amyl Nitrate – A liquid compound, $C_5H_{11}NO_3$, used as an additive in diesel fuel to improve its ignition qualities.

Aniline Point – The lowest temperature at which the oil under test is completely miscible with an equal volume of aniline, *see* Diesel Index.

Anticline (geological) – An earth-fold in which the strata are uplifted in the form of an arch.

Anti-Knock Value – *See* Octane Number.

Antioxidant – A substance which when added in small amounts to petroleum products will delay or inhibit undesirable changes such as the formation of gum, sludge and acidity which are brought about by oxidation.

A.P.I. – American Petroleum Institute.

A.P.I. Gravity – An arbitrary scale adopted by the American Petroleum Institute for expressing the specific gravity (*q.v.*) of oils. Its relation to specific gravity is as follows:

$$°\text{API} = \frac{141{\cdot}5}{\text{Specific Gravity at } 60\,°\text{F.}} - 131{\cdot}5$$

Aromatics – A group of hydrocarbons, of which benzene is the parent. They are called "aromatics" because many of their derivatives have sweet or aromatic odours. These hydrocarbons are of relatively high specific gravity and possess good solvent properties. Certain aromatics have valuable anti-knock characteristics. Typical aromatics are: benzene, toluene, xylene.

Asphalt – Natural or mechanical mixtures in which bitumen is associated with inert mineral matter. The term is normally qualified by indication of type or origin, e.g., lake asphalt, natural asphalt, etc. In the United States this term is generally used to describe the material known in the United Kingdom as Asphaltic Bitumen or Bitumen (*q.v.*).

Asphaltic Bitumen – *See* Bitumen.

sphaltic Cement – Asphalt or bitumen, or blends of these with one another or with flux oils, such that the product is a binder having cementing qualities suitable for the manufacture of asphalt pavements, mastics, etc.

S.T.M. – American Society for Testing Materials. This organisation is responsible for the issue of many of the standard methods used in the petroleum industry.

tmospheric Pressure – 1. The pressure of air. 2. More specifically, the pressure of the air at sea-level. 3. As a standard, the pressure at which the mercury barometer stands at 760 mm or 30 in. (equivalent to approximately 14·7 p.s.i.).

utofining – A fixed-bed catalytic process for desulphurising distillates. The pelleted catalyst is cobalt-molybdate on alumina and may be regenerated in place. Hydrogen for desulphurising is produced in the process.

viation Spirit (or Aviation Gasoline – Avgas) – Special blended grades of spirit suitable for use in aircraft engines. These fuels have high anti-knock ratings, high stability, and high overall volatility and low freezing-points.

arrel – A common unit of measurement of liquids in the petroleum industry; it equals 42 U.S. standard gallons or 35 Imperial gallons.

atching Oils – Petroleum of heavy gas oil or light lubricating oil type used in the jute industry to facilitate spinning by lubricating the fibres.

auxite – Mineral matter, essentially hydrated aluminium oxide, formed by the chemical weathering of igneous rocks; used as a treating agent in refining.

entonite – The clay mineral montmorillonite, a magnesium-aluminium silicate. Used in the refinery as a treating agent, in drilling as a mud component, and in greases.

enzene – A pure aromatic hydrocarbon (*q.v.*) of characteristic odour occurring in significant proportions in certain Far Eastern crude oils, but usually obtained in the U.K. as a by-product of the coal-gas industry.

enzine – Straight-run petroleum spirit boiling within the range 80–130 °C.

Benzole – A mixture, predominantly composed of aromatic hydrocarbons obtained as a by-product of the carbonisation of coal, either from coal gas by absorption or from coal tar by distillation. This mixture, after washing and rectification to concentrate the benzene and eliminate undesirable constituents to any desired extent, is classified in Great Britain according to purity as "Motor Benzole", "Industrial Benzole", "90's Benzole", "Pure Benzole" and "Pure Benzole for Nitration". Recognised specifications for these British grades are issued by the National Benzole Association.

Bitumen or Asphaltic Bitumen – Black to dark brown solid or semi-solid organic material which gradually liquefies when heated. These materials are usually obtained as residues from the vacuum distillation of petroleum. *See also* Blown Bitumen.

Bituminous Mastic (Bitumastic) – Mixtures of bitumen with inert fillers of fine mesh.

Black Oils – A general term applied to the heavier and darker coloured petroleum products such as heavy diesel fuel, fuel oil and some cylinder stocks (*q.v.*). It is used mainly in connection with shipping and storage; a black oil tanker is one used for carrying "black oils" and which would require cleaning before being used for "white oils".

Blending – Intimate mixing of the various components in the preparation of a product to meet a given specification.

Bloom – The bloom of an oil is its colour by reflected light when this differs from its colour by transmitted light. Many petroleum oils which appear red or yellow by transmitted light exhibit a blue or green bloom.

Blown Bitumen – A semi-solid or solid oxidised product obtained primarily by bubbling air through hot liquid bitumen, with a resultant increase in the melting-point and a modification of other physical properties.

Blow-out Preventer – A special hydraulically operated gland-like device, employing synthetic rubber, designed for use when drilling, to maintain pressure control of the drilling fluid.

Blown Oil – Fatty oil, of which the viscosity has been increased by blowing with air at an elevated temperature.

Boiling Range – Distillation range (*q.v.*).

Bottled Gas – Ordinarily butane or propane, or butane-propane mixtures, liquefied and bottled under pressure for domestic use.

Bottoms – The residue from a distillation of petroleum or the liquid layer left in a tank or similar container after draining to the level of the pump suction.

Bottom-Hole Differential Pressure – The difference between the reservoir pressure and the pressure at the bottom of a producing well is known as the B.H.D.P. The magnitude of this pressure difference determines the rate of flow of fluid towards the well-bore.

Bottom Settlings – Sludge collected at the bottom of tanks or other oil containers which comprises an emulsified mixture of oil and water and sometimes wax, asphalt and mud.

Boundary Lubrication – A state of lubrication existing when conditions of bearings, design, feed, load, and method of application of the lubricant do not permit the formation of a separating lubricant film by hydrodynamic action. Under these conditions, adsorption of the lubricant or of some of the active components of the lubricant upon the bearing surface, or the formation of low-shear-strength chemical compounds by the reaction of the components of the lubricant with the bearing surfaces, reduces the metallic contact and determines the character of the frictional resistance.

Breathing – The movement of gas (oil vapour or air) in and out of the vent lines of storage tanks as a result of alternate heating and cooling.

Bright Stock – A lubricating oil of high viscosity prepared from a cylinder stock by further refining, e.g. solvent deasphalting, dewaxing, acid treatment and/or earth treatment.

Bringing In (oil well) – On completion of drilling and after withdrawal of the drill pipe (*q.v.*), the back-pressure on the producing formation is reduced by bailing down the mud (*q.v.*) or by displacing it with a fluid of lower specific gravity, until the oil can overcome the static head and flow into the well. This is termed "bringing the well in".

B.S. & W. – "Bottom settlings and water" comprises the solids and aqueous solutions which may be present in an oil and which are separable therefrom by means of gravity or the centrifuge.

B.Th.U. – British Thermal Unit. The heat required to raise the temperature of 1 lb. of water through 1 °F.

Bubble Cap – An inverted cup with a notched or slotted periphery to disperse the vapour in small bubbles beneath the surface of the liquid on the bubble plate in a distillation column.

Bund – An earthwork or wall surrounding a tank or tanks to retain the contents in the event of a fracture of the tank.

Bunker Fuel – Any fuel oil or diesel fuel taken into the bunkers of ships.

Bunker "C" Fuel Oil – A heavy residual fuel oil used by ships, industry and for large-scale heating installations.

Butane – Commercial butane is a mixture of gaseous paraffins, mainly *normal*-butane and *iso*-butane (both C_4H_{10}). When blended into gasoline in small quantities it improves volatility and octane number. Butane can be stored under pressure as a liquid at atmospheric temperatures and as "bottled gas" it is widely used for cooking and domestic heating.

Cable Drilling – In this system, the rock is penetrated by percussion of a bit on bottom, the bit being suspended on a wire-line and the necessary motion imparted by a beam pivoted at the centre and usually termed a "walking-beam".

Calorie – The amount of heat required to raise the temperature of 1 gram of water through 1 °C. The kilogram calorie (i.e. 1,000 calories or 3·97 B.Th.U.) is also employed, particularly in engineering.

Calorific Value – The amount of heat obtainable by the complete combustion of unit weight of fuel. It is normally expressed as calories per gram or B.Th.U.s per pound, the latter being numerically 1·8 times the former. The higher or gross calorific value represents the total amount of heat of combustion. This total includes the latent heat of condensation of the water vapour produced by the combustion. Owing to the fact that the water vapour is not usually condensed under practical conditions of combustion, the "lower" or net calorific value, which excludes the latent heat of condensation of the water vapour, is a better guide to the amount of useful heat obtainable from the fuel.

Cap-Rock – An impervious layer, e.g. clay, which overlies a reservoir-rock (*q.v.*) and prevents wholesale leakage of petroleum to the surface.

Carbon Black – A substantially pure form of finely divided carbon usually produced from liquid or gaseous hydrocarbons by controlled combustion with restricted air supply. It is used as a filler in the rubber industry, being specially valuable by virtue of the improved wearing quality which it imparts to tyre rubbers. Smaller quantities are used as pigment in printing inks and paints.

Cased Products – Manufactured petroleum products which, in order to avoid the difficulties of bulk distribution and storage, are packed and sold in containers.

Casing – The steel lining of a well, the main purposes of which are to prevent caving of the sides of the well, to exclude water or gas from the well and to provide means for the control of well pressures and oil production.

Casing Perforation – To complete an oil-well it is usually necessary to perforate the last (production) string of casing cemented in the borehole, opposite the oil-bearing formation in order to allow the oil to flow into the well. In earlier days this was accomplished by lowering into the well, on an electrical cable, a gun perforator designed to shoot a number of steel bullets horizontally through the casing at intervals (usually) of six inches or a foot. The gun perforator firing steel bullets has been superseded by a tool made up of a number of explosive shaped charges linked together. The shaped charges are more reliable and penetrate several inches into the rock after perforating the casing, giving better channels of flow for the oil and gas.

Casing-Shoe – A steel sleeve protecting the lower end of the casing string when being inserted into the well. Often provided with a drillable back-pressure valve, when it is called a cement float-shoe.

Casinghead Gasoline – *See* Natural Gasoline.

Catalyst – A substance which accelerates or changes the course of a reaction without itself undergoing any chemical change.

Cat-Head (drilling) – A small spool rotated by the draw-works (*q.v.*) on which a manila line is wound and used for making-up or backing-off the tool joints on the derrick floor. The operation is similar to that of a capstan.

Ceresin – A hard, brittle wax obtained by purifying ozokerite (*q.v.*). The commercial product is nearly always adulterated with paraffin waxes. *See* Petroleum Ceresin and Microcrystalline Wax.

Cetane Number – A means of expressing the ignition quality of a diesel fuel. It is defined as the percentage by volume of cetane in a mixture of cetane and methyl naphthalene which has the same ignition quality when used in an engine as the fuel under test.

Christmas-Tree – The complete assembly of valves and connections at the well-head.

Clean Oil Vessels – Sometimes referred to as "White Oil Vessels". This term is applied to ships employed in carrying refined products, namely aviation spirit, motor spirit, kerosines and some grades of gas oil.

Compounding – A blending operation usually involving the addition of fatty oils to mineral lubricating oils.

Compression Ignition – Ignition in a diesel engine, in which the heat of compression ignites the fuel, in contrast to the spark ignition in a petrol engine.

Core – In rotary drilling, special bits are employed when required to cut cylindrical samples of the formations penetrated. These samples, known as "cores", are examined to obtain geological information.

Corrosion Fatigue – Metal fatigue accompanied and aggravated by corrosion.

Cracking – A process in which the feedstock is subjected to a high temperature for a limited time with the object of increasing the yield of light products, e.g. gasoline, at the expense of the heavier. Cracking processes are also the source of the olefins which are the intermediates in the manufacture of many petroleum chemicals. Sometimes a substance which promotes reaction, i.e. a catalyst is present. This has the effect of reducing the temperature at which cracking takes place and gives greater control over the reaction.

Cracking, Catalytic – A cracking process in which a catalyst is used to promote reaction.

Cracking, Thermal – A cracking process in which no catalyst is used to promote reaction, cracking being effected purely by the application of heat and pressure.

Crown-Block – An assembly of wire-line sheaves corresponding to the sheaves of the travelling block (*q.v.*) carrying the steel line on which the travelling block is suspended. It is mounted on the top of the derrick (*q.v.*).

Crude Assay – A procedure for determining the general distillation characteristics and other quality information of a crude oil.

Crude Oil – The oil produced from an underground reservoir, after being freed of any gas which may have been dissolved in it under reservoir conditions, but before any other operation has been performed on it. In the oil industry, simply termed "crude".

Cutback – Bitumen which has been rendered liquid by the addition of a suitable diluent such as white spirit, kerosine, or creosote. It is used as a means of incorporating bitumen with road-metal.

Cylinder Stock – Dark-coloured residual lubricating oil of high viscosity used as the basis of steam cylinder oil.

Deadweight Tonnage – *See* Tonnage (Ships).

Deasphalting – The removal of asphaltic constituents from residual stock for lubricating oil manufacture. It is a solvent refining process in which the asphalt is precipitated, usually by liquid propane.

Dehydrogenation – The removal of hydrogen from a chemical compound; for example, the removal of two hydrogen atoms from butane to make butylene, and the further removal of hydrogen to make butadiene.

Derrick – A steel pylon-like structure usually of sufficient height to permit the withdrawal of at least three connected 30 ft. lengths of drill pipe and capable of supporting the maximum load likely to be experienced during the drilling of the well.

D.E.R.V. Fuel – A term applied in the United Kingdom to types of gas oil suitable for use as a fuel for high-speed compression ignition engines. The term is an abbreviation of "Diesel Engine Road Vehicle".

Desalting – Removal of mineral salts (mostly chlorides) from crude oils.

Desulphurisation – The removal of sulphur or sulphur compounds from crude oil or its products.

Detergent Oil – A lubricating oil possessing special sludge-dispersing properties and used in some internal-combustion engines. These properties are usually conferred on the oil by the incorporation of special additives. A detergent oil has the ability to hold sludge particles in suspension as well as to promote engine cleanliness.

Dewaxing – The removal of waxes from lubricating oil stocks, now usually carried out by filtration at low temperature of a mixture of the oil and a solvent such as M.E.K. (methyl ethyl ketone).

Diesel Fuel – A general term covering oils used as fuel in diesel and other compression ignition engines. This term usually applies to fuels suitable for those engines of the industrial and marine type which have a low or medium rotational speed, and which are not so critical of fuel quality as are high-speed engines. Fuels for the latter need special descriptions, e.g. High-Speed Diesel Fuel, Automotive Gas Oil, or D.E.R.V. Fuel (*q.v.*).

Diesel Index – This is a figure calculated from the aniline point and specific gravity which is used as a rough indication of the ignition quality of a diesel fuel.

Dipping – The procedure employed to measure the depth of oil in a container – such as a tank. Measurements are normally made with a graduated steel tape, dip-stick, or dip-rod.

Dirty Oil Vessels – Sometimes referred to as "Black Oil Vessels". This term is applied to ships employed in carrying crude oils, fuel and diesel oils and some grades of gas oil.

Distillate – A product obtained by condensing the vapours evolved when a liquid is boiled and collecting the condensate in a receiver which is separate from the boiling vessel.

Distillation Range – A single pure substance has one definite boiling-point at a given pressure. A mixture of substances will, however, exhibit a range of temperatures over which boiling or distillation commences, proceeds and finishes. This range of temperature, usually determined at atmospheric pressure by means of standard apparatus, is termed the "distillation" or "boiling" range.

Doctor Test – A test for the presence in light distillates of a particular type of sulphur compound known as "mercaptans". The sample is shaken with a solution of sodium plumbite. If perceptible quantities of mercaptans are present the solution becomes brown and the sample is known as "doctor

positive". The coloration developed usually indicates inadequate sweetening.

Draw-Works (drilling) – An elaborated winch-type machine with cable-drums. Used for raising and lowering the travelling block (*q.v.*).

Drill Pipe – The steel pipe used for carrying and rotating the drilling tools and for permitting the circulation of the lubricating mud.

Drilling in (oil well) – A term applied to the operation of drilling into or in the actual producing formation.

Dry Gas – Petroleum gas from which the more easily liquefiable components have been removed, either naturally or by processing.

Earth Wax – *See* Ozokerite.

Edge-Water – The body of water underlying the oil and/or gas accumulation in anticlinal (*q.v.*) or similar structures.

Emulsifiable Bitumen – Bitumen to which compounds have been added in order to render it easily emulsifiable with water.

Emulsion – A dispersion of fine particles of one liquid in another. The tendency to do this is called "emulsibility".

Ethyl Fluid – The proprietary name for a brand of anti-knock compound containing tetra ethyl lead (*q.v.*) as the active constituent.

Extract – During solvent refining (*q.v.*) processes, other than dewaxing or deasphalting, part of the feedstock passes into solution in the solvent and is subsequently recovered by evaporating off the solvent. This fraction is the extract; it is generally aromatic in character (*cf.* Raffinate *q.v.*).

Extreme-Pressure Lubricant – A term which is applied to a lubricating oil or grease which contains a substance or substances specifically introduced to increase film strength, i.e. to increase the ability of an oil or grease to maintain the surfaces of highly loaded gears in a satisfactory condition.

Fault (geological) – A fracture along which the rocks on one side are displaced relatively to those on the other.

Fishing (drilling) – Operations concerned with the recovery of any piece of equipment lost in the hole; hence any such object is called a "fish".

Fixed-bed operation – A type of refinery operation in which the catalyst remains stationary in the reactor. The catalyst may be regenerated in place periodically.

Flash Point – The lowest temperature at which vapours arising from the oil will ignite momentarily (i.e. flash) on application of a flame under specified conditions.

Floating Roof – A special tank roof which floats upon the oil.

Fluid-bed Operation – A type of refinery operation based on the tendency of finely divided powders to settle in a gas stream of low velocity. The fluidised-powder technique involves suspending the finely divided powder in an upward-flowing stream of gas. This suspension has most of the characteristics associated with a true liquid and it can flow through pipes and valves, and will develop hydrostatic heads which allow it to flow from one vessel to another.

Flushing Oil – An oil or compound designed to remove used oil, decomposition products and dirt from lubrication passages, crankcase surfaces and moving parts of engines reached by the lubrication system.

Flux Oil – An oil of low volatility suitable for blending with bitumen, or with asphalt, to yield a product of softer consistency or greater fluidity. Selected residual fuel oils may be used for this purpose.

Fractional Distillation – *See* Fractionation.

Fractionation – A distillation process in which the distillate is collected as a number of separate fractions each having a different boiling range.

Fuel Oil – A general term applied to an oil used for the production of power or heat. In a more restricted sense it is applied to any petroleum product that is burnt under boilers or in industrial furnaces. These oils are normally residues, but blends of distillates and residues are also used as fuel oil. The wider term "Liquid Fuel" is sometimes used, but the term "Fuel Oil" is preferred.

Furfural extraction – A single-solvent process in which furfural (the aldehyde C_4H_3OCHO) is used to remove aromatic, naphthenic, olefinic and unstable hydrocarbons from a lubricating oil charge stock, thereby improving viscosity index and stability characteristics.

Gas Oil – A petroleum distillate having a viscosity and distillation range intermediate between those of kerosine and light lubricating oil. Its main uses are in the manufacture of gas for enriching ("carburetting") water gas, as a wash oil in the extraction of benzole from coal gas, and as a burner fuel in certain heating installations. Suitable gas oils are also used as fuels for high-speed diesel engines. (*See* D.E.R.V. Fuel.)

Gas-Oil Level or Contact (oilfield) – The level, referred to a convenient datum (usually sea-level), of the interface between a gas accumulation and the oil accumulation below it.

Gas/Oil Ratio (oilfield) – The quantity of gas produced with the oil, usually expressed as cubic feet per barrel of oil or as volumes of gas per volume of oil. Abbreviation: G.O.R.

Gasoline – A refined petroleum distillate, normally boiling within the limits of 30–200 °C and suitable for use as a fuel in spark-ignited internal-combustion engines. It is the normal term used in the U.S.A. to denote motor spirit (motor gasoline or just "gas") and aviation spirit (aviation gasoline or "Avgas"). In the UK "gasoline" normally denotes a petroleum spirit of distillation range 30–100 °C.

Gas Saturation Pressure (Bubble Point) – The pressure at which the dissolved gas content of the oil will begin to come out of solution at any given temperature.

Gear Oil – An oil suitable for the lubrication of gears. Gear oils vary in characteristics according to their specific application.

Geothermal Gradient (geological) – A measure of rise of rock temperature with depth below the surface. Usually expressed as °F per 1,000 ft.

Go-Devil – A device for cleaning out the bore of a pipe. It consists of a piston-type scraper which is usually pumped through the line.

Gravity – A common abbreviation usually meaning specific gravity (*q.v.*) in the UK and A.P.I. gravity (*q.v.*) in the USA.

H.D. Oil – The letters H.D. denote Heavy Duty, and have reference to the fact that these lubricating oils were originally developed for use in certain types of high-speed diesel engines and spark ignition engines subject to high piston and crankcase temperatures. H.D. oils combine the properties of detergency, resistance to oxidation, and relative freedom from corrosive action on alloy-type bearings. Normally H.D. oils contain special additives which confer those properties.

Heat Exchanger – Apparatus for transferring heat from one fluid to another. Specifically, a piece of equipment having a tubular piping arrangement which effects the transfer of heat from a hot to a relatively cool material by conduction through the tube walls.

Holiday – A term commonly used to indicate a portion of a surface unintentionally left uncoated.

Horton Sphere – A spherical, pressure-type tank used to store volatile liquids. Its purpose is to prevent excessive evaporation loss which occurs when such products are placed in conventional storage tanks.

Hydraulic Fluid – A fluid supplied for use in hydraulic systems. Low viscosity, low rate of change of viscosity with temperature, and low pour point (*q.v.*) are desirable characteristics. Hydraulic fluids may be of petroleum or non-petroleum origin.

Hydrocarbon Fermentation – The use of hydrocarbons as the source of carbon for the growth of micro-organisms. The term also extends to the use of hydrocarbons in processes where the primary objective is the production of an excretion product or specific internal component of the micro-organism.

C_3 Hydrocarbons – Any of the hydrocarbons of which the molecule contains three carbon atoms (propane and propylene).

C_4 Hydrocarbons – Any of the hydrocarbons of which the molecule contains four carbon atoms (butanes, butylenes and butadiene).

Hydrocracking – A process combining cracking, or pyrolysis, with hydrogenation. Feedstocks can include crude oils, residua, petroleum tars, and asphalts.

Hydrodesulphurisation – A desulphurisation process in which the oil is heated with hydrogen.

Hydrofining – A fixed-bed catalytic process to desulphurise and hydrogenate a wide range of charge stocks from gases to waxes. The catalyst consists of cobalt and molybdenum oxides on an extruded alumina support and may be regenerated *in situ* with air and steam, or flue gas.

Hypoid Lubricants – Types of extreme-pressure lubricants (*q.v.*) used for the lubrication of hypoid gears.

I.B.P. – Initial boiling-point. The temperature at which the first drop of distillate falls from the condenser during a laboratory distillation test.

Illuminating Oil – A petroleum fraction suitable for use in wick-fed or mantle-type lamps. Normally the term is synonymous with kerosine.

Inclinometer – In drilling operations, it is important to maintain the well-bore as near the vertical as possible. Special instruments, known as "inclinometers", have been devised to determine the magnitude and direction of deviations.

Inhibitor – A substance the addition of which in small amounts in a petroleum product prevents or retards undesirable changes taking place in the quality of the product, or in the condition of the equipment in which the product is used. In general, the essential function of inhibitors is to prevent or retard oxidation. Examples of uses include the delaying of gum formation in stored gasolines and of colour change in lubricating oils; the prevention of corrosion is also included, e.g. rust prevention by inhibitors in turbine oils.

Insulating Oil – Suitable petroleum distillates of low volatility and viscosity used for cooling and insulating purposes in electrical equipment such as circuit breakers, switches, transformers, etc.

I.P. – Institute of Petroleum. The official British organisation which deals with petroleum technology and with the standardisation of methods of test for petroleum.

Isomer – A compound having the same chemical composition and molecular weight as another but possessing a different molecular structure. The term is frequently used to differentiate branch-chain from straight-chain hydrocarbons.

Jet Engine – An engine which converts fuel and air into a fast-moving stream of hot gases which effects propulsion of the device of which the engine is a part.

Kelly (drilling) – A square hollow shaft of length slightly greater than that of the sections of drill-pipe (*q.v.*), which engages in the rotary table (*q.v.*), imparting rotation to the drill-pipe.

Kerosine – A refined petroleum distillate intermediate in volatility between gasoline and gas oil. Its distillation range generally falls within the limits of 150 °C and 300 °C. Its main uses are as an illuminant, for heating purposes, and as a fuel for certain types of internal-combustion engines. In the UK commonly but correctly termed "paraffin" or "paraffin oil"; the spelling "kerosene" is now officially obsolete. (*See* Power Kerosine.)

Killing a Well – The tendency of a well to flow can be overcome by filling the well-bore with fluid of suitable specific gravity, usually mud (*q.v.*).

Knock – The noise associated with self-ignition of a portion of the fuel-air mixture in the engine cylinder, ahead of the flame front.

Lake Asphalt – Natural asphaltic material occurring in surface deposits.

Lead Response – The increase in octane number of a motor or aviation spirit due to the addition of unit quantity of tetraethyl lead. Certain constituents, notably sulphur compounds, reduce lead response.

Light Distillate – A term lacking precise meaning, but commonly applied to distillates the final boiling-point of which does not exceed 300 °C.

Liquefied Gas – Light hydrocarbon material, gaseous at atmospheric temperature and pressure, held in the liquid state by pressure to facilitate storage, transport, and handling. Commercial liquefied gas consists essentially of either propane or butane, or mixtures thereof.

Manifold – A piping arrangement which allows one stream of liquid or gas to be divided into two or more streams, or which allows several streams to be collected into one.

Mercaptan – One of the organic compounds having the general formula R—SH, meaning that the thiol group, —SH, is attached to a radical such as CH_3, C_2H_5, etc. The simpler mercaptans have strong, repulsive, garlic-like odours which become less pronounced with increasing molecular weight and higher boiling points.

Methane – A light, odourless, flammable gas, CH_4; the first member of the paraffin series C_nH_{2n+2}; boiling point −151·4 °C. It is the chief constituent of natural gas. It is also often produced by the

partial decay of plants in swamps, so that its occurrence is not uncommonly misinterpreted as an indication of the presence of petroleum.

Middle Distillate – One of the distillates obtained between kerosine and lubricating oil fractions in the refining processes. These include light fuel oils and diesel fuel.

Motor Spirit – The normal British term used to indicate a fuel for spark-ignited internal-combustion engines, having an approximate distillate range of 30 °C to 200 °C. Equivalent terms are "gasoline", "petrol" and "motor fuel".

Mud (drilling) – In rotary drilling it is essential to remove the cuttings from the hole by circulating suitable pumpable fluids. These are usually mixtures of water and very finely divided material such as special clays, shales, barytes, etc.

Mud-Ring – When porous formation is encountered in rotary drilling, water may be lost from the drilling mud by filtration, leaving a ring of solid material on the walls of the hole at the point of filtration or repression.

Naphtha – A cut covering the end of the motor spirit and beginning of the kerosine range and frequently used as a feedstock for reforming processes. It is also known as "heavy benzine" or "heavy gasoline".

Naphthenates – The salts of naphthenic acids. Their uses include service as paint driers and as wood and textile preservatives.

Naphthenes – *See* Naphthenic Hydrocarbons.

Naphthenic Acids – Organic acids found in crude oils from certain sources. They have a characteristic unpleasant odour. Their main use is for the preparation of naphthenates (*q.v.*).

Naphthenic Hydrocarbons – Saturated hydrocarbons containing at least one closed ring of carbon atoms. The monocyclic ones, i.e. those containing one ring, have the formula C_nH_{2n}.

Natural Asphalts – Mixtures occurring in nature in which bitumen is associated with inert mineral matter.

Natural Gas – Gas found in certain localities issuing from the earth under pressure and often produced in association with crude petroleum, when it acts as an important factor in the recovery of the latter. Natural gas is usually classified as "wet" or "dry", depending on whether the proportions of gasoline constituents which it contains are large or small.

Natural Gas is also referred to as "Casinghead Gas".

Natural Gasoline – A low-boiling liquid petroleum product extracted from natural gas. In its "wild" or unstabilised condition it contains fairly high proportions of propane and butanes. The propane and part of the butanes are removed by certain processes, yielding a stabilised gasoline suitable for blending with other gasoline.

Natural Gasoline is sometimes referred to as "Casinghead Gasoline".

Observation Well – Special wells may be drilled in selected locations to allow observation of fluid levels, changes of pressure, etc. within the reservoir, as production proceeds.

Octane Number – The octane number of a gasoline is a measure of its anti-knock value. The higher the octane number, the higher the anti-knock quality of the gasoline.

This quality is determined in a standard engine by matching for detonation the gasoline under test against a mixture of *iso*-octane and *normal*-heptane, both pure hydrocarbons, the percentage by volume of *iso*-octane in that mixture being noted as the octane number. (See p. 172 for more detail).

Oil Shale – A rock of sedimentary origin, with an ash content of more than 33 per cent; the contained organic matter yields oil when destructively distilled, but not appreciably when extracted with the ordinary solvents for petroleum.

Permeability – The degree to which a rock will allow liquid or gas to pass through it.

Petroleum Ether – A special boiling-point spirit (*q.v.*) of high volatility and narrow distillation range, e.g. 40-60 °C or 60-80 °C, used in the extraction of edible oils, etc., and for laboratory analytical work.

Petroleum Resins – Solid or semi-solid resinous products obtained mainly by the distillation of special crude oils or lubricating oil extracts. They are used as substitutes for natural resins in paints, etc. where asphaltic bitumen would be unsuitable because of its dark colour.

P.F.D. (Primary Flash Distillate) – The total distillate from the primary column. This is subsequently separated into gas and gasoline, the latter being blended into motor spirit.

Pitch – This is a generic term covering materials obtained as residues from the distillation of coal tar. It should not be used to describe petroleum products.

Platforming – A refining process using a platinum-containing catalyst which includes 0·1 to 8·0 per cent of fluorine or chlorine on an alumina base.

Polymerisation – The combination of identical molecules to form larger molecules, known as "polymers". Typical polymers range from di*iso*butylene, a light liquid, to poly*iso*butylene, a rubber-like material.

Polymers – *See* Polymerisation.

Porosity (geological) – The proportion of a rock's total volume occupied by the voids between the mineral grains.

Pour Point – The pour point of a petroleum oil is the lowest temperature at which the oil will pour or flow when it is chilled without disturbance under prescribed conditions.

Power Kerosine – A volatile kerosine with distillation limits essentially between 150 °C and 260 °C and of good anti-knock value. It is used as a fuel for some spark-ignited engines, e.g. tractors, and is alternatively known as "Vaporising Oil".

Pressure Distillate – The untreated distillate product of thermal cracking (*q.v.*).

Propane – A hydrocarbon gas (C_3H_8), useful for heating and metal cutting and flame-welding purposes. It can be stored under pressure as a liquid at atmospheric temperatures but is more volatile than butane, and high pressures are required to keep it in liquid form. By reason of its chemical composition it is classed as a C_3 hydrocarbon (*q.v.*).

Raffinate – The refined product resulting from a solvent refining process (*cf.* Extract, *q.v.*).

Recycling (oilfield) – The practice of returning to the underground reservoirs such refinery products as are temporarily out of market balance.

Recycling (refining) – The procedure of recirculating those portions of a feedstock which have passed unchanged through a refining process. The term is also used to describe the continuous returning of unwanted by-products to the process.

Reforming – A process in which straight-run feedstocks, e.g. benzines or naphthas, are subjected to high temperatures and pressures with the object of changing their chemical structure in such a way as to increase their octane number (*cf.* Cracking *q.v.*).

Reforming, Catalytic – Reforming in which reaction is promoted by a catalyst.

Reforming, Thermal – Reforming without the use of a catalyst.

Reid Vapour Pressure – The vapour pressure (*q.v.*) of petroleum products, e.g. motor spirit, measured at 100 °F in the Reid apparatus and reported in pounds per square inch.

Repressuring (oilfield) – The injection of gas into a reservoir for the purpose of maintaining or restoring reservoir pressure.

Reservoir-Rock (geological) – A porous and permeable rock, e.g. sandstone or limestone, which contains petroleum in quantity.

Residue (Residuum) – The material remaining as unevaporated liquid or solid from processes involving distillation or cracking.

Road Oil – An oil intended for cold application to road surfaces for binding and waterproofing purposes. Petroleum residues and light cutbacks (*q.v.*) are among the products used as road oils.

Rotary Drilling – In this system, the rock formation is penetrated by a rotating bit connected to a hollow drill-pipe (*q.v.*) through which fluid is pumped to convey the rock cuttings to surface.

Rotary Table – A heavy geared circular steel body having a square hole cut at its centre, for engaging and rotating the drilling string. The table rotates in the horizontal plane and is normally driven by chains from the draw-works (*q.v.*).

Seepage (geological) – Prolonged erosion of the formations overlying a petroleum accumulation may permit gas and/or oil to seep to the surface.

Shale Oil – The distillate obtained when oil shale is heated in retorts.

Shooting (oil well) – In order to facilitate the flow of oil towards the well-bore, explosive charges are sometimes lowered into the well and fired opposite the producing formation with a view to fracturing or shattering it.

Show (drilling) – An indication of the presence of gas, oil or water in the formations penetrated during drilling.

Side-Tracking – Difficult fishing operations (*q.v.*) sometimes necessitate the deflection of the borehole to avoid the fish. The operation, carried out by means of a whipstock (*q.v.*) and special drilling tools, is known as "side-tracking".

Single-Flash – A term applied to the sudden release of gases and/or vapours from oil as opposed to removal in a number of stages.

Sludge – (*a*) Acid Sludge. Material of high specific gravity formed during the chemical refining treatment of oils by sulphuric acid, and usually separable by settling or centrifuging. Also known as Acid Tar.

(*b*) Engine Sludge. The insoluble degradation product of lubricating oils and/or fuels, formed during their use in internal-combustion engines and deposited from the oil on to engine parts outside the combustion space. Water may or may not be present in such material.

(*c*) Tank Sludge. Material which collects at the bottom of storage tanks containing crude oils, residues, or other petroleum products. Such sludge usually contains water (*see* B.S. & W.).

Slush Pump – The pump used for circulating the drilling fluid.

Solar Oil – The term formerly applied to gas oil (*q.v.*). The term derives from the original use of a light distillate oil for the production of illuminating gas by direct cracking.

Soluble Cutting Oil – A blend of mineral oil and emulsifiers. When mixed with water in the right proportions it forms a dispersion suitable for use as a cutting fluid for metals, e.g. on a lathe.

Solvent Extraction – Processes in which solvents are used to dissolve out undesirable constituents, e.g. the removal of aromatics from kerosine by extraction with liquid sulphur dioxide.

Solvent Refining – Processes in which solvents are used to eliminate undesirable constituents either by dissolving them out, i.e. solvent extraction, or by precipitating them as in solvent dewaxing and solvent deasphalting.

Sour Crude – Crude oil containing appreciable amounts of hydrogen sulphide and mercaptans.

Sour Gas – Hydrocarbon gas containing undesirable sulphur compounds, sulphuretted hydrogen and methyl mercaptan.

Special Boiling-Point Spirit – A petroleum solvent fractionally distilled to specially selected distillation characteristics. Such distillates are normally manufactured from well-refined straight-run naphthas. The various volatilities are designed to enable a suitable grade to be chosen for any particular industrial purpose.

Specific Gravity – The ratio of the weight of a given volume of substance to the weight of an equal volume of water at the same specified temperature, normally 60 °F.

Spindle Oil – Originally used to describe a stable low-viscosity oil used in the lubrication of textile spindles. The term now includes any low-viscosity mineral lubricating oil.

Stabilised Gasoline – Gasoline after subjection to fractionation by which the vapour pressure has been reduced to a specified maximum. (*See also* Natural Gasoline.)

Steam Cylinder Oil – Oil used to lubricate the cylinders of steam-engines. Usually dark, viscous petroleum oils of high flash point, sometimes compounded with fatty oil.

Straight Run – Produced directly from crude oil by distillation but not cracked or reformed.

Structure – When used in petroleum geology, this term is usually understood to denote a fairly large arching or flexure of rocks in a sedimentary series such that conditions favourable for the accumulation and trapping of oil and gas could be present. The majority of oil geologists would probably equate structure with an anticlinal or domal situation with dimensions of at least several miles. In the pure geological sense the term is applied to the texture or form of rocks involving dimensions of inches or feet – a quite different conception altogether.

Sweet – Products which give a negative result in the Doctor Test (*q.v.*).

Sweet Gas – Hydrocarbon gas free from sulphur compounds.

Sweetening – Any treatment which renders a sour product sweet (*q.v.*), e.g. Doctor Treatment, Hypochlorite Treatment or Copper Sweetening.

Swivel (drilling) – A connection made to the top of the kelly (*q.v.*) through which the drilling fluid is pumped. A heavy steel link (the bail) is used to suspend the drilling string from the hook while internal thrust-races and glands permit rotation of the bottom connection.

Syncline (geological) – An earth-fold in which the strata are depressed in the form of a basin.

Tar – A term sometimes used to describe heavy liquid residues derived from petroleum processes. The word "tar" usually indicates the black viscous liquid resulting from the distillation of solid material such as coal or wood.

T.E.L. – Tetra Ethyl Lead (*q.v.*).

Tetra Ethyl Lead – A colourless stable liquid obtained commercially by the action of lead-sodium alloy on ethyl chloride. When added in small proportions to motor spirit it increases the octane number (*q.v.*). For this purpose, tetra ethyl lead is used in the form of ethyl fluid.

Tonnage (ships) – By international agreement, Merchant vessels are measured in tons of 100 cu. ft., the resultant tonnage being termed Gross Tonnage. Deductions are made from this figure in respect of engine-room and bunker spaces, accommodation, etc. to arrive at the Net Register Tonnage. In the commercial employment of Merchant vessels, particularly tankers, the tonnage figure usually referred to is the Deadweight Tonnage. This figure represents the total carrying capacity of the ship in tons of 2,240 lb. when loaded to summer marks, viz. when loaded to the appropriate freeboard during the summer season. To arrive at the weight of cargo carried, it is necessary to deduct bunkers, stores, water, etc. While there is not necessarily any relationship between the Deadweight Tonnage and the Gross or Net Tonnage – in the case of tankers the approximate summer deadweight figure may be taken as two and a half times the Net Register Tonnage. Conversely the Gross Tonnage may be taken as approximately two-thirds of the Deadweight Tonnage.

Topped Crude – Crude oil from which some of the lighter constituents have been removed by distillation.

Topping Plant – Distillation equipment employed for the removal of the volatile fractions of an oil.

Transformer Oil – A well-refined pale petroleum distillate of low viscosity, resistant to oxidation under conditions of use. Used in transformers for cooling and for electrical insulation.

Travelling Block – An assembly of wire-line sheaves to which is attached a heavy steel hook used in conjunction with the crown-block (*q.v.*) to obtain mechanical advantage in raising or lowering the drilling string or casing.

Treatments – Somewhat loosely used to cover all those refining operations where small proportions of undesirable constituents are removed from products by chemical or physical means, e.g. acid treatment and sweetening (*q.v.*).

Turbine Oil – A well-refined specially selected petroleum distillate or mixture of such with a bright stock. Used for the lubrication of steam turbines. These oils show high resistance to emulsification with water and to oxidation under conditions of use.

T.V.O. (Tractor Vaporising Oil) – The trade name of the vaporising oil or power kerosine sold by Shell-Mex and BP Ltd.

Ullage – The empty space above the liquid in a tank or similar container. It is estimated by measuring the distance from the top of the container to the surface of the liquid held in the container.

Uplift – The total quantity of fuel supplied to an aircraft at one refuelling.

Vaporising Oil – *See* Power Kerosine.

Vapour Pressure – The pressure exerted by the vapour escaping from a liquid. As the temperature of the liquid rises its vapour pressure increases; eventually it exceeds the pressure of the confining atmosphere and the liquid boils. In the petroleum industry vapour pressures are usually reported as "Reid Vapour Pressure" (*q.v.*).

Visbreaking – Viscosity breaking; lowering or "breaking" the viscosity of residue by cracking at relatively low temperatures.

Viscosity – That property of a fluid which determines its rate of flow. As the temperature of a fluid is increased its viscosity decreases and it therefore flows more readily.

Viscosity Index – An arbitrary number used to characterise the rate at which the viscosity of a lubricating oil changes with changing temperature. Oils of high viscosity index exhibit relatively small change of viscosity with changing temperature and vice versa.

Volatility – The ease with which a product begins to vaporise. Volatile substances have relatively high vapour pressures and therefore boil at relatively low temperatures.

Wash Oils – Petroleum fractions employed for the absorption of the heavier easily liquefiable components of a mixture of gases.

Weathering – A term applied to the loss of light petroleum fractions by exposure of the oil containing them to the atmosphere.

Wet Gas – A gas mixture containing easily liquefiable components.

Wetting Agent – A substance which, when added in small amounts to a liquid, increases the rate at which that liquid spreads across a surface or penetrates porous material.

Whipstock – In drilling operations it may be necessary to deflect the direction of a borehole. This is accomplished by inserting a long cylindrical steel billet with a tapering face cut at the desired angle to the vertical, from which the bit is deflected when drilling is resumed.

White Oils – A term applied to oils substantially colourless and without bloom made from light lubricating oils by a drastic process of refining. They have various uses, such as for medicinal purposes and in the manufacture of toilet preparations. The term is also used in the expression of "White Oil Ships", in which case, light-coloured petroleum products up to gas oil are meant.

White Products – A term applied to the more volatile petroleum products, such as gasoline, white spirit, kerosine (*q.v.*). It is not to be confused with the term "White Oils".

White Spirit – A refined distillate intermediate in distillation range between gasoline and kerosine (i.e. with a distillation range of about 150–200 °C). It is used as a paint thinner and for dry cleaning, etc. The term "mineral turpentine" or "turpentine substitute" is sometimes used for white spirit, but is not recommended, owing to possible confusion with gum turpentine. In the USA the term "petroleum spirits" is used for white spirit.

Wild-Cat – A term used to indicate a well which has been drilled without a complete geological exploration of the locality.

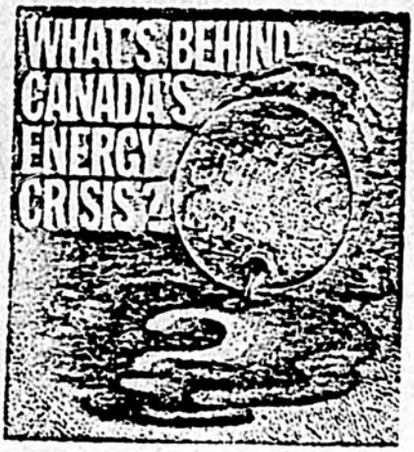
Wild Gasoline – This indicates a light petroleum spirit containing appreciable quantities of material which are normally gaseous at atmospheric temperatures and pressures, i.e. an unstabilised gasoline.

Work-over (oil well) – A term applied to any operation performed on a well subsequent to completion.

Xylene – Colourless liquid, $C_6H_4(CH_3)_2$, of the aromatic group of hydrocarbons made by the catalytic reforming of certain naphthenic petroleum fractions. Used as high-octane motor and aviation spirit blending agents, solvents, and chemical intermediates. Isomers are metaxylene, orthoxylene and paraxylene.

See P. 22

TORONTO STAR



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Canada's energy crisis:

A bizarre tale of bungling

By DAVID CRANE
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A diverse group of Canadians will crowd into the ornate ballroom of Ottawa's Chateau Laurier hotel later this month for a meeting that will vitally affect this nation's future.

The group will include Indians and Eskimos, lawyers, scientists, financiers, engineers, government officials and oil and gas executives.

They will be assembling—on Oct. 27—for the opening session of National Energy Board hearings into proposals for a natural gas pipeline to be built at a cost of billions of dollars along the Mackenzie River valley in Canada's far North.

Many of those who turn up on opening day will probably spend much of the next 12 months there. That's how long it is expected to take the energy board to work its way through the complicated and controversial proposals for the biggest investment project in Canada's history.

Behind the pipeline controversy—and Canada's sudden transition from an apparently energy-rich nation to one searching anxiously for new oil and gas reserves—lies a bizarre tale of bungling and hypocrisy in Ottawa, of how the Trudeau government grossly miscalculated Canada's energy resources, of how it exercised power, not in Canada's interest, but in the interests of the U.S. and the oil and gas industry.

Parliament often didn't know

This is what emerges from confidential government files made available to The Star. This new material, along with information already on the public record, shows how a number of far-reaching decisions on energy policy were made in Ottawa between 1968 and 1972, though Parliament and the public were only dimly aware of what was going on. Much of the material is based on The National Interest, a new book by Prof. Edward Dosman, chairman of the political science department at York University, to be published by McClelland and Stewart later this year.

The material shows how the Trudeau government, while paying lip service to native rights and concern for the environment, was pressing hard for resource development, largely under foreign ownership and subsidized under generous tax and other concessions.

It was in 1968, after Atlantic Richfield Co. sent out the dramatic news of a major oil and gas find at Prudhoe Bay in Alaska, that the Trudeau government became aware of the North and its possibilities.

The Alaskan discovery, although no one realized it at the time, would soon have a far-reaching impact on future Canadian energy policy.

A seemingly unlimited supply

Canada reacted by promoting a more rapid export of existing oil and gas reserves, pushing hard for a continental energy policy, with rapid pipeline development in the North and accelerated oil and gas exploration.

The Trudeau cabinet accepted the oil and gas reserve figures of the Canadian Petroleum Association, which showed the country with a seemingly unlimited supply of oil and gas, and feared the new Alaskan discoveries would curtail sales of Canadian energy to the United States.

By actively promoting northern pipelines the cabinet and Ottawa's senior civil servants believed they could more closely link Canada's oil and gas reserves into the U.S. market.

During the crucial 1963-1973 period the public was kept in the dark on the key decisions being made in Ottawa, while behind closed doors senior government officials and the oil and gas industry collaborated to develop oil and gas in the North for the U.S. energy market.

Glowing industry estimates

Over the five-year period, Ottawa:

—Decided Canada would need oil and gas pipelines along the Mackenzie Valley, carrying both Alaskan and Canadian oil and gas, to assure a market for northern Canadian oil and gas in the United States.

—Talked to the Nixon administration about long-term commitments of Canadian oil and gas to the U.S. market. Canadian concerns about adequate supplies for this country's needs were discounted in favor of glowing estimates from the Canadian Petroleum Association. In 1970 the government approved the largest natural gas export contract in Canadian history.

—Committed hundreds of millions of dollars in public money to facilitate the construction of oil and gas pipelines.

—Showed itself willing to ignore environmental risks in the delicate ecology of the North in its single-minded bid to accelerate oil and gas exploitation in the Arctic Circle.

—Rejected demands by native people for settlement of their long-standing land claims before pipelines were built and oil and gas flowed, and showed little concern for Indian and Eskimo fears of loss of their traditional way of life, their culture and other social problems arising from massive resource development in the north.

TORONTO STAR. OCTOBER 11

—Hesitated in asserting Canadian sovereignty in the Arctic because it did not want to upset Washington.

From 1968 to 1973 the Trudeau government worked to make northern Canada a part of the North American economy.

Gross misreading

Believing in the existence of a vast treasurehouse of resource riches, the government pushed for increases in Canadian oil and gas exports to the United States.

Today, Canada finds itself faced with the prospect of oil and natural gas shortages before long, mainly because of Ottawa's gross misreading of Canada's energy situation in the late 1960s and early 1970s. And it is the consumer who now must pay the price.

The big U.S. oil discoveries in Alaska caught Ottawa unprepared.

Senior officials and cabinet ministers responsible for energy feared Canadian oil exports to the United States would be drastically reduced. To counter this, they made reckless proposals to the Nixon administration that Alaskan oil be carried through a Canadian pipeline to the U.S. midwest.

This way, they hoped, the search for oil would accelerate in the Canadian north and the United States would agree to import more Canadian oil as well.

Whether by agreement or not, the construction of an oil pipeline would integrate Canada's northern oil revision of the late 1950s, northern sources into U.S. markets.

In spite of Canada's own interest in northern development dating back to at least John Diefenbaker's northern vision of the late 1950s, northern development policy in Canada in 1968 was a mess.

The big international oil companies had staked claims to most of the geophysically attractive land and offshore regions.

But there was no plan for northern development. Instead there was administrative chaos, a distinct lack of cabinet interest and a vague hope that exceedingly generous incentives for exploration and development would eventually lead to massive resource development.

The cabinet got most of its advice from the Advisory Committee on Northern Development, a committee of senior civil servants under the chairmanship of the deputy minister of Indian Affairs and Northern Development. Between 1964 and 1969 it met only five times.

The Department of Indian Affairs and Northern Development had the most direct responsibility for the north. But it suffered from conflicts of interest.

It was supposed to be concerned with the needs of the native people in the north and with the protection of the northern environment, on the one hand, and with promoting resource development on the other. Senior officials of the department, as well as their minister, Jean Chretien, were mainly concerned with resource development.

The department saw its job as assisting the petroleum and mining companies in the north, leaving the setting of investment priorities to private industry. This way, the department hoped, jobs and economic activity would be created in the north and the natives would be happy.

As a result of this philosophy, the oil and gas industry gained enormous leverage in Ottawa's policy process. It had access to confidential information and government thinking that was denied other groups, including Parliament itself.

At the same time, the oil and gas industry gained the active collaboration of goverment officials in Indian Affairs and Northern Development, Energy, Mines and Resources, Transport and the National Energy Board, in assisting and approving their projects.

So when the northern oil rush began, an ill-prepared Trudeau cabinet and senior government officials were confronted by sophisticated big-league oil and gas companies controlled mainly in the United States, and by an ambitious Nixon administration that wanted a continental energy deal with Canada.

As a first step the government had to find some new way to deal with northern oil and gas policies.

In December, 1968, the government announced the establishment of the Task Force on Northern Oil Development. Its chairman was to be the deputy minister of Energy, Mines and Resources.

Named senator

At the time this was Claude Isbister (today he is chairman of Ontario's one-man royal commission into investigating oil prices). After May, 1970 it was Jack Austin, an ambitious Vancouver mining lawyer who recently was named a senator after being rejected by the government as a candidate to head Canada's government-owned oil company, Petro-Can. (Maurice Strong, currently head of the United Nations Environment Secretariat, is now expected to head Petro-Can.)

The other members of the task force included Robert Howland, chairman of the National Energy Board, Digby Hunt, assistant deputy minister of Indian Affairs and Northern Development, and Gerald Stoner, deputy minister of Transport. Robert Shaw, deputy minister of the Department of the Environment joined later.

The job of the task force was to plot Canada's reaction to the Alaska oil and gas rush.

It became incredibly powerful, but no one in Ottawa worried about its inherent conflicts of interest. For example, Howland was a member of the task force secretly urging strong efforts by Canada to get oil and pipelines built through Canada. Yet as chairman of the National Energy Board, he would have to hold impartial public hearings to determine whether such a pipeline should be built.

The task force, for the next four years, became the main source of energy policy proposals for the Trudeau cabinet. It was also the main contact between the government and the oil and gas industry. All of its work was secret.

The task force was created in an atmosphere of panic. The influential Interdepartmental Committee on Oil, responsible for energy relations with the United States, believed the Alaskan oil discoveries represented a serious threat to the Canadian oil industry and might even allow the United States to achieve near self-sufficiency in oil.

If this happened, it was feared, it would drastically reduce Canadian oil exports to the United States and lead to a drastic reduction of oil and gas industry investment in Canada.

The underlying assumption by the experts in Ottawa in 1968 was that Canada had plentiful oil supplies and that the country's most urgent need was to find export markets for its oil.

Yet in 1974, Ottawa would be forced to impose export controls on oil because the country faced the prospect of shortages.

The chief objective of Canadian energy policy was to overcome U.S. oil import restrictions.

Thus Canada argued with Washington that it was a reliable and secure source of long-term oil supplies. And, starting in 1969, Canada linked future supplies of natural gas, which the U.S. needed, with oil exports. More U.S. oil purchases, Canada argued, would lead to more oil and gas exploration and hence additional Canadian natural gas for the United States.

Two markets

Canadian oil policy since 1961 had divided the country into two markets. One, to the west of the Ottawa Valley, could use only Canadian oil from the western provinces. The other, east of the Ottawa Valley, used imported oil from Venezuela and the Middle East.

Unless Canada changed its oil policy to ship western oil to Quebec, the only other outlet for prairie production was the U.S. market. Canada opted for policies to boost oil exports and decided against shipping Canadian oil east to Montreal and Quebec City.

It was against this background that the task force set to work on four assignments.

The first, under Howland's direction, was to assess the feasibility of an oil pipeline from Alaska to the United States through the Mackenzie Valley.

The second, under Stoner at Transport, was to assess the feasibility of using oil tankers to carry crude oil to the United States and Europe through Canada's northwest passage.

The third, under Energy, Mines and Resources and assisted by the energy board, was to assess the impact of Alaska's oil discoveries on North America's oil supply and demand outlook, including the impact on Canada's oil industry.

The fourth, under Gordon Taylor of Finance, was to assess the costs and benefits to Canada of different energy policies.

But, in fact, the chief purpose of the task force quickly became the promotion of a Mackenzie Valley corridor for oil and gas pipelines.

And this in turn became the principal objective of both Canadian energy policy and Canada's plans for northern development.

The thinking was that if a trans-Canada route for Alaska's oil was chosen, it would improve Canada's bargaining position with the United States, even though it would lock Canada even more closely into a continental energy arrangement.

Within five years, as Canada's shortage of energy resources became evident, these considerations would be irrelevant.

But in 1968-1972 they were all-important. No one in Ottawa had time for anyone who had second thoughts about what turned out to be a tragically flawed policy.

Meantime, Prime Minister Pierre Trudeau had visited Washington in March, 1969 where he and President Nixon arranged for senior Canadian and U.S. officials to hold further discussions on energy.

The stage thus was set for Canada's all-out efforts to promote oil and gas pipelines down the Mackenzie Valley and to promote massive development of oil and gas reserves in the north.

Six years later Mr. Justice Tom Berger, sitting at the head of an inquiry in northern Canada into the social and environmental impacts of a natural gas pipeline, was to suddenly realize what in fact the government had asked him to study—not simply the impact of a gas pipeline on the Mackenzie Valley, but plans for a series of gas and oil pipelines that would be built, one after the other, over the next 15 years.

Under present plans by the oil and gas industry, an application for an oil pipeline will probably be filed in 1976, with construction to start as soon as the first natural gas pipeline is built. After that the capacity of the first gas pipeline would be expanded, creating through looping a second gas pipeline. Then it would be time to loop the oil pipeline, thus creating a second oil pipeline.

Up to 2 years

What this means, Berger said at his own hearings late this summer, is that the North would face "a construction project that might well last over a period of 10 or 15 or even 20 years.

But nobody had ever asked the northerners if this was what they wanted or asked the public, through Parliament, whether this was really in the national interest.

Those decisions had already been made by a handful of senior civil servants and members of the Trudeau cabinet.

THEY MADE THE BIG DECISIONS ON NORTHERN OIL, GAS POLICY

oe Greene, Minister of Ener- Mines and Resources until ly 1972, favored a continental and gas deal with the United tes. He feared Canada would e out if it imposed stiff condi- s on exports. The tough job once said, is "getting sales." had unbounded faith in the nadian Petroleum Associa- n's estimate of seemingly end- s oil and gas reserves. Greene, w a senator, was replaced by nald Macdonald, who contin- these policies until it became ar they were wrong.

• Jean Chretien, Minister of Indian Affairs and Northern Development until early this year, spent much of his time seeking European and U.S. investment to speed northern development. He caught the pipeline fever early, and described plans for oil and gas pipelines as "an adventure of social and economic impact rivalling the construction of the Canadian Pacific Railway." In a speech in Dallas seeking foreign U.S. oil investment he said, "the Canadian North can be regarded as one of the underdeveloped regions of the world."

• Robert Howland, former chairman of the National Energy Board, was responsible for impartial hearings on oil and gas pipelines. He also looked after Canadian oil exports to the United States, played a crucial role in the Task Force on Northern Oil Development, was part of the senior civil service team that tried to persuade the U.S. oil and gas industry to build pipelines along the Mackenzie Valley, and advised the cabinet on energy policy. He resigned in 1973 at about the time the federal cabinet realized the country was following the wrong energy plicies.

ack Austin, former deputy ster of Energy Mines and ources, who headed the Task e on Northern Oil Develop- t and pushed aggressively for hern oil and gas pipelines. In eech to the Canadian Bar As- ation not long before he was ed the job, Austin termed the hatian voyage through the idian north "a grave threat e well-being of the Cana- oil and natural gas industry to the confidence of those in da who believe in continen- concept of natural resource ng."

• Digby Hunt, assistant deputy minister of Indian Affairs and Northern Development, was responsible for northern resource development, northern environment and social planning in the north. Hunt is also a director of Panarctic Oils Ltd., the government-controlled oil and gas exploration company. He has favored oil and gas development over environmental and native issues. He was also a member of the Task Force on Northern Development.

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Canada feared to tell U.S. North is ours

★ A few years ago, Canada's oil and gas resources seemed almost limitless and Ottawa was trying to sell more to the United States.

Today, we're cutting back oil sales to the U.S. and Canada is suddenly aware we may not have enough oil and gas for our own use during the 1970's.

Why? How could Ottawa have been so wrong? Confidential government files, recently available to The Star, show how the Trudeau government grossly miscalculated in estimating Canada's energy resources, and exercised power, not in Canada's interest, but in the interests of the U.S. and the oil and gas industry.

This is the second in a series. Much of the material in it is based on The National Interest, a book by Professor Edgar Dosman, a York University political scientist, to be published later this year by McClelland and Stewart.

By DAVID CRANE
Star political editor

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No issue illustrates more clearly how ill-prepared Ottawa was to deal with the challenge of the North after the huge Alaska oil finds in 1968 than the sovereignty crisis that emerged soon afterwards in Canadian-American relations.

The sovereignty issue was quickly create a major strain in relations with the United States, one that the new Trudeau government and Ottawa's senior civil servants did not know how to cope with.

The challenge came with the announcement by Humble Oil late in 1968 that it planned to send the tanker Manhattan through the Northwest Passage the following summer to test the feasibility of moving Alaska oil to the U.S. east coast in tankers. Moreover, the U.S. Coast Guard announced that it would participate in the project.

Lacked clear view

Canada had no contingency plan to deal with this challenge. The External Affairs Department lacked a clear view of Canadian sovereignty in the North, although the department had been highly sensitive to the big U.S. presence in there since 1945.

The Advisory Committee on Northern Development, a key group of senior civil servants who advised the cabinet on northern policy, had anticipated the problem.

At a meeting in December, 1967, it had noted the accelerating hunt for oil and gas on Arctic lands and said this hunt would spread to northern waters as well. It saw that Canada had no controls on northern shipping and planned to set up a committee with the Departments of External Affairs and Defence to study this but the committee never met.

At another meeting, in June 1968, the advisory committee saw the Alaska oil discoveries as good news for Canada and was pleased by U.S. Coast Guard interest in the North.

But at a meeting a few months later, in December, 1968, these key officials who advised the cabinet on the north realized that Canada was facing a challenge to its sovereignty and that no one knew how to deal with it.

The crisis itself was caused by the U.S. Coast Guard decision to send an icebreaker with the Manhattan, without seeking permission from the Canadian government. It was one matter for the oil companies to send a tanker through the Northwest Passage. It was quite another for the U.S. government to do so.

The immediate response of the Trudeau government was to suggest to the U.S., through the External Affairs Department, that it apply for permission to send its Coast Guard vessel through the Northwest Passage.

Ignored suggestion

But the United States ignored Canada's suggestion, since a request for permission would imply acceptance of Canada's sovereignty.

The United States viewed the Northwest Passage as an international strait linking the Atlantic and Pacific Oceans, an important waterway that formed part of the high seas that could be used by its navy and commercial fleet. Canada saw the passage as an internal Canadian waterway.

In the U.S. view, no country had sovereignty more than three miles from shore, and this included the Arctic.

At the December 1968, meeting of the Advisory Committee on Northern Development, senior officials worked out a strategy for the cabinet: Canada should try to ensure sovereignty by co-operating with the United States and trying to become part of the project. One step would include the use of the Canadian icebreaker, the John A. Macdonald, in the Manhattan voyage.

The officials also suggested that Canada propose the use of Coast Guard vessels from both countries in each other's waters.

Ottawa's senior officials wanted to avoid a direct confrontation with the Nixon administration over the sovereignty issue, as well as to avoid within Canada any suggestion there was a challenge to Canadian sovereignty in the Manhattan voyage.

Moreover, concern over future oil sales to the United States made Ottawa wary over getting into an open dispute.

But Ottawa was now faced with a dilemma. Talks between the two countries seemed out of the question since they would be most likely to lead to confrontation.

In a sense, External Affairs hoped the issue might just go away. By achieving a reasonable level of Canadian participation in the Manhattan voyage it was hoped it could protect Canada's interests without direct diplomatic exchanges.

Ottawa believed the working relationships with the U.S. oil companies and Coast Guard could be taken as positive signs that the United States accepted Canada's jurisdiction, although the U.S. state department was explicitly to reject this notion.

Questions certain

But Ottawa had to deal with Parliament as well. With all the publicity surrounding the Manhattan voyage, questions were bound to be asked.

And they were. However, the cabinet decided to deny the existence of a challenge and to reassure the public instead.

An article by an Arctic expert published in The Globe and Mail in February, 1969, suggesting that the government was being inactive in the face of a direct challenge from the United States, caused near panic in External Affairs.

To prepare for a flurry of questions in the House of Commons, External Affairs worked out a set of answers for Mitchell Sharp, the minister. He was advised to restrict himself to three points:

- He should say he was not aware of any U.S. attempt to discourage Canadian participation in the Manhattan project.
- He should say there was no foundation for any suggestion the United States was challenging Canadian sovereignty in the Manhattan trials.
- He should point out that the U.S. oil industry had requested the co-operation of Canadian authorities.

One unforeseen result was that Washington interpreted this kind of approach as a sign of weakness on the government's part, which to the Nixon administration meant that Canada might be willing to compromise. If Canada had wanted to assert its sovereignty, it would have done so from the start, Washington probably reasoned. By delaying, it showed its fear of the United States.

At about this time External Affairs circulated a set of confidential briefing notes to the Trudeau cabinet and senior officials.

Diefenbaker stand

These notes referred to the stand former prime minister John Diefenbaker had taken in 1958 on the North, when his government had said: "The waters between the islands, and the areas beyond, are looked upon as our own, and there is no doubt in the minds of this government, nor do I think in the minds of former governments of Canada, that this is national terrain."

They also referred to former prime minister Lester Pearson's unsuccessful bid, in 1964, to establish Canadian sovereignty, clearly over the Arctic waters.

According to the briefing material, the U.S. state department had now? Uncertainty was not confined to the government's senior officials.

The cabinet and the Liberal caucus in Parliament were uncertain. They knew the Canadian public would emphatically reject a "North American Arctic."

Thus the search was on for a minimal Canadian position, one that would retain the concept of Canadian Arctic waters without producing a serious strain in Canadian-U.S. relations.

Through the early months of 1969 it became increasingly clear the Trudeau government would have to say something. There was continued U.S. silence toward Canadian signals for co-operation and there was growing awareness of the issue in Canada.

Finally, on May 15, 1969, Trudeau in the House of Commons stated Canada's position. But it was a weak speech and at one point appeared to back away from Diefenbaker's 1958 assertion of sovereignty over Arctic waters.

Trudeau told the MPs: "Not all countries would accept the view that waters between the islands of the archipelago are internal waters over which Canada has full sovereignty."

Opposition MPs were astounded that Trudeau would admit to any doubt over Canada's sovereignty.

"The contrary view," Trudeau said, "is indeed that Canada's sovereignty extends only to the territorial sea around each island."

MPs were surprised as well by his implied invitation of a challenge to Canadian sovereignty when he said differences of opinion would have to be settled "not on an arbitrary basis but with due regard for the principles of established international law."

Trudeau's speech outlined Canadian support for the importance of the Manhattan voyage in opening the North and the importance for Canada of learning more about northern navigation. The speech gave the clear impression that Canada and the United States were working closely together on the project.

The main lines

The following month, on June 23, External Affairs transmitted the main lines of the Trudeau speech to the U.S. state department through the U.S. embassy in Ottawa.

(7)

The note stated explicitly that Canada's sovereignty was not affected by the Manhattan voyage and repeated Trudeau's expectations of mutual benefits as well as looking forward to a cordial future of Canadian-U.S. relations. The note also stated Canada would support oil and gas exploration in the North.

The note avoided any indication that Canada had perceived any U.S. state department actions which could be interpreted as questioning Canadian sovereignty. The note reasserted Diefenbaker's 1958 stand but pointedly refrained from a formal statement of Canadian sovereignty over Canadian Arctic waters and the Northwest Passage.

External Affairs had hoped there would be no U.S. reply to its note. That could have closed the issue. But there was a reply. And it was a shock.

In a message that was clear and uncompromising, the U.S. state department said the United States would not recognize Canadian jurisdiction over Arctic waters beyond the three-mile limit, although it recognized all of Canada's land claims in the North including the continental shelf.

The United States took the position Trudeau had invited in his May 15 speech: International principles of the law of the sea, the state department said, included the right of innocent passage, and freedom of the high seas applied to Arctic waters as well.

The state department, under direct orders from the White House, firmly rejected the Canadian view that waters between the islands were internal Canadian waters. The United States said it would insist on the right of unrestricted free transit through the Northwest Passage.

The Northwest Passage, the state department continued in blunt language, was an international strait where freedom of navigation applied. The United States would reject any unilateral extension of maritime jurisdiction by Canada.

The U.S. note clearly put Ottawa on the spot. Ottawa's gamble that it could bluff its way through the situation without direct Canada-U.S. confrontation had flopped.

But Ottawa could not stay silent, lest this might indicate it was backing away from Canada's 1958 stand and recognizing the legitimacy of the U.S. position.

External Affairs groped for a reply, and the cabinet could not agree on a policy. But there was a subtle shift in vocabulary. From the fall of 1969 on, Ottawa officials talked of "jurisdiction" instead of "sovereignty." (In fact, by spring of 1970, officials no longer talked even of maintaining Canadian jurisdiction. Instead, they spoke of "extending Canadian jurisdiction.")

On Aug. 8, 1969, External Affairs sent a long memorandum to Canadian embassies around the world in an effort to patch up the May 15 statement in which Trudeau appeared to backtrack on Canada's northern sovereignty claims.

The memorandum reiterated that U.S. and British oil companies were interested in using tankers in the Northwest Passage, that the U.S. Coast Guard and military personnel would participate in the Manhattan voyage, and that Canada was cooperating.

But it went on to say: "While the oil companies concerned have sought the co-operation of the Canadian government in the project, appropriate U.S. authorities have failed to formally request consent for, or to provide requisitive notifications of U.S. Coast Guard icebreaker participation in the project."

The equivalent

However, External Affairs told the embassies, Canada was treating consultations between the two coast guards as the equivalent of notification.

Furthermore, Canada was taking the view that the Manhattan voyage was a private matter, in spite of the presence of the U.S. Coast Guard.

In September, 1969, Sharp, continuing the government's "no crisis" stance, contended that Canada was closely involved in the Manhattan experiment. "It is wholly misleading, therefore, to portray the Manhattan passage as a test of Canada's sovereignty in the Arctic. The issue simply does not arise," he wrote in a newspaper article.

The same month Trudeau told high-school students in northern Ontario: "We're not going to stand up now and say flatly it (the Northwest Passage) is ours. We'd have to shoot at the Manhattan to back up the claim and start a war with the world."

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In January, 1970, the cabinet agreed. This permitted a government presence without undermining private enterprise in the North.

Meanwhile, External Affairs was still wrestling with the problem of how to respond to the U.S. state department's uncompromising note rejecting Canadian sovereignty over the waters of the Northwest Passage and referring to "the North American Arctic."

Early in 1970, after work by its legal division, External Affairs proposed that Canada simply extend its territorial sea from three miles to 12 miles. This would effectively assert Canadian sovereignty in the Northwest Passage and could be done through a simple amendment to the Territorial Sea and Fishing Force Act.

It was also a convenient approach because the 12-mile limit has already gained widespread acceptance in the international community. External Affairs expected the United States would contend that Canada could not claim jurisdiction over "international" straits, but the department doubted the United States would go to court over it.

This approach was firmly rejected by Trudeau's own aides. They argued that the United States would be more willing to accept anti-pollution legislation as a method of protecting Canadian jurisdiction than an extension of Canada's territorial sea from 3 miles to a 12-mile limit. And the recent oil tanker spill at Chedabucto Bay, N.S., reminded Canadians of the damage caused by oil spills.

This approach was attractive to the Departments of Indian Affairs and Northern Development and Fisheries and Forestry (about to be reorganized as the Department of the Environment).

Trudeau's office felt the anti-pollution approach would be attractive to other countries and would have some public support in the United States. It was also an easy way to avoid public debate on the sovereignty issue itself.

The crunch came early in 1970 with the second voyage of the Manhattan. The public was demanding a clear Canadian statement, and with the two strategies in conflict Trudeau finally resolved the issue by adopting both.

On April 8, 1970, as the Manhattan entered Arctic waters for the second time, he introduced legislation implementing the 12-mile limit and at the same time brought in the Arctic Waters Pollution Prevention Act, giving Canada jurisdiction in northern waters for 100 miles off shore to deal with pollution.

Before the legislation was introduced in Parliament there was frantic activity behind the scenes.

Quickly dispatched

By the first week of March, the U.S. embassy learned through its Ottawa contacts that the Trudeau government planned legislation "to extend Canadian jurisdiction," although there was still no diplomatic note saying so. On March 6, Canadian officials were quickly dispatched to Washington to explain Canadian plans.

On March 10, Nixon responded by slashing Canadian oil shipments in the eastern and central U.S., from 537,000 barrels a day in the early part of 1970 to 395,000 barrels a day for the period March 1 to Dec. 31.

Canada's External Affairs Department was not surprised. If the U.S. wanted to teach Canada a lesson, it could easily do so by cutting back on oil purchases.

Nixon's own task force on oil policy had already recommended, in 1969, a reduction in Canadian oil shipments, effective July 1, 1970, pending state department negotiations over "measures looking toward a freer exchange of petroleum, natural gas and other energy resources between the two countries."

On March 11, 1970, External Affairs notified the United States of the measures Canada planned to deal with sovereignty in the Arctic.

A few days later, on March 17, an angry Richard Nixon telephoned Trudeau to object to Canada's plans. Nixon told Trudeau not to do it and said "It would raise troubles in Washington."

Trudeau said he had no choice, that he had to respond to nationalist political pressures.

Nixon said he was aware of the "political pressures" but said he had hoped for "co-operative action" from Canada. The U.S. president said he planned to send a top-level team to Ottawa to discuss the issue.

That team, led by Alexis Johnson of the state department, arrived in Ottawa March 20. The delegation included officials from state, the department of the navy, transportation and the coast guard.

From about 10.30 in the morning until 7.30 at night the Americans argued with various Canadians, including External Affairs Minister Sharp, his under-secretary of state, Ed Ritchie, Treasury Board President Bud Drury, and officials from Indian Affairs and Northern Development and other key departments.

Firmly opposed

According to confidential Canadian government minutes of that day's meetings, the U.S. delegation said it was firmly opposed to what Canada was doing, not only because of the precedent it was setting, but also because of the serious implications for U.S. and Canadian defence in the North due to the restrictions that would be imposed on the movement of U.S. Navy warships.

The meeting in itself ended in a stalemate. But the confrontation had sent shock waves through Canadian-American relations.

The issue, and Nixon's actions on oil, had demonstrated Canada's vulnerability in trade relations between the two countries. For his part, Nixon seemed personally enraged by Trudeau's handling of the issue.

Yet a few months later the issue appeared to evaporate. The reason: In October, 1970, Humble Oil announced the end of the Manhattan experiment. The oil industry felt the time was not yet ripe for the use of tankers in the North.

With that, Canada turned its efforts to re-establishing energy relations with the United States and to developing its own plans for oil and gas development in the North—including pipelines—as part of the future energy supply base of the United States.

Yet the challenge to Canadian sovereignty remains. Since the Manhattan experiment, the U.S. Coast Guard has embarked on a program to build powerful new icebreakers and one, the Polar Star, is about ready for use.

Should there be another Middle East oil embargo, one contingency plan for the United States would be to ship Alaskan oil through the Northwest Passage by tanker to its major east coast centres. Would it seek Canadian permission first? That remains to be seen.

In the meantime, Canada has yet to build its own more powerful icebreakers in the North and is likely yet again to postpone spending on northern surveillance aircraft.

'Buy our oil' was Ottawa's plea to U.S.

(9)

Oct. 14

By DAVID CRANE
Star political editor

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From 1968 until 1972 the Trudeau government had one long-term objective in its oil policy: To sell as much as possible to the United States.

The government and senior civil servants pursued this policy in three ways:

• They embarked on negotiations with the United States for a continental energy policy that would remove all barriers, such as U.S. oil import quotas, to the flow of Canadian oil into the United States.

• The government campaigned long and hard to have Alaska's new-found oil carried in a pipeline along Canada's Mackenzie Valley instead of one across Alaska. It was hoped this would link Canada's oil reserves more closely into U.S. markets.

• The government, late in 1970, increased natural gas exports, which the United States desperately wanted, and linked future gas supplies to U.S. willingness to buy more Canadian oil.

The Alaskan oil find caused panic in Ottawa. There was fear of stagnation in Canada's oil and gas industry. After 1972, it was felt, this country would face a severe cut in oil shipments to the United States.

In late 1968, the cabinet committee on planning and priorities quickly drew together terms of reference for the new Task Force on Northern Oil Development, to deal with the whole problem of northern oil and gas, pipelines, Canadian strategies for negotiations with the United States and the role of tankers in the Northwest Passage.

Its chairman was the deputy Minister of Energy and its other members included the chairman of the National Energy Board and the deputy minister of Indian Affairs

Enormous power

The task force became enormously powerful because it was the main source of oil policy for the cabinet and the main link between the government and the oil and gas industry.

On March 25, 1969, a month after U.S. and British oil companies in Alaska announced plans for a pipeline across Alaska and a tanker link to the U.S. west coast, the task force presented its first memo to cabinet.

It saw four possibilities as a result of the Alaska oil finds.

These were: The pipeline across Alaska; a line from Seattle, Washington, to Chicago to complement the trans-Alaska line; a Canadian alternative along the Mackenzie Valley, and an extension to Quebec of the Canadian pipeline which already carried Alberta oil to Ontario.

The task force rejected the notion of extending Canada's existing pipeline system east to Quebec, and embarked instead on a cost-comparison study of the trans-Alaska and Mackenzie Valley alternatives.

At the same time, Prime Minister Trudeau headed for Washington to meet then U.S. president Nixon and to discuss Canada-U.S. energy relations, including northern sovereignty, pipelines, U.S. oil import restrictions and the possibilities of a Canada-U.S. energy agreement.

Embark on talks

The two agreed that they should embark on talks, in Trudeau's words, "to permit the encouragement and development of oil resources in Canada."

Speaking to reporters of Canada's desire to increase oil sales, Trudeau said: "I think we have arguments for the United States in the sense that our oil is not only cheaper, (than other U.S. oil imports) but it is more secure in terms of defence in any future conflict. It is continental oil. It is more easy of access. And if we do not continue exploring and discovering new sources of oil, there might come a time when there will be an oil gap that we won't be able to fill on this continent."

Talks between the two countries began a few days later.

In the meantime, another crucial committee in Ottawa, the Interdepartmental Committee on Oil Policy, added its voice to those calling for more oil sales. This committee, made up of the chairman of the National Energy Board (Robert Howland), the under-secretary of state for external affairs (Marcel Cadieux) and the deputy minister of energy, mines and resources (Claude Isbister), was responsible for advising the cabinet on Canada-U.S. energy relations.

In August, 1969, it told the Trudeau cabinet that Canada should continue its policy of importing cheaper foreign oil into eastern Canada while requiring the rest of the country, including Ontario, to use more expensive Canadian oil carried by pipeline from Alberta and Saskatchewan.

Redouble efforts

What this meant, the committee said, was that Canada should redouble its efforts to sell more prairie oil to the United States and should seek talks with the United States to lower U.S. oil import quotas.

In February 1970, Nixon published his own task force report on oil import policy, which recommended easier access for Canadian oil, but only after negotiations on a broad energy agreement.

(10)

Nixon said all members of his task force agreed "that a unique degree of security can be afforded by moving toward an integrated North American energy market." And he announced: "I have directed the Department of State to continue to examine with Canada measures looking toward a freer exchange of petroleum, natural gas and other energy resources between the two countries."

A second Task Force report to cabinet in April, 1970, repeated Canadian fears about the loss of the U.S. oil market.

Yet an appendix to the report referred to the growing gap between future U.S. oil needs and oil supplies that could only be filled by imports from Canada and other countries. Thus Canada was prepared to rush into deals with the United States to sell more oil while the government's own studies showed it would have growing bargaining power in the future.

Meanwhile, the task force in Ottawa was pressing on with its efforts to get an oil pipeline along the Mackenzie Valley.

Operating by '75

By August 1970, the cabinet had given approval in principle to oil and gas pipelines down the Mackenzie Valley.

The enthusiasm for the project—although there had been no study of either the environmental or economic impact—is captured in a government document that boasted: "A second great era of new oil and gas pipeline construction may soon begin in Canada."

The government was convinced that a Mackenzie Valley gas pipeline would be built and that it probably would be in operation by 1975. But the task force, headed by Jack Austin, since May 1970 deputy minister of energy, mines and resources, wanted an oil pipeline as well.

There were two big problems: The Nixon administration did not want the Canadian route and the U.S. oil industry didn't either.

The task force and the Trudeau cabinet believed that by offering easier environmental standards and the added lure of long-term access to Canadian oil and gas—as well as by lobbying with Midwest states that would benefit directly—they still might get the pipeline.

Another factor they believed was working in their favor was the series of delays to the oil industry's plans for a trans-Alaska oil pipeline.

In early 1971 the Canadian Embassy in Washington, while concluding that U.S. oil executives still favored the trans-Alaska route, maintained this was mainly for political reasons. Embassy officials also contended that the oil industry might opt for the Canadian route if that meant a quicker decision.

External Affairs emphasized, though, that there would have to be a Canada-U.S. energy agreement covering not only the terms under which pipelines for oil and gas would operate but also providing for long-term U.S. access to Canada's oil and gas reserves in the North.

This was spelled out in a March 9, 1971, memo from the Canadian Embassy in Washington to the External Affairs Department in Ottawa, when Ottawa was trying to decide what strategy to pursue to get an oil pipeline.

"In this context one hears the frequent comment that the corporate interests could scarcely be expected to pursue the Canadian alternative in the absence of an inter-governmental agreement sufficiently definitive to permit the companies to plan realistically," the embassy said.

The embassy went on to say: "At the same time, there is recognition that the oil and gas potential of Canada's northern reaches would have to be given consideration in any bilateral agreement."

In other words, as part of the deal to get an oil pipeline through Canada, the Canadian government would have to be willing to make a long-term commitment for United States access to northern Canadian oil and gas reserves.

In the same month, a State Department memorandum concurred in the need for a formal treaty between the two countries to protect the corporate business interests of the oil industry. But that memo also spelled out many of the difficulties that would arise in trying to build binding guarantees into a treaty.

Strong opposition

There was strong opposition to the Trans-Alaska route from environmentalists in Washington. In Canada, west-coast MPs were critical of the Alaska route because of the threat of oil pollution in the Strait of Juan de Fuca.

In February, 1971, Canada requested talks with the United States on the pollution threat.

Under the trans-Alaska pipeline plan, oil would be carried west across Alaska by pipeline to the port of Valdez. From there, it would be carried to various west coast refineries, including one at Cherry Point, Wash., which could be reached only through the tricky Strait of Juan de Fuca between the state of Washington and British Columbia.

External Affairs Minister Mitchell Sharp argued in task force and other discussions that Canada's strategy should be to protest about the threat of pollution and wait for the United States and the oil industry to initiate talks on the Mackenzie Valley route.

Other cabinet ministers, such as Energy Minister Joe Greene and Environment Minister Jack Davis, favored a direct, formal proposal to the Nixon administration in favor of the Canadian route.

Both Greene and Davis contended the Canadian route was environmentally safe although no research had been done on the impact of a pipeline carrying hot oil through permafrost.

While privately and publicly the government was actively promoting a multi-billion dollar oil pipeline down the Mackenzie Valley, it could not document claims it was making to the United States that such a pipeline would be environmentally sound and cheaper than the proposed trans-Alaska one.

While Ottawa tried to find a way to bluff through the fact that it had done no research, Canadian-U.S. economic relations were quickly moving to a broader confrontation.

10% surcharge

In August, 1971, President Nixon announced emergency economic measures to bolster the U.S. economy and protect the dollar.

These included a 10 per cent surcharge on all U.S. imports.

The Trudeau government reacted in shock and disbelief. Canadian officials became all the more anxious to secure the U.S. market for Canadian oil.

Thus by September, 1971, the mood in Ottawa was to press more strongly for an oil pipeline through Canada. But how?

At the end of August, the Canadian embassy in Washington had reported to External Affairs that there was still U.S. interest in the Canadian route.

Gerry Stoner, the deputy minister of transport and a member of the task force, contended the task force did not have enough reliable information on such matters as probable oil and gas reserves in the North, the concessions that Canada would have to make to the United States to get the Canadian route accepted, the techniques of building a hot oil pipeline in the Mackenzie Delta, the economic impact on Canada of such a huge project, the availability of Canadian capital or the degree of opposition from native groups.

Stoner implied that Canada was making claims, in public and in private, it simply could not back up. Not the least of these was the Canadian assurance that the National Energy Board and the cabinet could come up with a quick decision on a pipeline application.

All of these issues, Stoner contended, needed much more research before an oil pipeline could be aggressively promoted.

But this approach was rejected by other senior civil servants, led by Austin of Energy, Mines and Resources and by the Trudeau cabinet as well.

A strong push for a more aggressive campaign to promote the Canadian route came from Austin and senior aides in Trudeau's office.

They convinced External Affairs undersecretary Ed Ritchie first, and then won support from Simon Reisman, deputy minister of finance, James Grandy, deputy minister of industry, trade and commerce, and Gordon Robertson, clerk of the Privy Council office.

On Oct. 23, 1971, the Interdepartmental Committee on Oil, which looked after Canadian-U.S. energy relations, made the following recommendation to cabinet: "That the Secretary of State for External Affairs communicate with the United States and advise publicly that we were seeking the opportunity of discussing the Canadian alternative with U.S. government officials."

Canadian officials were aware of the possible implications for Canadian-U.S. relations. Austin had pointed out, in a letter to Ritchie dated Sept. 9, 1971, that "it would amount to joining issue in a major controversy within the framework of U.S. domestic politics and Canadian-American relations."

In his letter to Ritchie, Austin said the Americans might resent this approach as intervention in their own politics. "Would the political costs be too high, whatever resulted?" he asked. In the end, neither Ritchie nor Austin seemed to think so.

Austin listed several arguments in favor of pushing for the oil pipeline. These included the development of Canadian oil reserves in the north, extra oil exports, jobs, and the use of Canadian materials.

Danger to dollar

He also listed arguments against the oil pipeline. These included additional U.S. dependence on Canada, concessions on environmental protection and the balance of payments impact. The project could push up the value of the Canadian dollar, hurting other Canadian industries. "Is Kierans right?" Austin asked. It was Communications Minister Eric Kierans who had raised the danger to the Canadian dollar.

But with the cabinet decision made to push harder for a U.S. deal to move Alaskan oil down the Mackenzie Valley, some crucial decisions on Canada-U.S. relations now had to be made by cabinet.

These included:

- Arrangements under which Canada would be used as a land bridge—through the Mackenzie Valley and the prairie provinces to the U.S. Midwest—for a strategic U.S. commodity. Canada's national security would be affected but it was assumed Canadians would accept this since the costs would be outweighed by the benefits of more secure export markets for Canadian oil and gas.
- Canadian long-term oil commitments to the United States. Canada would have to make some kind of oil commitment from existing reserves since the chief rationale for a Canadian oil pipeline was not the danger of west coast oil pollution but the promotion of Canadian exports.
- The commitment of future oil and gas reserves in the North to U.S. markets. This was another concession Canada would have to make to get the oil pipeline.

There were, of course, other issues to deal with. An oil pipeline would raise new questions about Canada's national priorities. The cabinet and the task force had agreed in 1970 that a gas pipeline would be built but an oil pipeline as well would greatly enlarge the requirements for manpower, financing

Formal pact

Thus, in the fall of 1971, wi
Trudeau government in publ
concerned mainly with the ef
Nixon's 10-per-cent import
charge, behind closed doors
actively considering a fo
energy-sharing arrangement
the United States.

The opening of negotiation
the United States on an oil
would also mean a commitm
bind Canada more tightly tha
to the security and energy in
of the United States.

It would also mean that
might have to commit a shar
northern oil and gas reserve
United States without full
edge of its own future needs.

Donald Macdonald in the
time, had made it clear—in
meeting with the press as
minister in February, 1972—
wanted both an oil and a ga
line down the Mackenzie Val
March he travelled to Washin
discuss the idea with Roger
ton, U.S. Secretary of the In
Morton expressed little in
Macdonald came away dete
to make a strong last-ditch eff

That effort came in a letter
ered by Macdonald to Mor
May 5, 1972.

The letter offered the
States a commitment for
Canadian crude" while an oil
line was being built along tha
enzie Valley. Macdonald did n
how much crude oil Canada
supply. A year later Canada
clamp controls on Canadian
ports.

Macdonald also claimed
Canadian route would be les
ardous environmentally tha
trans-Alaska route, suggest
would make more sense to r
oil line through Canada since
line would be built there an
pointed to Canada's just-anno
plans for an all-weather Mack
highway as a sign of Canada'
ousness about the pipeline pr
and said there was no reason
"regulatory and governmenta
sideration could not be given
expeditious manner comme
with an application filed by th
of this year."

In many respects, the Mac
letter was extraordinary in
claims.

(12)

Canada was only starting on its environmental research. There was no agreement on right-of-way, no settlement of native land claims. The finance department's economic impact study was not yet completed. (Completed later in the year, it questioned the value of a gas pipeline, let alone an oil line as well.)

And there was nothing to back up Macdonald's claim that the National Energy Board could quickly approve an oil pipeline application (except perhaps the fact that its chairman wanted oil and gas pipelines built).

The United States, for its part, quickly saw that Macdonald could not deliver what he was offering.

John Irwin, the U.S. undersecretary of state, told the Canadian Embassy in Washington he doubted that Canada could really deliver the promises contained in Macdonald's letter. For example, he asked, how could Canada make far-reaching oil commitments to the United States? The U.S. was concerned about an energy shortage in the fall but already knew there was not much Canada could do to help.

Rejects proposal

Canada's hopes for the oil pipeline ended in 1972, after Morton rejected the Canadian proposal. But the cabinet still pursued it, or at least paid lip service to it in Parliament for another year. At least External Affairs Minister Mitchell Sharp did. He told the Commons in July 1973: "We have only begun to fight."

Once the word had been received from Morton, however, the task force switched its full attention to plans for a gas pipeline down the Mackenzie Valley.

Executives from the Mackenzie Valley Pipeline Research Group gave Ottawa officials a final report, on Dec. 19, 1972, on their research into a Mackenzie Valley oil pipeline. They contended the project was feasible and could be built later if more oil was found in the Mackenzie Delta or Alaska. Since then, the oil industry and U.S. officials have kept alive the prospect of an oil pipeline down the Mackenzie Valley while the oil industry has stepped up its oil search in the Mackenzie Delta and Alaska.

WEDNESDAY: How Canada promoted the Mackenzie Valley gas pipeline.

(13)
OCT. 15

Canada was told it had oil to last 923 years

By DAVID CRANE
Star political editor

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In 1970 the Trudeau government made two key decisions that paved the way for a natural gas pipeline along the Mackenzie Valley in Canada's far North.

In August, it gave approval in principle to a multi-billion-dollar natural gas pipeline when it published its guidelines on pipelines in the North. This was the green light industry had been waiting for.

In September, it approved the largest single gas export license in Canadian history and, in the process, shifted the focus of future gas development to the far North in the Mackenzie Delta and Beaufort Sea.

The two decisions were linked, part of Canada's over-all strategy to increase oil and gas sales to the United States and to accelerate development of potential oil and gas reserves in the North.

Massive oil and gas finds in Alaska in 1968 had made the cabinet afraid that Canada would lose a big share of its oil market in the United States.

Big push

Although natural gas policies were not making headlines in Canada, the big push for pipelines and exports really got under way in 1970.

In particular, the oil and gas industry began to lobby for clear direction and policy from Ottawa on pipelines, especially a gas pipeline. There was confidence that applications could be ready by early 1971 with actual construction under way in the winter 1972-73. This confidence was particularly strong in the Department of Indian Affairs and Northern Development.

There were talks between Canada and the United States on natural gas exports and pipelines. By this time the United States was beginning to experience natural gas shortages.

Sensing the danger of policy drift in Canada, on April 8, 1970, Gerry Stoner, the deputy minister of transport, sent a letter to Gordon Robertson, clerk of the Privy Council Office and senior aide to Prime Minister Pierre Trudeau, proposing a meeting of Ottawa's inner core of deputy ministers, to take place in the Privy Council Office, to discuss the government's policy on pipelines.

On May 12 a meeting was convened with Marshall Crowe, then a senior adviser to Trudeau on energy and economic policy, as chairman.

(Shortly afterwards Crowe left Trudeau's office to become president of the Canada Development Corp. While there he organized the CDC's participation in Canadian Arctic Gas, which wants to build a Mackenzie Valley gas pipeline. Crowe sat on the management and tax, finance and accounting committees of the Arctic Gas project. Today he is chairman of the National Energy Board which begins hearings on the gas pipeline Oct. 27.

The meeting chaired by Crowe really came about because a number of officials were worried about a lack of policy on the North.

Among those attending ... Claude Isbister, deputy mini... energy, Douglas Fraser of t... tional Energy Board, M... Strong, representing the soo... born Canada Development ... Digby Hunt of Indian Affair... Northern Development, Sto... Transport, Gordon Taylor ... nance and Norman Gilchrist, ... dent of Northern Transportati... Ltd., a Crown-owned compan... provided shipping services ... Mackenzie River.

Growing pressu...

Gilchrist stressed that the g... ment had to decide how it wan... handle an application for a gas... line and said there was gr... pressure from industry for a g... ment policy. Fraser responde... the energy board was already ... ing with the consortia.

Stoner wondered whether the ... ernment should encourage a ... line, but Fraser indicated the... for speedy action, contendin... liquefaction technology was ... developed fast.

Hunt told the meeting tha... government would have to pr... transportation for pipeline con... tion and said that his depart... was planning a highway alon... Mackenzie.

(14)

Strong said that the government would have to consider Canadian control and the possibility of Canadian direct participation through a government-owned corporation.

At the same time, Strong said, the government owed it to industry to set out its philosophic stance.

Crowe proposed that the task force take on the question of government policy, with representation from the Privy Council as well. Out of this emerged a joint working group from the Task Force on Northern Oil Development and the Interdepartmental Committee on Oil.

In the minds of Ottawa officials a gas pipeline was in the national interest and would help Canada-U.S. relations. All that remained was to draft the pipeline guidelines and get the cabinet to adopt them.

On June 17, 1970, a working group was set up to advise the cabinet on the terms and conditions under which oil and gas pipelines could be built.

By late July, a draft set of guidelines had been produced, proposing a single Mackenzie Valley corridor with one gas pipeline and one oil pipeline. There were provisions for Canadian ownership, Canadian content, jobs for native people and respect for the environment.

Energy Minister Joe Greene was pushing hard for Canadian ownership. At an earlier meeting with officials of TransCanada PipeLines, Greene said he would prefer to invest public funds rather than see Canadians lose equity control.

Added incentive

Surprisingly the guideline that said there should be "a substantial opportunity" for Canadian ownership caused some of the longest arguments. At a meeting of the working group on July 16 one official said "it could be construed as another facet of fairly excessive nationalism."

On Aug. 13, Greene and Jean Chretien, minister of Indian affairs and Northern Development, outlined the guidelines to a press conference. Greene also indicated that the three gas pipeline groups should consider merging.

"We're saying to them: 'Get together, boys, and find a common corridor, or only one of you is going to be in the ball game.'"

The oil and gas industry now had what it wanted: A commitment from the Canadian government on the gas pipeline, at least in principle. It could now get on with the details of its pipeline planning. This, in turn, would give an added incentive to oil and gas exploration in the North.

At the same time, the government was looking closely at the gas export issue, as the National Energy Board wound up its hearings from companies seeking approval to export another 8.9 trillion cubic feet of gas to the United States. The export hearing was the biggest in the energy board's history.

Energy relations

The decision was bound to affect the tone of Canadian-U.S. energy relations.

Canada was well aware of the U.S. desire to see the exports approved, and was anxious to mend its fences with the United States after the sovereignty crisis in the Arctic and President Nixon's abrupt reduction in Canadian oil shipments to the United States.

By 1970 the National Energy Board itself appeared to have established close links with the U.S. Federal Power Commission and was closely involved in talks on future gas exports and a Mackenzie Valley gas pipeline.

In a June 9 speech FPC chairman John Nassikis praised the close working relationship between the two agencies and spoke of FPC and State Department efforts to develop "a common energy policy" with Canada.

"The formulation of a common energy policy with Canada offers promising potential for additional natural gas from Canadian gas reserves as well as Alaskan gas reserves via a pipeline across Canada to the vast mid-continent market," he said.

There was a feeling in Canada that the country had an almost endless reserve of oil and gas that should be developed and sold as rapidly as possible.

Probably no government statement illustrated more clearly the government's belief in Canada's inexhaustible natural gas supplies than a comment in early August, 1970, by Jean-Luc Pepin, minister of industry, trade and commerce and former energy minister.

Talking about applications before the National Energy Board to export a record volume of gas, Pepin said: "It would be crazy to sit on it. In maybe 25 to 50 years we'll be heating ourselves from the rays of the sun and then we'd kick ourselves in the pants for not capitalizing on what we had when gas and oil was a current commodity."

Moreover, Pepin said, if the gas exports went ahead, "then we're in for the next round. The decision will condition the whole energy situation between Canada and the United States."

On Sept. 29, 1970, Energy Minister Greene announced the Trudeau cabinet had approved the largest gas export license in Canadian history—8.3 trillion cubic feet to be exported over a 15- to 20-year period.

Moreover, while the National Energy Board and the cabinet found it had to refuse permits to export another 2.6 trillion cubic feet, Greene held out the prospect of additional future gas supplies for the United States if the U.S. would ease its restrictions on Canadian oil shipments.

"The discovery of oil and gas are intimately related," he said. "Exploration and discovery depend on adequate markets for oil and gas both in Canada and the United States."

Barely two months later a high-powered U.S. delegation to Ottawa, led by U.S. Secretary of State William Rogers, announced a sharp increase in Canadian oil purchases in 1971.

A communique said that "arrangements should be worked out quickly to permit in subsequent years full and unimpeded access to U.S. markets of Canadian crude oil and petroleum products, surplus to Canadian commercial and security arrangements."

Big money

The gas export decision, by squeezing to the limit Canada's accessible and cheap reserves, shifted the focus of exploration and development to the North and provided the encouragement the oil and gas industry wanted to spend big money to develop future oil and gas reserves.

The stage was set for the big push to develop the Mackenzie Delta and get on with the job of building the Mackenzie Valley gas pipeline.

The decision to tie the Canadian North into the North American economy had been made. Development was to be pushed and Canada-U.S. energy talks were to continue in order to link the northern reserves into the U.S. energy market.

(15)

The big job now was to get the competing pipeline groups to merge into a single consortium, to work out the government support for the project and to establish the ground rules for a hearing expected as early as 1971.

Through 1971, the illusion of unlimited oil and gas reserves continued in spite of growing doubts by some Canadians and the resignation, on April 29, of Eric Kierans from the cabinet.

In a speech to the American Petroleum Institute on May 19, Energy Minister Greene said: "The reserves from which we presently draw our supplies are judged to be sufficient for 20 years for oil and 30 years for gas."

Shortly afterwards, Greene, in a June 2 speech to the Canadian Institute of Mining and Metallurgy, said: "Canada's total oil reserves were 469 billion barrels at the end of 1970 while total natural gas reserves were 725 trillion cubic feet. At 1970 rates of production, these reserves represent 923 years' supply for oil and 392 years for gas."

Urgent reply

The speeches brought an urgent response from Bruce Willson, president of Union Gas Co. In a July 8 letter to Greene, he said: "In my judgment both of these statements are inaccurate and quite misleading."

Willson said Union was already having trouble obtaining gas for its customers in southwestern Ontario while, he said, "gas producers and others in public utterances have somehow managed to create the illusion that Canada has such large volumes of oil and gas available, that there is no supply problem."

Willson went on to warn, prophetically as it turned out: "Unless the gas industry and the governments involved in regulating it do a better job in the future, Canada will be faced with the same type of energy crisis which currently confronts the United States."

Greene remained confident. In a letter to Willson July 29, he asserted: "I would hasten to assure you that the figures which I quoted are considered reasonable not only by the National Energy Board but by the industry as well."

The energy minister rejected outright the notion of possible future shortages caused by inadequate reserves. "The current problem of supply, as I see it, is one primarily of existing pipeline capacity limitations and of contractual surplus, rather than one of insufficient

Yet the figures Greene quoted were from the Canadian Petroleum Association, not the government, since the government had none of its own.

Same figures

Last year, former cabinet minister Eric Kierans charged that these same figures had been used by the National Energy Board to convince the cabinet to approve the massive 1970 gas export.

"It is the day on which, in bitter retrospect, I must candidly confess that we in the cabinet were misled," Kierans said.

When Willson received Greene's reply, he was not satisfied, and he wrote back to Greene Aug. 17 stating that neither his company nor the Canadian Gas Association had ever supported the Canadian Petroleum Association's figures for planning purposes.

The people in the industry who stood by the figures, Willson contended, were the oil and gas producers. But these people, Willson said, "psychologically and from a financial point of view, are very heavily biased in favor of the most rapid and profitable exploitation of resources." In fact, most producers were foreign-controlled while many distributors, such as Union Gas, were Canadian-controlled.

Willson contended that Canada was already facing a gas shortage. The last major gas discovery in Canada had been in 1967-68, while "the Western Canadian gas producers which, as I have mentioned, have their own specific interests, have succeeded in creating a shortage by contracting virtually all established gas reserves to U.S.-owned export companies."

Before the end of 1971, the National Energy Board was in fact turning down new applications to export Canadian gas. The country, it found, no longer had gas available to export.

After this decision the issue of Canadian oil and gas reserves was hotly debated within the Task Force on Northern Oil Development that advised the cabinet. But neither the task force nor the energy board had any independent means of calculating Canada's reserves. This meant the officials had to rely on industry.

Poor returns

In the end, in April of 1972, the task force decided to accept the most optimistic forecasts and concluded that northern natural gas supplies in the Mackenzie Delta "must and will" relieve the restrictions on further exports imposed by the energy board.

Yet in these discussions there was still no concern voiced over the fact that Canada would be spending large sums of money to facilitate extra exports of gas to the United States, while Canada would get very little in return in taxes, royalties and other revenues.

If Canada was to export more gas to the United States, a new gas pipeline along the Mackenzie Valley was even more urgently needed. But there was one stumbling block: Two competing groups wanted to build the line.

A hearing to choose between two groups would take much longer to handle than a hearing on one application.

Government pressure mounted on the two pipeline groups to merge.

In a speech to the Canadian Gas Association on May 29, 1972, Energy Minister Donald Macdonald said: "I am hopeful that industry itself may come forward with one proposal which combines the best features of all the projects now being prepared. This is a challenge that requires and deserves the best kind of industrial diplomacy." About two weeks later the two groups merged to form Canadian Arctic Gas.

At the same time, Macdonald implied that gas was being discovered at a much faster rate than had been thought. Speaking of the progress being made in proving up Mackenzie Delta gas reserves, he said, "It may well be that the initial gas pipeline may be founded on Canadian gas reserves alone."

As it turned out, proving up of reserves has been much slower than either the federal government or the oil and gas industry had expected. In January this year Canadian Arctic Gas Pipeline Ltd. estimated delta reserves at 6.5 trillion cubic feet, less than half the estimate made by government officials in 1971-72.

The fourth report to cabinet from the task force, in July 1972, stated: "The weight of public opinion in Canada is generally in favor of northern pipeline development."

(16)

It went on to state: "The accompanying memo analyzes many factors, alternatives and related policy matters concerned in the expectation that a gas pipeline will be built over northern Canada during the middle years of the decade."

The memo dealt with such factors as Canadian content and ownership, and raised the question of what sort of hearings would be held.

Attached, without any comment whatever, was a preliminary draft of a Finance Department economic impact study which warned that such a project would cause many problems for Canada, bring far fewer jobs than expected and raise a number of serious problems.

Optimism ended

A later meeting of the task force, on Sept. 6, 1972, showed there was still no concern over the Finance Department study. The task force was still expecting an application in the near future, officials were satisfied everything was on schedule, and the government was working closely with Canadian Arctic Gas.

The only concern, voiced by deputy energy minister Jack Austin, was that partial reports or deliberate leaks from individual departments could lead to "misrepresentation and inaccurate publicity" that could be damaging to the Liberals in the Oct. 8 federal election.

But the optimism of the task force would soon end. The October election produced a minority government which severely challenged the Trudeau government's handling of energy.

And at a Dec. 14 meeting of the task force, with the final impact study ready, the mood had totally changed.

All of a sudden there was real concern within the government and growing public questioning of the gas pipeline project. If Canada would not gain much, why build the pipeline?

By then the thrust of the pipeline was shifting to emphasis on future Canadian gas needs, although in early 1973 it was still expected that Canadian gas from the Mackenzie Delta would go primarily to the United States.

In a speech in Washington on Feb. 27, William Wilder, chairman of Canadian Arctic Gas, said half the gas in the proposed pipeline would come from Alaska and half from the Mackenzie Delta in Canada.

Within reach

Wilder told the Washington audience that he expected the National Energy Board to treat new gas reserves in the Mackenzie Delta as proven and within economic reach.

"We believe that when this is done, there will be a clear exportable surplus which will allow the granting of export applications which will accompany our pipeline application." In fact, both Imperial Oil and Gulf Oil had made arrangements to export more than $5 billion worth of natural gas to the U.S. utilities from the Mackenzie Delta.

By then, the government was clearly on the defensive. Signs of a Canadian natural gas shortage were becoming ominous. Parliament suspected that the government might be trying to push the pipeline through without first determining it was in the national interest.

It would take all the careful planning and manoeuvring of the task force and, later, of the Department of Indian Affairs and Northern Development, to make sure the pipeline was built.

That is what the National Energy Board has to decide when it begins hearings Oct. 27.

THURSDAY: How the federal government tried to push through resource development in the North before settling native land claims and other issues.

(17)

Ottawa tried to slip pipeline past natives

OCT. 16

By DAVID CRANE
Star political editor

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In its pursuit of oil and gas pipelines to link Canada's northern oil and gas supplies to the U.S. energy market, the federal government quickly decided that the problems of northern native peoples would not be allowed to stand in the way.

That message came through clearly in public statements by the government, the secret files of government committees and the cabinet itself, and the government's own actions in response to the Eskimos, Indians and Metis of the North.

The government strategy, summed up in meetings of the Task Force on Northern Oil Development, was to get pipelines built as quickly as possible, before native groups could organize effectively.

In the meantime, it was hoped, pipeline jobs for native peoples would divide native organizations—even though most jobs would last only a short time and the social impact of such a massive project would devastate the culture, traditional livelihood and communities of the northern people.

Not consulted

Native peoples were not consulted on government efforts to develop oil and gas, or other natural resources.

Decisions on where and how exploration would take place or pipelines would be built were made privately by Ottawa and the oil and gas industry.

Decisions on the all-weather Mackenzie Valley highway route were made secretly by Ottawa, after determining what route would most please the oil and gas industry.

And the routes of oil and gas pipelines were to be chosen by the oil and gas industry, in consultation with Ottawa, but not the native peoples.

The chief architect of this policy was the Department of Indian Affairs and Northern Development. Traditionally, the department viewed the Indians and Eskimos as wards of the government. It did not readily accept the notion that natives in the North should help plan the future of the North. Nor did it at first recognize their right to make claims at all.

Native groups in the North believe they have "aboriginal rights" there: In other words, that they have a right to keep or be paid for lands they have used from time immemorial and for which they have never been properly compensated.

Want to be paid

If other people want to take out oil and gas and build pipelines and highways to move it, then the native people believe they should be paid and should be assured that their own way of life will not be wiped out in the process.

The Indian Affairs Department saw things differently: Natives were seen as beneficiaries of an ambitious system of assistance, which, as it spread, made them more and more dependent on the government. As far as the department was concerned, its own job was to produce jobs for native people as a by-product of the opening of the North.

Development, of course, not people, was the main concern of the department. That philosophy was shared by its minister, Jean Chretien, and apparently by his successor, Judd Buchanan.

In the crucial period from 1970 to 1972, native peoples and environmentalists quickly came to be seen in Ottawa as the enemy, as people who could mess up the carefully laid plans of government and industry to open northern oil and gas reserves and link them to U.S. markets.

Exploration crews were arriving in traditional hunting and fishing areas with the approval of Ottawa but with no warning to the natives, let alone consultation.

Inuvik's example

Experience at Inuvik, the largest Canadian community within the Arctic Circle and a pivotal town should the pipelines be built, was already showing what Ottawa-planned-life could mean to natives.

Eskimos had been brought from their villages to jobs in the community. Since these were mainly just part-time, the Eskimos ended up on welfare and alcohol. The taste of the white man's life made some unwilling to go back to the tiny villages. Suicide and mental illness increased. Children were seperated from their parents to be sent to government-run boarding schools.

With the big oil and gas discoveries in Alaska in 1968, the native

(18)

people in the North realized they had to organize, that their very survival could be at stake. They were encouraged and inspired by the new-found political power of the Alaska Native Federation.

But attitudes in the U.S. were much different.

The federal government there froze Alaskan land allotments after the huge oil and gas discoveries at Prudhoe Bay, until native claims were settled. It was clear that no pipeline would be built until the claims were settled, and the oil and gas industry realized that it would have to support a native claims settlement if it wanted to proceed with its own plans.

In Canada, the government tried to delay a settlement, with Prime Minister Pierre Trudeau at first, in a 1969 speech, rejecting out of hand the notion of aboriginal rights of the native peoples. When that strategy failed, the Canadian government made it clear that a pipeline could be built before a settlement.

Key treaties

Two key treaties with Indians existed in the North. Both came into being after major resource discoveries there.

The two treaties, known as 8 and 11, covered about 400,000 square miles of the Northwest Territories. Treaty 8 was signed in 1899, three years after the discovery of gold in the Yukon; Treaty 11 was signed in 1921, a year after Imperial Oil found oil at Norman Wells, N.W.T. Both treaties were initiated by Ottawa to restrict possible native claims to land and resources.

Between 1968 and 1971, several native groups organized in Canada's North. These included the Yukon Native Brotherhood, the Committee for Original Peoples' Entitlement, the Indian Brotherhood of the N.W.T., the Inuit Tapirisat and the Yukon Association of Non-Status Indians.

In this period, although the northern natives were becoming increasingly concerned about their fate, the federal resource planners showed nothing but indifference.

Ottawa's only reference to northern natives in the 1970 northern pipeline guidelines was the provision that northerners must be trained and employed in construction and operation.

But the natives knew they should be wary even about the promise of jobs. At the time the 1970 guidelines were published, Panarctic Oils Ltd., the Arctic Islands, employed only six Eskimos.

Nor were white men's jobs what many native people wanted. They wanted to settle their land claims and make their own decisions on their future.

Yet that company was controlled by the federal government and included senior civil servants from Ottawa on its board of directors.

When the Alaskan native claims were settled, in December, 1971, Canada's native groups were enormously encouraged.

The Alaskan settlement, a milestone in the history of U.S. relations with its Indian and Eskimo populations, gave its native people 40 million acres of land, a $462.5 million cash settlement and the promise of an additional $500 million in future mineral rights.

To Ottawa's horror, the Alaskan settlement became a benchmark for Canada's native groups, and Alaskan native organizers lent their assistance to Canadian groups. Moreover, some 900 natives of Ilingit descent in the Yukon would share in the Alaskan settlement.

In 1972 the task force decided to seek full cabinet approval for its tactic of delaying negotiations with native groups until the pipelines were built and oil and gas development well under way.

The civil servants, led by Jack Austin, deputy energy minister, and Digby Hunt, assistant deputy minister of Indian affairs and northern development, refused to consider losing the time that would be necessary for lengthy negotiations.

Concern 'unforeseen'

A report of a task force committee on May 16 noted that expansion of the northern pipeline guidelines "has progressed more slowly than anticipated due to unforeseen developments such as the concerns of the Indian people."

In a confidential report to the cabinet in July, 1972, the task force stated clearly that the settlement of native claims was not a prerequisite to approval of pipeline applications because pipeline construction did not prejudice native claims.

The officials said the government should commit itself to nothing more than "consultation" and "the protection of the rights of northern residents."

At the same time, the officials said, the native people in the Canadian North should not be encouraged to expect a settlement like that in Alaska.

The Trudeau cabinet agreed with this strategy of holding the native proposals of the task force on July 14, 1972.

In the meantime, Ottawa hoped, Canadian Arctic Gas would file its pipeline application quickly and the National Energy Board would approve it before a confrontation developed.

One problem was that the native peoples themselves were growing restless and there was an increase in public interest in the North. That year, James Wah-Shee, president of the Northwest Territories Indian Brotherhood, warned: "No settlement, no Mackenzie Valley pipeline."

At Inuvik, Oblate priest Joseph Adam, a missionary in the Arctic for 35 years, told Energy Minister Donald Macdonald that native people were frustrated enough to blow up the pipeline if it was built.

"These people have a right to their aboriginal rights," Adam said. "If people in the south won't understand that, the native people in the North won't let the oil go out."

In Parliament, Yukon MP Erik Nielsen presented a petition on behalf of the Old Crow band of 200 Loucheaux Indians, who have lived for centuries on the banks of the Porcupine River, about 80 miles north of the Arctic Circle.

The Indians, who wanted protection of their muskrat trapping grounds on the Old Crow flats as well as settlement of their land claims, threatened to block the pipeline in the courts.

"We want the government to settle our claims and we don't want our trapping and hunting activities disturbed," band chief Charlie Abel said. "These things are very, very important to us."

The government was adamant in its position. Although he now acknowledged that northern natives were entitled to some settlement, Chretien said at a June, 1972, press conference that construction of a pipeline could begin before any settlement because the Indian Act gave the government the power to proceed with such projects.

Among senior civil servants there

(19)

public interest in the North would make it difficult to keep "politics" out of northern development. It would also threaten the close and cosy arrangements by big government and big business to develop the North without public scrutiny.

In particular, Ottawa felt that it had to conceal the decisions in principle already reached with the oil and gas industry. If those were made public, they would disclose the extent to which the federal government, through the task force, was collaborating with industry in the North.

Priorities ignored

Moreover, should the native people discover that Ottawa was not honoring the priorities set out in the official development plan for the North—Canada's North 1970-1980—the political repercussions could only spell trouble for the senior civil servants and the cabinet.

Thus the native people, like the environmentalists, had to be given the impression everything possible was being done to protect their interests. Announcements were made of assistance for research and legal expenses, while, behind the scenes, Ottawa pushed to have the pipeline built as soon as possible.

The birth of the official development plan itself demonstrated that tactic.

During 1970, the cabinet did not want to be bothered with a discussion of development policies; indeed Chretien had to wait through most of the year merely to have it consider some proposals in November.

Pipelines, oil and gas exports to the U.S. and sovereignty were the real northern issues in the eyes of Ottawa's senior civil servants and the Trudeau cabinet.

Once those were settled, it was a matter of working out with the oil and gas pipelines in the North, administration in the U.S. exactly how the resources of the North would be integrated into the North American economy through oil and gas pipelines and export commitments.

Kept secret

On July 15, 1971, the cabinet approved a northern development policy.

In November, 1971, it was agreed the document should not be made public, in spite of earlier promises, "for it would only create more disquiet among the northern people."

publish the plan, and in March, 1972, Canada's North 1970-1980 was presented to the Commons Committee on Indian Affairs and Northern Development as the official northern development policy of the Trudeau government.

In it, the government said that a review of northern development policies had taken place during the past year in which "the government affirmed that the needs of the people in the North are more important than resource development and that the maintenance of ecological balance is essential."

There was no mention of the land claims issue.

Nor were the government's claims that it wanted to protect the environment convincing. In April, 1972, immediately after the publication of the new policy on the North, Prime Minister Trudeau announced his ambitious election-eve plan for an all-weather highway through the Mackenzie Delta.

The native peoples had not been consulted on its route and no environmental study had been carried out beforehand. Later, when severe environmental problems were shown to exist, the federal Department of the Environment was forbidden to delay the highway project.

The route was challenged by some native groups. And it became clear that the role of the new highway was not to serve native communities but to give the oil and gas industry and the Nixon administration evidence of the Canadian government's commitment to development of oil and gas pipelines in the North. Today the highway ends abruptly at Fort Wrigley, one of the first native communities to oppose the project because it did not want tourists and other groups driving into the community.

Similarly, in December, 1972, the federal government gave approval in principle for offshore drilling in the Beaufort Sea without consulting native groups whose hunting lands were nearby. Moreover, in spite of the fact that the Beaufort Sea represented one of the most sensitive oil and gas exploration zones anywhere, no government agency had studied the environmental hazards.

Policy a sham

The government's new northern development policy was a sham, and both the government and the native peoples knew it. Nothing had changed the desire of the Departments of Indian Affairs, Energy, and Mines and Resources and of the National Energy Board to get a pipeline built as soon as possible.

The real thrust of northern planning remained the same, exercised through the confidential relationships built up between the oil and gas industry and senior officials in these departments.

After 1970 the intensity of these relationships grew. The oil and gas industry persuaded senior officials in Ottawa that their assumptions — the need for oil and gas exports, a large role for foreign capital, the consortium approach to development—were valid. Excluded from the discussions were the public, people from the North, members of Parliament and the press.

Neither Ottawa's senior officials nor the cabinet wanted anyone from the outside questioning their plans.

In other words, industry and government would plan northern development. The native people were to be "protected," but not consulted or listened to.

Couldn't see it

Officials at the top of Indian Affairs and Northern Development could not accept the idea of native people as owners and managers of their historical lands. Instead, they were seen as dependents who needed welfare or jobs.

This meant, for example, that changes in Canadian oil and gas land regulations were worked out between the government and the oil and gas industry in secret. Yet these revisions spell out the conditions under which oil and gas is extracted from the North, including royalty rates.

Similarly, the $300 million in transport facilities required for construction of a Mackenzie Valley pipeline required industry-government collaboration well in advance of National Energy Board hearings.

Chretien's policy statement in 1972, then, was merely some advice to administrators in the North to pay a little more attention to the native people themselves.

It took a political upset in the October, 1972, federal election to give the northern natives even a vestige of hope that their interests

(20)

Inquiry called

When Trudeau returned to Ottawa with a minority government he was forced to do things he had not planned to do. One such act was the appointment of a B.C. judge, Tom Berger, to hold a special inquiry in the North on pipeline projects.

This has given the native people a forum in which they could spell out their concerns, although it could not deal specifically with the land issue.

When Berger completes his report, probably next year, he will have to chance to state in clear terms the problems and needs of the native people.

Will Ottawa listen? Possibly not. Scarcely had the Berger Commission begun its hearings this year than the government said it might have to make a pipeline decision before the inquiry's work was done.

FRIDAY: How the federal government tried to override opposition from environmentalists in the North.

FRI., OCT. 17

(21)

Files show Ottawa put oil above ecology

By DAVID CRANE
Star political editor

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By 1970 the Trudeau government's commitment to oil and gas pipelines in the North was so strong that the cabinet and senior civil servants were convinced they could stonewall questions about the environment. They were confident that industry could be trusted to protect the fragile ecology.

Their main concern was to get the pipelines built in order to increase Canadian oil and gas sales to the United States and accelerated development of the North.

Moreover, there was a firm belief in Ottawa that environmentalists would not create difficulties if pipelines were built fairly quickly, because Canadians concerned about the subject were not yet as well organized or financed as those in the U.S.

Senior officials within the government made it clear that Canada was willing to impose less stringent environmental standards than the United States if that meant the pipelines would be built through Canada instead of across Alaska.

Ottawa's willingness to trade off environmental standards for pipeline investments in the North is documented in confidential records of the Task Force on Northern Oil Development, a committee of senior civil servants; and in confidential documents of the cabinet and other government bodies.

For instance, during a meeting May 12, 1970, hastily called by Marshall Crowe of the Privy Council Office to discuss northern pipelines, Digby Hunt, assistant deputy minister of Indian affairs and northern development, said Canada could be less stringent in its environmental standards than the U.S. in Alaska.

Ironically, throughout 1969 and 1970, it was left to U.S. government officials in Washington and to U.S. oil company executives to warn the task force that pipelines through Canada would encounter the same sort of environmental opposition that faced the Trans-Alaska oil pipeline.

Generate interest

In fact, the task force decided in 1969 and 1970 not to initiate any research on possible hazards of oil and gas pipeline construction and operation in the North. It feared such research might generate too much public interest and might rally opposition to the plan of linking Northern oil and gas to U.S. markets through new pipelines.

This strategy had a drawback: In the absence of Canadian environmental research, Washington simply did not believe Energy Minister Joe Greene, Environment Minister Jack Davis, External Affairs Minister Mitchell Sharp or, later, Energy Minister Donald Macdonald when they claimed that the Mackenzie Valley was ecologically safer than the Trans-Alaska route for a hot oil pipeline and a cold natural-gas pipeline.

At times, it seemed that the Trudeau government was even less concerned about environmental safeguards than was the oil and gas industry. From 1968 through 1970 the industry tried, without success, to persuade Ottawa to spell out its environmental standards for pipelines to be built down the Mackenzie Valley.

On Aug. 13, 1970, the Trudeau government published a set of guidelines for oil and gas pipelines in the North. But all the guidelines said about the environment was that the oil and gas industry would have to satisfy the National Energy Board that proper safeguards would be followed during pipeline construction and operation.

These guidelines, approved by the cabinet, made no mention of environmental standards, criteria or data for the National Energy Board or anyone else to follow.

Inherent conflict

This approach reflected not only Ottawa's policy of build-now, worry-later, but the inherent conflict within Indian Affairs and Northern Development among its responsibilities to develop the North, protect the northern environment and look after the interests of the native people.

The weakness of the 1970 guidelines does not mean environmental concerns were ignored altogether. A small subcommittee on ecological problems was set up by Jack Austin, deputy minister of energy, mines and resources and chairman, after May 1970, of the task force, and Robert Howland, chairman of the National Energy Board and of the task force's pipeline committee.

One reason was that although Austin did not want to spend a great deal of time dealing with ecological problems, he did not want the task force to lose control of environmental policies, a potentially hot issue.

But the new subcommittee had no research staff and did not request any funds for research.

Canadian Gas Arctic, one of the forerunners of the Canadian Arctic Gas group whose application is pending now to build a gas pipeline down the Mackenzie Valley, established a body called the Environment Protection Board to carry out research to support its own application. The task force was satisfied this research would be good enough for the government.

The task force still was counting on a quick application and hearing for a gas pipeline: Approval at the deputy-minister level by mid-1971, follow-up hearings before the National Energy Board that fall. By June, 1972, the hearings could be wrapped up, and with the necessary construction permits and right-of-way in hand, construction of a gas pipeline could begin in the fall of 1972.

But in 1971, with MPs and other groups asking more and more questions, senior government officials came reluctantly to the view that their plans for oil and gas pipelines could ultimately face tough environmentalist opposition.

The task force decided to replace its small subcommittee with a new environmental committee to head off public concern. On March 17, Austin asked Robert Shaw, deputy minister of the new Department of the Environment (still operating under its old name of Fisheries and Forestry) to be chairman.

The task force had been caught by surprise when, in the spring of 1971, Austin received a letter from Jack Davis, minister of the environment.

Davis said he had read the winter issue of the Canadian Wildlife Federation newsletter and he agreed with its claims that the task force was misleading the Canadian public into believing the government was conducting large-scale research of its own into the environmental problems of northern pipeline construction.

Shaw's committee never met.

Instead, in June, the task force proposed a more ambitious program, including a new social and environmental committee, along with an advisory group of outside experts to work with the task force on environmental and social programs in the North.

The cabinet memorandum setting up the new committee and advisory group made it clear that this was an attempt to allay growing public suspicions that environmental problems were not receiving much attention from the government.

The advisory group was to include representatives from about 20 organizations, such as the Canadian Wildlife Federation, Imperial Oil Ltd., the Canadian Arctic Resources Committee, the Canadian Pipeline Advisory Committee and an Eskimo brotherhood Inuit Tapisirat.

But it would not have access to government research; it would have a very small budget, and it would meet only on rare occasions and always at the discretion of Indian Affairs and Northern Development. In fact it never met.

Reflecting the panic over anticipated opposition, the new committee sought, in addition to $5 million committed in May, 1971, another $10 million for a three-year crash program of environmental research in the North.

This was a remarkable change in attitude. But the truth was that the new committee had not worked out any research priorities among a long list of projects hastily thrown together at the last minute and simply appended to the cabinet memorandum.

Political pressure

The program was approved by the cabinet although a number of senior officials had serious misgivings. But it was felt that political pressure could become so great that any kind of environmental research should be approved, regardless of its great value.

Until the fall of 1972, the main worry within the task force was that public groups such as the Canadian Arctic Resources Committee and Pollution Probe of the University of Toronto, along with various "trouble-makers" within the Departments of the Environment and of Indian Affairs and Northern Development, might try to use the same tactics to halt or delay a Mackenzie Valley pipeline that U.S. environmentalists had used to delay the Trans-Alaska line.

A set of expanded guidelines drafted by the task force's new social-environmental committee and tabled in the Commons by Jean Chretien, minister of Indian affairs and northern development, June 23, 1972, were hastily drafted, gave little evidence of detailed government research and read more like a code of good environmental behavior than a set of standards to be followed by engineers in the field.

The task force simply did not have enough reliable data available to draft adequate standards. Indeed, the first guideline asked the very question the guidelines were supposed to answer.

It stated that "a pipeline should be constructed, operated and abandoned in keeping with good engineering practice to ensure its safety and integrity, in the interests of good environmental management and the reduction of environmental damage."

The guidelines did not define "good environmental management."

During 1972, government lawyers were also raising the question whether the National Energy Board had the power to deal with environmental and social questions in its hearings. The National Energy Board Act was silent on this, except for an umbrella clause empowering it to consider the public interest.

In 1971 the energy board requested, in a memorandum to cabinet, amendments to its legislation specifically setting out its power to examine environmental problems when dealing with pipeline applications.

But a memorandum to Environment Minister Davis from his deputy minister, Shaw, dated Feb. 8, 1972, showed there was little support for such amendments.

Threw roadblock

(23)

"I understand that the Honorable Jean Chretien threw a roadblock at this Memorandum to Cabinet on the grounds that consideration of the environmental impact of a pipeline in the Territories was the exclusive responsibility of Indian Affairs and Northern Development," Shaw wrote.

Later that month Shaw received a letter from Robert Howland, chairman of the National Energy Board, requesting Shaw to speak to Davis about the role of the board so that Davis might in turn try to change Chretien's mind.

Howland also made it clear that the energy board needed its own small environmental staff, although this was being blocked by the Treasury Board. The pipeline hearing would not be a one-shot deal, Howland stressed.

"It is inherent in the circumstances of continuous pipeline expansion that the board will constantly need the (environmental) staff competence we envisage," Howland wrote Shaw. In other words, once the first pipelines were built, there would be an ongoing expansion of their capacity as the flow of oil and gas from the North increased.

Other projects in the North reflected the government's disposition to downplay environmental problems if they interfered with the oil and gas industry.

One example was the plan to push ahead construction of an all-weather highway north through the Mackenzie Valley to Inuvik and on to Tuktoyaktuk.

Prime Minister Trudeau announced it at Edmonton April 28, 1972, just four days after Chretien sent a confidential memo to cabinet recommending the project and one day after the Cabinet gave approval.

'Dissident voices'

Trudeau said in Edmonton: "Before we build them . . . we must be equally certain that these facilities will not lead to ecological devastation or disregard for the lifestyle and treaty claims of the original inhabitants of the North."

Yet construction was to start right away, in spite of the fact that Ottawa had done no environmental research on the impact of an all-weather road through permafrost and in spite of the objections of native groups, who quickly saw that the main reason for building the road then was not to aid their communities but to assist pipeline construction and emphasize the government's commitment to pipelines.

In his memorandum to cabinet Chretien anticipated "a backlash of dissident voices . . . from environmentalists" about the road, but he proposed a strategy to split any opposition.

He proposed that a separate statement on settlement of two Indian treaties be made simultaneously with the highway announcement.

Summing up the reasons for accelerated construction of the highway—before environmental impact studies had been made and in spite of an admitted shortage of gravel—Chretien told the cabinet: "As a means of realizing the potential benefits of an all-weather highway down the Mackenzie Valley for pipeline construction, of indicating Canada's interest in a very positive way in the construction of oil and gas pipelines through Canadian territory and of providing a focus for northern development, the continuation of construction of the Mackenzie Highway to Inuvik should be commenced immediately and pushed through to rapid completion."

To sell the highway to Canadians, Chretien recommended that the cabinet present it as "the kind of project that has considerable emotional appeal, similar to that offered by the CPR in the late 1800s, in the development of Canada's last frontier."

Chretien recommended against consulting the caucus "at this stage." Back-bench Liberal MPs were to be told no more than the general public.

The decision to push on with the highway was crucial in the government's pipeline planning. It was a big expenditure — the cost was estimated at about $100 million then and now is close to $200 million — but it was a clear signal to the Nixon administration in the U.S. and to the oil and gas industry that Ottawa wanted to push ahead with oil and gas pipelines as rapidly as possible. It was a clear victory for the task force. (Today, the highway has run out of money and ends uncompleted on the outskirts of Fort Wrigley.)

Individual scientists working for Canadian Gas Arctic's Environment Protection Board wrote to the federal government June 6, 1972, requesting that an environmental impact study be made and published on the Mackenzie Highway.

On Aug. 28 the government replied that it would not publish such a statement.

Offshore pools

To this day the Department of Indian Affairs and Northern Development has refused to publish the environmental research it was forced to carry out on the highway.

A second area where government lack of concern was visible was in the Beaufort Sea. As oil and gas companies pushed on with their exploration in the Mackenzie Delta it became evident that big pools of oil and gas might exist offshore.

In December, 1972, at a private meeting between oil and gas companies and senior government officials representatives of the oil and gas industry requested approval in principle to commence offshore drilling.

A draft memorandum to cabinet was prepared by a committee from Indian Affairs and Northern Development set up in February the following year. The draft memorandum said the environmental risks were low, although no environmental research had been done and no research was proposed.

A final draft, considered by the cabinet in July, 1973, gave Indian Affairs and Northern Development authority to license offshore drilling.

However, the cabinet also called for a modest environmental research program, with offshore drilling to start in 1975. Disagreements over shared costs of the research between government and industry have delayed drilling to 1976, although Imperial Oil has been permitted to start drilling from a man-made island offshore.

Warning of the dangers of well-blowouts, Douglas Pimlott, of the Canadian Arctic Resources Committee, expert on the North, said last year that the oil and gas industry and Indian Affairs and Northern

(24)

Development were pushing ahead with offshore drilling in the Beaufort Sea "in advance of the development of adequate technology for Arctic operations because the companies involved are rushing to prove reserves so that the construction of a gas and possibly an oil pipeline can be justified to the National Energy Board before the end of this decade."

What then is the government's record on environmental protection of the far North?

At the beginning of the 1970s the Ottawa government clearly was unprepared to deal with the matter.

But to admit as much would have delayed pipeline plans, a course unacceptable both to the task force of senior civil servants and to the cabinet.

So a different strategy was devised: Instead of a government-sponsored environmental impact statement similar to that required in the United States, the Canadian government would leave research to the oil and gas industry.

In the meantime, government guidelines would be set out that would give the appearance of concern. These came in 1970 and 1972.

When cracks appeared in this strategy, the government still determined that pipeline plans would not be blocked by environmental issues.

A hastily drafted program of government research was launched and critics of the government were dismissed as members of the radical fringe of Canadian politics.

Well-known Canadian scientists and academics found themselves under strong pressure from senior civil servants to drop their support for groups such as the Canadian Arctic Resources Committee, which was pressing for much fuller environmental and social studies of proposed pipelines, the Mackenzie Highway and offshore drilling in the Beaufort Sea.

Yet in the end the government has had to bow at least part way to environmental pressures, although the Department of Indian Affairs and Northern Development has successfully blocked a weak-hearted and largely ineffectual Department of the Environment from taking a hard look at ecological issues.

The appointment of a commission in 1974 under B.C. judge Tom Berger to hold land-use hearings brought environmental issues into the open.

No guarantee

Even so, the government has refused to publish environmental data on the Mackenzie Highway, has attempted to cut back government funds for environmentalist groups appearing before the Berger Commission, has prevented the Berger Commission from looking at the environmental impact of the gas-gathering and processing systems that must be built through the Mackenzie Delta to supply the pipeline, and has tried to act as if the pipeline were a single project to be considered in isolation instead of the first of a series of pipelines.

There is no guarantee the government will listen to the Berger Commission's report.

There is no evidence it is about to alter its philosophy of the past five years.

SATURDAY: What have we learned from our energy bungling?

SAT. OCT. 18

(25)

The oil mess: What has Ottawa learned?

By DAVID CRANE
Star political editor

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Within the past 12 months the National Energy Board and the Department of Energy, Mines and Resources have had to admit to the country that the government's energy policy has been based on the false premise of abundant oil and natural gas.

In October, 1974, the energy board reported that Canada would become a net importer of oil by 1977. In fact, Canada is in that position already, with a declining level of oil production.

In May, 1975, the energy board reported that Canada would face natural gas shortages this decade. They could come as early as next winter.

How did the Trudeau government come to bungle the country's energy policy so badly? Just five years earlier, Trade Minister Jean-Luc Pepin (just this week appointed chairman of the Anti-Inflation Review Board), had declared that Canada had so much oil and gas "it would be crazy to sit on it."

In part, the energy mess was the result of a series of errors of judgment by cabinet ministers and senior officials.

Direct result

But it was more than that. Canada's energy crisis is the direct consequence of the way big government and big business work closely together on major issues of public policy.

After oil and gas were found in Alaska in 1968, it was clear that Canada would have to weigh the consequences for its own energy policies.

But instead of defining the broad public interest, the government subordinated Canada's energy resources—as well as the native people and the fragile environment of the North—to the immediate interests of Canadian-U.S. relations and to largely foreign-owned oil and gas producers.

The record of the Trudeau government since 1968 shows:

- The government and its advisers completely miscalculated Canada's oil and gas reserves and needs, relying instead on the fanciful figures of the Canadian Petroleum Association, which represents the country's oil and gas producers, most of them foreign-controlled. This led the cabinet and senior civil servants to sell Canada's proved and cheaper reserves of oil and gas to the United States as rapidly as possible.
- The cabinet proclaimed sovereignty in the Arctic waters, after hesitating for several years, but has done little since to affirm it.
- The Department of Indian Affairs and Northern Development shut the northern Indians and Eskimos out of much of the policy planning in the North, while paying lip service to participation. At the same time the department hoped that oil and gas pipelines could be pushed through before native groups could organize to settle their land claims.

More research

- Senior officials responsible for the North decided to rely on the oil and gas industry to deal with environmental research, while attempting to discredit public environmental groups who wanted much more independent research. At the same time the Department of Indian Affairs and Northern Development succeeded in blocking the Department of the Environment from assuming responsibility for protecting the ecological balance of the North.

Late in 1972, the federal cabinet, the National Energy Board, the Department of Energy, Mines and Resources and the Department of Indian Affairs and Northern Development suddenly discovered their whole approach since 1968 had been wrong. But they still didn't realize the true dimensions of the problem.

That would not come for another 13 months to two years.

There is little evidence that Ottawa has learned from its bungling of 1968 to 1972—except to take a more sophisticated approach in dealing with native groups and public-interest organizations.

A look at some key policy areas today — Arctic sovereignty, energy, northern development, the role of native people, environmental protection and the policy-making process itself — shows little has changed.

Behind the facade of clever civil servants and powerful cabinet ministers, the indecision and delay on tough policy questions is unchanged.

(26)

One key example is the government's failure to follow up the issue of sovereignty in the North.

After introducing legislation in April, 1970, to deal with the sovereignty crisis in Arctic waters, the Trudeau government realized it would have to strengthen its presence in the North to demonstrate Canadian sovereignty.

In July, 1970, the cabinet directed the Department of National Defence to determine the role of Canadian Armed Forces in the North.

By January, 1971, the Defence Department was able to present a draft report on northern sovereignty to Ottawa's senior civil servants. Surprisingly, Defence saw few problems or threats and endorsed what it viewed as Canada's open-door attitude to other countries using the North.

"No other state covets or seeks to deprive Canada of any part of its territory or seeks to reduce or deny to Canada its political independence," the report said.

"To the extent that Canada's national jurisdiction is disputed by other states, the disputes centre on areas into which that jurisdiction has recently been extended beyond the limits traditionally recognized by international law and are mainly with states with which Canada is allied or enjoys friendly relations and which consequently are unlikely to use physical force to impose their will on Canada."

Here, of course, Defence was referring to the U.S. rejection of Canadian sovereignty claims in the North. It did not see a threat from the U.S. navy or Coast Guard using their own armed polar icebreakers to escort oil tankers through the Northwest Passage at some future date.

"It has been noteworthy," Defence went on to say, "that the departments and agencies consulted believe that, within their specific areas of responsibility, Canadian laws and regulations and the means which they employ to enforce them are for the most part adequate to protect Canadian national interests."

Defence noted approvingly that "Canadian policies as expressed in the body of statute law and in Canadian regulations manifest almost no xenophobia."

In fact, it said in classic understatement, "there is little of the desire to exclude foreigners from the territory and economic activity of the nation that has been a classic characteristic of most modern states."

Top priority

The main recommendation of the Defence Department, when it made its final report to the cabinet in May, 1971, was that the Departments of Defence and Transport should work closely together to improve Canada's surveillance and control of the North.

To be sure, subsequent government defence policy statements have stressed that protection of Canadian sovereignty in the North is one of the top priorities of Canadian defence policy.

But there has been little follow-through, due in part to budgetary restrictions in defence spending and reliance on outdated equipment. For a while last year, Defence suspended altogether its already feeble air surveillance program in the North. Budgetary reasons were cited.

The situation was summed up in a brief to the cabinet this year from the Naval Officers' Associations of Canada and was underlined by the failure of Canadian authorities, for a month, to detect a Polish vessel in Canada's Arctic waters.

The United States could challenge Canadian sovereignty in the future as Alaskan oil production is increased, according to the naval association. It said that the Bering Strait is too shallow for tankers and that if the United States wants to move Alaska oil to the oil-hungry east coast, tankers must go through the Northwest Passage.

Huge tankers

It pointed to discussions last year by U.S. marine engineers and U.S. government officials of a possible plan to build as many as 62 huge ice-breaking tankers, each capable of carrying 240,000 tons of oil, that would be able to make the 9,200-mile round trip between Alaska and Cape May, New Jersey, through the Northwest Passage, in just 20 days.

"Canada maintains no continuous surveillance of the eastern or two western entrances to this waterway," the naval association reminded the cabinet in April.

Another sign to the world that Canada intended to stake its sovereignty claim in the North would have been a government program to design and construct polar icebreakers.

In April, 1970, the Task Force on Northern Oil Development told the Trudeau cabinet that Canada urgently needed icebreakers to maintain its sovereignty claims in the Arctic. The new anti-pollution law in Arctic waters made it essential that Canada be able to intercept foreign vessels even in very difficult ice conditions, the task force said.

And, it warned, the outcome of the next challenge to Canadian sovereignty in the North could depend on Canada's capability to enforce its Arctic legislation rather than its legal skills in the International Court of Justice.

In the meantime, the U.S. Coast Guard had embarked on its own crash program of polar icebreaker construction. The program may have been helped by data gathered on the voyage of the tanker Manhattan through the Northwest Passage in 1969.

Canada has failed to obtain information from the voyage, in spite of icebreaker and other help it provided at the time.

The decision to withhold the information was apparently made by Exxon Corp., parent of Imperial Oil. But the real reasons may have run deeper than corporate secrecy.

Claude Isbister, while still deputy minister of energy, told a meeting of senior Ottawa officials May 12, 1970, that the U.S. navy might be helping pay for the Manhattan voyage.

In any event, Canada made several attempts to get research information from the Manhattan voyage.

In a letter to Humble Oil, an Exxon affiliate, in early 1972, for example, Ottawa wrote, "Of course we appreciate the need to keep some material confidential, and we can assure you that all materials sent to us will be so treated."

In spite of this pledge, nothing was forthcoming.

Polar icebreaker

Not until mid-1974 did the government finally approve the funding of research into polar icebreakers by a Montreal firm. The money is only for the design stage, and the federal government will have to decide in 1978 whether it wants to build the ships. If so, they would not be delivered before 1982.

Nor has there been a real change in government attitudes toward environmentalists or native people, although Indian Affairs and Northern Development now recognizes that challenges from both these groups have been more effective than they were expected to be.

(27)

After the 1972 election resulted in a minority Trudeau government and the apparent collapse of government energy strategy, the cabinet and senior civil servants decided reluctantly to hold a special set of pipeline hearings in the North. There are also normal National Energy Board hearings that begin Oct. 27.

The hearings, under Mr. Justice Tom Berger of the B.C. Supreme Court, are into the environmental, social and regional economic impact of a gas pipeline proposed by Canadian Arctic Gas Pipeline Ltd. along the Mackenzie Valley. (A second application, from Foothills Pipeline, was made after Arctic Gas.)

It was Berger's job to determine under what conditions a pipeline right of way should be granted. Yet the very day in March this year that Berger began his hearings, the government seemed to have some doubts.

On March 3, New Democratic Party energy critic Tommy Douglas asked acting prime minister Mitchell Sharp whether the government would promise to withhold a decision on a gas pipeline until Berger had completed his report.

"I can give no such a categorical assurance. It would depend a great deal on the nature of the report to be presented by Mr. Justice Berger," Sharp replied.

On March 11, Energy Minister Donald Macdonald attempted to give an impression the government was still undecided whether or not the gas pipeline would be built. "There were no attempts by this government to make any judgment on the Mackenzie Valley pipeline before the National Energy Board, reports," he told the Commons.

Budget slashed

Yet on Jan. 18, Jean Chretien, as minister of Indian Affairs and Northern Development, had declared: "This government, after carefully weighing all the factors involved, has come to the conclusion that a gas pipeline down the Mackenzie Valley is in the national interest."

Scarcely a month after the Berger hearings had begun, the new minister of Indian affairs and northern development, Judd Buchanan, slashed the budgets of native groups appearing before the Berger commission and eliminated funding of public environmental groups altogether.

Buchanan said that the Canadian Arctic Resources Committee and the environmental research it was co-ordinating could be supported from Berger's own budget, although in February he had sent a memo to the commission telling it not to do so.

This move, coming shortly after Sharp's rebuff in the Commons, almost killed the Berger hearings.

In the public uproar that followed, funds were found in the Berger commission's budget. The amount of money involved: $145,000, or just over half the amount spent recently on the champagne festivities to open Mirabel airport outside Montreal.

Moreover, the boomtown philosophy that remains in the Department of Northern Development promises a future pattern of boom-bust cycles.

One example is the development of a lead-zinc mine at Strathcona Sound on Baffin Island in the eastern Arctic. The foreign-owned Mineral Resources International Ltd. has been given permission—and help—by Indian Affairs to open a mine that will supply raw concentrates for the metals industry in Europe.

Cabinet order

Before the project was approved, there was virtually no social or environmental research by the government in spite of a Dec. 20, 1973, cabinet order that there should be an impact study on such projects and a pledge by Chretien on March 28, 1972, that government support for such projects would be based on a full assessment of their economic and social impact.

When he announced government support for the project last year, Chretien stated the government's primary objective was to ensure jobs for Baffin Island natives and to give them a voice in planning a project. Yet there has been little involvement of local people in the planning and they were not sure they wanted to become miners.

One factor that concerns the native people a great deal is the lack of clear answers to environmental problems.

The new mine may create 275,000 tons of tailings or wastes each year, containing dissolved poisonous metals, such as lead and arsenic. These will have to be disposed of in the land or in the waters of Strathcona Sound.

What does Canada gain from su a project, which it attracts w generous tax incentives and s ports with public funds?

Another example of the w development overrides environm tal concerns in the North can found in an internal memo circui ed within the Department of Environment by one of its officia In it he complains about efforts Indian Affairs and Northern Dev opment to prevent the Departm of the Environment from playing active role in the North.

In one case in the memo, dian Affairs called a meet through one of its committees to cuss an application by Imperial which wanted to start construct immediately in the Beaufort of an offshore oil- and gas-drill island, and to start drilling ab Dec. 1.

Environment said it would be p pared to comment on Imperi application by Aug. 15. On Aug. Indian Affairs went ahead and sued the permit.

"This example illustrates the l of acceptance of Environment's r in the North and the lack of m than superficial concern about environmental aspects of devel ment," the official commented.

Energy policy has been no m reassuring. Much of the informat on this point will come out at tional Energy Board hearings int Mackenzie Valley gas pipeline t begin Oct. 27.

The first issue will be the role the board itself and its chairm Marshall Crowe.

Easiest answer

When the hearings open, Cro will respond to suggestions that may have a conflict of interest cause he has served as presiden the Canada Development Co While at the CDC, Crowe arran its participation in Canadian Ar Gas Pipeline and had served on pipeline consortium's managem committee and its tax, finance accounting committee.

The easiest answer would be Crowe to step down from the he ings and let someone else from board fill in for him.

But the issue may go deeper t that. Questions may be raised ab the impartiality of the board its since it has been heavily involve promoting a gas pipeline since at 1969. And this conflict arises fr the curious legislation setting up board. The board has a double-l reled responsibility: To cond

(28)

In recent years the board has played an important role in formulating energy policy. In the eyes of some critics, it should have to answer for policy mistakes.

The sudden change from a natural gas surplus to an anticipated shortage is a case point, one that will be hotly debated at the pipeline hearings.

By the end of 1974, as Bruce Willson of Union Gas told a National Energy Board hearing on Canada's natural gas supplies, the country was faced with the prospect of "decreasing supplies at ever-increasing prices."

"This is just not good enough for a country which, until very recently at least, was touted as having gas reserves sufficient to meet its own needs for literally hundreds of years into the future," he said.

In 1973, National Energy Board vice-chairman Douglas Fraser stated that western reserves were "ample to cover" Canadian deliverability requirements until the end of the 1980s or into the early 1990s," while Energy Minister Donald Macdonald's energy white paper the same year said, "the present volume of reserves is sufficient to meet export commitments and growing Canadian demands in the areas now served through the 1980s."

Yet by last year the situation had changed so drastically that the National Energy Board was compelled to hold new public hearings to determine Canada's natural gas supplies and needs.

Verne Horte, president of Canadian Arctic Gas Pipeline, declared last year: "Unless new reserves of Canadian gas are developed more rapidly, we believe that most, if not all, of the Mackenzie Delta gas will be required by Canadian consumers."

In fact Canadian Arctic Gas says it had spotted Canadas' impending gas shortage by 1972. But it had to convince the government.

Open system

Finally this year, the energy board was forced to report that Canada in fact faces the prospect of gas shortages in the near future.

Where does the country go from here?

The answer does not lie just in getting better people in Ottawa to make better decisions, although that would certainly help.

The real answer lies in a more open system of policy-making, one that gives Parliament and the public more information and more access to policy-planning within the government.

In too many instances the cabinet and senior civil servants were unwilling to disclose their plans to the public and, even worse, they dismissed critics as people who were unionists or who were just not able to make responsible judgments because they did not have access to all the facts.

In many respects, the critics were treated in the same way as U.S. critics of the Viet Nam war.

But if Canada is to have a fresh approach to decision-making, and to have an open policy-making process that defines the public interest in broader terms, there will have to be a remarkable change in attitude not only on the part of the top cabinet ministers but also on that of senior civil servants.

Of that, there seems virtually no prospect.

In the meantime, Ottawa's bungling of energy policy stands as one of the great political scandals of recent years.

But one other question remains: Even though the government mishandled energy, environment and native claims issues, does Canada, and hence Ontario, face a natural gas shortage?

If it does, and this will have to be shown at the Energy Board hearings, then Canada will probably need a Mackenzie Valley gas pipeline. But not for the reasons originally planned a few years ago.

Last of a series

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

KEPLINGER *and Associates, inc.*—
PETROLEUM ENGINEERS and GEOLOGISTS

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January 18, 1977

Senate President John Rader
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Senator Rader:

Please find enclosed a copy of a speech I gave a couple of weeks ago here in Houston to a group of end users who are seeking to acquire natural gas for their own account due to the crisis-proportion energy shortage.

I would like for you to put in the record that indeed a critical energy shortage does exist in the United States and this shortage is going to get worse before it gets better. It is imperative for the survival of the United States that we continue to find oil and gas in a free market environment. In addition, we should all vigorously oppose divestiture of the major oil companies. Price controls and divestiture would surely kill any semblance of future energy independence. I believe that by a study of the facts and figures in the attached paper, the conclusions are irrefutable.

We appreciate this opportunity to submit this written evidence.

Sincerely yours,

KEPLINGER AND ASSOCIATES, INC.

H. F. Keplinger

H. F. Keplinger, President

HFK:bam

Enclosure

EXHIBIT XIV

AN EXAMPLE OF
ULTIMATE AND REMAINING RESERVE ESTIMATES
IN THE LIFE OF A GAS WELL

	Initial Volumetric Estimate				Mid-Life (No Decline)				Production on Decline			
			% Increase				% Increase				% Increase	
	A	B	Inc.	Cum.	A	B	Inc.	Cum.	A	B	Inc.	Cum.
Pore Volume Calculations												
Porosity - Percent	20	22	10	10								
Connate Water - Percent	35	30	8	18								
Initial Pressure - Psia	3,000	3,000	-	18								
Initial Supercompressibility	.905	.905	-	18								
Pressure Base Psia	14.65	14.65	-	18								
Reservoir Temperature - Deg. F.	200	200	-	18								
Temperature Base - Deg. F.	60	60	-	18								
Initial Gas in Place - Mcf/Ac. Ft.	1,010	1,196	18	18								
Recovery Factor	.70	.75	7	27								
Calculated Gas Recovery - Mcf/Ac. Ft.	707	897	27	27								
Drainage Volume Calculations												
Net Pay at Well - Feet	20	20	-	-	20	20	-	-				
Est. Average Net Pay Over Drainage Area - Feet	17.5	20	14	14	17.5	17.5	-	-				
Est. Drainage Area - Acres	240	320	33	52	240	240	-	-				
Drainage Volume - Acre Feet	4,200	6,400	52	52	4,200	4,200	-	-				
Estimated Ultimate Recovery - MMcf	2,969	5,741	93	93	2,969	3,767	27	27	2,969	3,339	12	12
Reserves At End of Report Period												
Estimated Ultimate Recovery - MMcf	2,969	5,741	93	93	2,969	3,767	27	27	2,969	3,339	12	12
Cumulative Production - MMcf	-0-	-0-	-	-	1,440	1,440	-	-	2,544	2,544	-	-
Estimated Remaining Reserves - MMcf	2,969	5,741	93	93	1,529	2,327	52	52	425	795	87	87

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NATURAL GAS ACQUISITION

Prepared by

H. F. Keplinger

for the

"ACQUIRING NATURAL GAS CONFERENCE"

Executive Enterprises, Inc.
New York City

January 5-7, 1977, Hyatt Regency Hotel
Houston, Texas

NATURAL GAS ACQUISITION

By: H. F. Keplinger
Keplinger and Associates, Inc.
Houston, Texas - Tulsa, Oklahoma
January, 1977

OUTLINE

I. INTRODUCTION

A. Overview of U. S. Natural Gas Distribution System

B. Composition of the Natural Gas Industry

II. INTERSTATE GAS SUPPLY SITUATION

A. The Problem

1. Decreasing Reserves

2. Declining Reserve Life Index

B. The Effects

1. Production Shortages

2. Curtailments

C. The Results

1. Unemployment

2. National Economic Problems

D. The Cause

1. Unregulated Intrastate Prices

2. Regulated Interstate Prices

E. A Partial Solution

1. Deregulation

2. Increasing Prices

III. GAS ACQUISITION BY THE END USER

A. Opportunities

1. Investing with Major and Independent Producers

2. Investing with Pipelines

B. Method I - Purchasing Gas at the Wellhead

1. Advantages

   a. Easy
   b. Reduced Risk
   c. Less Technical Problems

2. Disadvantages

   a. Reserve and Deliverability Estimates Sometimes Difficult
   b. Inability to Get Long-Term, Fixed-Price Contracts

3. Example Wellhead Gas Purchase

C. Method II - Participation in Exploration

1. Advantages

   a. Cheaper Gas if Successful
   b. Secure Long-Term Supply

2. Disadvantages

   a. Increased Risk
   b. Large, Long-Term Capital Requirements

3. Example Exploration Participation Programs

   a. End Users on Their Own
   b. Participation with Exploration Company
   c. Participation with Pipeline Company

D. Method III - Purchasing Gas Reserves in the Ground

1. Advantages

a. Less Risk
b. Secure Long-Term Supply
c. Bank Financing Available

2. Disadvantages

a. Reserves and Deliverability Estimates Sometimes Difficult
b. Extremely Competitive Business

3. Examples of Recent Purchases

a. Actual
b. Hypothetical

4. Example Transportation Agreements

5. Example Competition

IV. SUMMARY

V. ADDENDA

A. ADDENDUM I - Bank Financing Criteria

B. ADDENDUM II - Reserve Estimates

VI. EXHIBITS

NATURAL GAS ACQUISITION

By: H. F. Keplinger
Keplinger and Associates, Inc.
Houston, Texas - Tulsa, Oklahoma
January, 1977

It is indeed a pleasure to speak to you today concerning types of programs for acquisition of natural gas. The importance of natural gas as a future energy source cannot be overemphasized. Natural gas, sometimes referred to as the perfect energy source, is our most widely used domestic energy resource and will continue to be for many years to come. It supplies approximately one-third of our energy needs and, more important to those of us gathered here, it is a primary source of energy for American industry in that it supplies approximately 47% of our industrial needs.

It may be of interest to you to see graphically an overview of the natural gas distribution system in the U.S. Exhibit I is based on 1974 data from a Bureau of Mines survey. You will note that the total supply of gas was 24.3 trillion cubic feet. After deducting storage injection, fuel use and losses, there was a total of 19.1 trillion cubic feet available for delivery to customers. This was divided between the interstate pipelines, which transported 12.4 trillion cubic feet, and the intrastate pipelines and producers which delivered 6.7 trillion cubic feet. Interstate sales to direct customers totaled 1.0 trillion cubic feet, and interstate sales through distributors totaled 11.4 trillion cubic feet.

The natural gas industry is essentially composed of three segments: first, gas supply, i.e., the exploration for and production of natural gas at a field

level and/or gas supply acquired by negotiated gas purchase contracts; second, the transportation of that gas to industrial and residential distribution points through gas gathering and transmission pipelines; and, third, marketing which consists of the sale and distribution of that gas to the end users. All other gas company departments such as finance, accounting, geological, engineering, legal, land and right-of-way, pipeline, compressor, gas measurement, and dispatching are, or should be, incidental to performing the three basic functions of the company, i.e., gas supply, transportation, and marketing. The increasing shortage of natural gas has forced many natural gas pipelines, distribution companies and end users to become more involved in the gas supply segment of the industry by actively engaging in direct exploration, development and production, either on their own or in combination with oil and gas producers.

INTERSTATE NATURAL GAS SUPPLY SHORTAGES

Before discussing the various methods of acquiring natural gas, I think it is appropriate that we place the natural gas supply situation in the U.S. into perspective.

THE PROBLEM

The FPC has released statistics for 1975 indicating that a decline in natural gas reserves committed to interstate pipelines has occurred for the eighth consecutive year. During 1974, total domestic natural gas reserves dedicated to interstate pipelines declined about 13.8 Tcf, or about 10.3%. Based on

Form 15 annual reports filed by 60 interstate pipeline companies, dedicated domestic reserves fell from 120.5 Tcf at the end of 1974 to 108.4 Tcf at the end of 1975, or by approximately 10%. This drop resulted from reserve adjustments amounting to 95 Bcf, coupled with gas withdrawals of 12.1 Tcf. Pipeline production and purchases of 12.1 Tcf in 1975 compares to the 1974 volume of 13.0 Tcf. The reserve life index, or reserve to production ratio, for interstate pipeline reserves declined from 9.3 years at the end of 1974 to 9.0 years at the end of 1975. This decline will continue to persist and accelerate unless proper price incentives are given to the industry.

THE EFFECTS

The FPC expects curtailments for the 1976-1977 heating season to increase by 26.7% over last winter. Reports filed by 29 of 52 pipelines show that the companies are predicting they will fall almost 3.8 Tcf below contracted deliveries which total 14.5 Tcf. Last year's actual figures show that pipelines were unable to deliver nearly 3 Tcf of 14.1 Tcf total demand. This is exactly what was predicted at this meeting last year.

The FPC completed a series of hearings in December involving expected curtailments by 19 pipelines. The companies were asked to project what effect a severe winter would have on their gas supplies. A report on the hearings concluded that "under normal weather conditions, markets served by 18 of the pipelines will experience relatively minor difficulties in absorbing projected curtailments with minimal adverse effects such as production losses or unemployment during the coming winter season." The nineteenth pipeline, Transco, which expects a 47% shortfall, did not have enough information about the end

use customers of its distribution companies to reach any conclusions. The FPC said it intends to monitor Transco's situation and seek reopening of the proceedings, if necessary. The Commission noted that United Gas Pipe Line Co. is predicting over 46% curtailment this winter, with a 7% cutback to industrial customers and a 7% shortfall in Priority 1 gas. None of United's direct industrials are expected to be totally curtailed and United is making all efforts to assist customers with potential problems through emergency purchases, Order 539 arrangements and locating alternate fuel supplies.

THE RESULTS

The following chart (Exhibit II), taken from Chemical Week, shows the states that will suffer from curtailments this winter. As you can see, there are seven states that will be curtailed 40% or more, seven states that will be curtailed between 25% and 40%, and 23 states that will be curtailed 10% to 25%. It is estimated that between November 1 and March 31 the interstate pipelines will only be able to deliver 77.6% of the gas that has been contracted for by local utilities and the pipelines' other directly served customers in 47 states. Last winter's gas shipments amounted to 81.9% of the total obligated volume.

During the past two years while fuel shortages in the industrial northeast and in North Carolina contributed more unemployment to an already serious recession, the recession was hardly felt in Texas. This is because the new supply of intrastate gas ensured jobs and generated business expansion and provided 200,000 Texas farmers with 880,000 tons of fertilizer a year. This

was accomplished by high, unregulated intrastate gas prices and the associated increase in drilling activity. The output of petrochemical plants in Texas and Louisiana creates 7.3 million jobs as those products flow into the country's industrial complex. I don't want to belabor the future problems involved with curtailment, but in a recent report issued by the FPC, they estimate that a 15% reduction in petrochemical output would result in a loss of 1.6 million jobs throughout the nation and the loss of $70 billion in industrial production value. The textile industry alone is said to provide one out of eight jobs in the nation and is heavily dependent on synthetic fibers made from petrochemicals. Governor Rhodes of Ohio said that his state lost 61 million man-hours of employment last winter because of gas shortages. In North Carolina they are worried about the loss of 71,000 jobs if adequate natural gas is not available to them.

THE CAUSE

Exhibit III is a summary of the prices now allowed by the FPC. You will note that prior to January 1, 1973, the price varies for old gas from $.3325/Mcf for large producers to $.3938/Mcf for small producers in all areas except the Permian Basin and Rocky Mountains. For old gas drilled prior to January 1, 1973, either dedicated to interstate commerce after January 1, 1973, or subject to new contracts which replace contracts expiring on their own terms after January 1, 1973, the price, plus BTU adjustments and other allowances, is $.5942/Mcf for large producers and $.7713/Mcf for small producers. For gas drilled after January 1, 1973, but prior to January 1, 1975, the price is $1.0507/Mcf for large producers and $1.3647/Mcf for small producers. For wells drilled after January 1, 1975, the price for new gas is $1.6075/Mcf

for both large and small producers. We have assumed a BTU content of 1030, and a pressure base of 14.73.

I would like for you to compare these numbers to the summary price data shown in an FPC staff report for new and renegotiated intrastate contracts for the second quarter of 1976 (Exhibit IV). The weighted average price of new intrastate contracts executed during this period was $1.59 per Mcf. The weighted average price for renegotiated or amended contracts in the second quarter of 1976 was $1.66 per Mcf. The second quarter volumes represented by the two groups of contracts were 116 Bcf and 125 Bcf, respectively. You will note on Exhibit IV that the highest price paid was $2.34 per Mcf and the lowest was $0.15 per Mcf.

Another interesting note is that on the Texas Gulf Coast over 96% of the gas was sold at prices above $1.50 per Mcf. It is obvious that even with the new Order 770-A allowing $1.42 for new gas, the disparity between interstate and intrastate still plagues the industry. The average price paid in 1975 by interstate pipeline companies was 42.3¢/Mcf. This was 13.5¢/Mcf higher than the average 1974 price of 28.8¢/Mcf. The interstate pipeline companies surveyed by the FPC accounted for about 60% of all natural gas produced and marketed in the U.S. in 1975.

A PARTIAL SOLUTION

Deregulation of the wellhead price of natural gas will be essential if interstate pipelines are ever to compete with intrastate pipelines for meaningful reserves of natural gas. One can only hope that 1977 will see the deregulation of natural gas which would allow for increased drilling budgets and the

possibility of the interstate pipelines competing more effectively for new gas. This would certainly help end users in being assured of future supplies.

Some signs for deregulation are encouraging, as indicated by President-elect Carter's letters to Governors Boren and Briscoe in which he stated that he favored immediate deregulation of natural gas. However, his language is now changing in that he has added the word "temporary" and recently said, "In the long run, temporary deregulation of natural gas prices probably is advisable, leaving into effect existing contracts which extend in many instances beyond the year 2000." There is still great political pressure not to deregulate the price of natural gas. It is interesting to note that Exxon, number one in interstate gas sales in the U.S. with 965 Bcf in 1975, estimates that only 8% of their 1977 natural gas production would be affected by the recent FPC ruling increasing wellhead prices. One can see that the higher prices of natural gas would not immediately affect the overall average price as much as some critics might think.

With or without deregulation, we feel that prices for natural gas will continue to rise. I would like to point this out by citing a recent FPC application, CP77-100, filed by Tenneco Atlantic Pipeline Co. (TAPCO). TAPCO is to construct some $546 million worth of facilities to import 1,140,000 Mcf/D from Canada to resell to its parent company, Tennessee Gas Pipeline, at an estimated $4.57/Mcf. The total cost of this project is in excess of $2 billion. This gas is to be purchased from Algeria at a July 1, 1975 cost of $1.30 per million BTU's, f.o.b. Algerian ports, and is subject to escalation to reflect the value of the U.S. currency relative to the currency of six European countries as provided in the contract. This contract is for a period of 20 years com-

mencing in 1981. The facilities that TAPCO proposes to construct consist of 391 miles of 30-inch line from Canada to New York, another 107 miles of 30-inch line extending to Tennessee's main line in Pennsylvania, together with the appropriate terminals, cryogenic tankers, vaporization facilities, etc. TAPCO estimates that the 1984 cost of this gas will be competitive with its projected 1984 price of No. 2 fuel oil, which is the most commonly used fuel for requirements of Priority 1 and 2 customers. In support of this project, TAPCO noted that Tennessee is presently curtailing service into Priority 2 and, beginning the 1981-82 winter season, estimates curtailment of Priority 1 service without the supplemental gas involved herein. Moreover, even with this gas, Tennessee will be required to curtail Priority 2 to at least 1986.

Gentlemen, when you figure what the actual cost of this gas will be in 1981-1985 dollars to the end customer, the number is indeed staggering. We could cite numerous other examples of projected increases in gas prices but I think it is obvious that prices will continue to escalate.

It is interesting to note that, on the same day that TAPCO filed its application, the FPC denied a petition to revise limited term and emergency purchase provisions by a group of agricultural and industrial customers and United Gas Pipe Line Co. In its petition, United stressed that the FPC may be forced to deal with a natural gas shortage of crisis proportion during the 1976-77 winter heating season, but that significant additional volumes of gas could be available in time to help this coming winter if the Commission granted a more flexible limited term and emergency procedure authority.

The Commission denied these petitions stating that the new national rate of $1.42 would help encourage increased drilling activity and place interstate pipelines in a more competitive position to secure supplies from the onshore market; further stating that the Commission does not want to establish procedures which have a "band-aid effect" in dealing with the natural gas crisis and that such measures have proved to provide solely temporary help to the curtailed interstate pipeline systems rather than any long-term benefit.

Thus, on one hand we have an application for a future supply of gas costing $4.57 and involving a $2 billion investment, which will probably be approved, while on the other hand, we have a petition turned down that would enable a pipeline company to acquire an immediate supply of natural gas at a cost of $1.50-2.00 per Mcf.

It should be noted though, that on many occasions in recent years the FPC, realizing that a gas shortage does exist, has helped the pipeline companies to acquire new gas reserves for the interstate market by allowing new gas acquisition methods, such as raising prices as demonstrated by 770-A.

THE ROLE OF THE END USER

It is obvious that most interstate natural gas companies do not have sufficient reserves under the present gas pricing systems and it is doubtful that they will be able to obtain sufficient additional gas in the future to fulfill many of their existing contracts. If you purchase gas directly from an interstate pipeline company you are subject to curtailments and have no guarantee of a long-term supply. Therefore, it becomes increasingly important

for you, the end user, to acquire energy for your own account. I will outline in a general way the opportunities for and the methods by which companies such as yours might get into the gas supply segment of the natural gas industry and secure your long-term energy supply needs.

OPPORTUNITIES

In 1956 the industry was drilling some 60,000 wells per year and 2,800 drilling rigs were operating. By 1971, before the Arab oil embargo, the number of rigs had dropped to only 975 and we drilled less than 28,000 wells. More than 10,000 independent operators went out of business in those 15 years. Today there are approximately 7,000 natural gas producers outside of major companies with 300 of them being classified as major independents and the remainder as small independents. Attention is called to the fact that independent producers drilled approximately 90% of all of the oil and gas wells drilled in the United States in 1975, and that approximately 54% of the new natural gas and oil reserves found last year were attributed to independents. Due to the recent price incentives, drilling has increased considerably and there are presently some 1,800 rigs working. Obviously, the only way that more gas reserves can be found is by drilling more wells, and this requires significant capital. This situation affords an excellent opportunity for the end user to strike equitable contracts with the oil and gas producer.

In addition to the traditional major and independent oil and gas producers, pipeline companies are becoming actively involved in exploration, development and production activities. Although most pipelines are and will continue to be in curtailment for the foreseeable future, it is incorrect to

say that they are not trying to find adequate supplies for their customers. Exhibit V shows the growth in direct exploration and production expenditures by six large gas transmission companies. As you can see, they spent an estimated $302 million in 1976 for lease acquisition, drilling, and development. This figure is nearly double the $170.5 million these firms spent in 1975. The outlay of five of these companies for this year is estimated to be $358 million. This does not include lease sale participations or spending by a newly acquired producing subsidiary of one of the pipelines. All pipelines are indicating a plan to continue strong exploration programs in 1977 and through the foreseeable future. Most pipeline companies have had exploration departments for a number of years but it is only in recent years that they have become relatively active. Transco, for instance, is estimating that its total 1976 exploration expenditure was $93 million. This is more than triple the $30 million it spent in 1975, and it has budgeted $144 million for exploration and development in 1977, almost five times the expenditure in 1975. Panhandle Eastern is also conducting a heavy exploration and production program. It spent $85 million in 1976, including some $34 million in bonuses for an interest in four tracts in the Baltimore Canyon. Panhandle estimates they will spend $75 million next year, not including any lease sale expenditures.

I could cite many more examples of the other major pipelines trying to acquire gas reserves by conducting their own exploration programs, but the point is that these pipelines will continue to be a major force in the finding, producing and selling of interstate natural gas. All pipelines are indicating gradual and steady improvement in their reserve life index decline. In addition, pipeline exploration will probably be stimulated by

the FPC's new penalty on advance payments to producers. In its Order 770-A, the FPC set out a schedule for penalizing producers who accept advance payments from pipelines. It is expected that most producers will reject pipeline advance payments in the future. This necessitates that pipelines will have to go into exploration themselves in order to develop new supplies of gas.

But as the pipelines expend more money for exploration they, of necessity, need to program ways of funding their exploration projects. This money can only be obtained by off balance sheet financing. Debt payments may claim a greater and greater share of earnings and that makes the companies a less attractive proposition in today's financial markets. It would appear that many of these gas projects may prove exceedingly difficult for the companies to finance. This situation presents an opportunity for the end user to participate in exploration and development programs with the pipeline companies by supplying the needed capital.

ACQUISTION BY THE END USER

Aside from purchasing gas from a gas transmission or distribution company, there are three other ways in which an energy user can acquire gas. One is to purchase it directly at the wellhead from the companies owning the gas. The second is to actively participate in an exploration program, either on your own, through a pipeline company involved in exploration, or through a major or independent producer. The third way is to buy already discovered oil and gas in the ground and thus become a producer of natural gas. All of these methods require either a transportation agreement to be made with one of the existing gas pipeline companies or construction of appropriate

facilities to get the gas to the desired market location. There are advantages and disadvantages to all of these methods of acquiring gas for your own account and it is upon this aspect of the problem that I would like to focus our attention.

METHOD I

PURCHASE AT THE WELLHEAD

The first method mentioned - buying the gas on a contract basis at the wellhead - is perhaps the easiest method in that you do not have the risks, technical problems and costs associated with the exploration and development programs. However, there is the risk that the reserves you pay for may not be there as a result of inaccurate gas reserve and deliverability estimates. Moreover, as you may be aware, most gas sellers these days are very hesitant to sign long-term contracts with purchasers and, in addition, all of the contracts that we see today have price renegotiation and escalation clauses. It is, therefore, almost impossible to secure a long-term supply at a fixed price or an established weighted average price. We have all seen many companies with long-term contracts that have not been able to maintain sufficient gas supplies to honor those contracts due to gas shortages and inadequate prices. These uncertainties, of course, make it very difficult to program the economics of an energy-using company to make it competitive in the future.

There have been many agreements for purchasing gas at the wellhead which have been certificated under FPC Orders based on Opinions 533 and 533-A. The following is an example of a recent 533 sale along a major pipeline.

The gas was sold for $1.95 per million BTU's with a yearly renegotiation provision. If your company were to purchase the gas at this price, it would be limited to a short-term contract and would pay the $1.95/Mcf with an estimated 15¢/Mcf price escalation per year. Assuming gathering charges of 10¢/Mcf, a pipeline charge of 23¢/Mcf, and an estimated delivery charge of 25¢/Mcf, the gas would cost $2.53/Mcf in the first year, and $2.68/Mcf in the second year.

METHOD II

PARTICIPATION IN EXPLORATION

The second approach to acquiring natural gas is to enter into the exploration phase of the oil and gas business, either by forming your own exploration and production staff, or by entering into exploration arrangements with existing oil and gas companies, either majors or independents. One of the main disadvantages of trying to start an exploration program on your own is that the corporate commitment of time and money involved might be significant compared to the results of the drilling program. In addition, it is very difficult in these competitive times to find qualified technical personnel. Therefore, most companies have preferred to enter into some type of arrangement with existing oil and gas exploration companies.

In general, these arrangements are that the energy user will pay a certain amount of overhead to the oil and gas company, which we will call the operator. The energy user will also pay some or all of the acreage and seismic costs involved in the exploration venture, and a majority of the drilling and completion costs involved in the exploration program. In return for supplying

this capital, the company will receive a percentage of the oil and gas reserves that are found and, in addition, will have a call at competitive prices on the operator's share of the reserves. As compensation, the operator is usually carried for an interest. The advantages of this type of program are that the end user is able to immediately acquire the expertise of an existing organization and conceivably will be able to find oil and gas more quickly and at a substantially reduced cost compared to buying it at the wellhead. The major disadvantage, of course, is that the program will be unsuccessful if oil and gas are not discovered in economic quantities. Another disadvantage is that reserves discovered may be remote from point of use. We feel that these risks can be reduced by carefully selecting an operator who has had good experience in finding oil and gas reserves and by doing what we call "spreading the risk". In this way you spread the dollars that you want to invest over a wide range of prospects, thus avoiding the law of gamblers ruin, or "putting all your eggs in one basket". By carefully selecting a good operator and evaluating the exploration program, you can reduce the risk of not finding oil and gas. The question then becomes, "how much oil and gas will be found at what price". We have seen many companies come in on a short-term basis (one or two years), be unsuccessful, and get out of the oil and gas exploration business altogether after a bad experience. It is our experience that if a company decides to go into the exploration business, it should plan a long-term run at it to adequately spread the risk and participate in enough oil and gas prospects so that the law of averages will be working for the company. It is essential, however, that each exploration program be looked at in great detail on a prospect basis. Since geological factors can vary so much between prospects there are very few general standards against which the merits of each prospect can be measured.

Also, there are practical problems involved with the exploration for and production of natural gas. The number of wells required for the exploration and development of gas fields must be planned and judged on a field by field basis. In addition, the rate of deliverability of gas from any given reservoir will vary according to differing reservoir conditions. The forecasting of gas deliverabilities from new fields can be a very arduous task. It is important to take into consideration the maximum efficient rate of production; that is, the rate that the well can produce without causing damage to the reservoir and ultimately recover the maximum amount of reserves.

The ability of a given reservoir to produce natural gas is subject to many variables which are present in nature and which cannot be controlled by the producer. Because of the uncertainties occasioned by the nature of natural gas deposits, the contracts between the producer and the buyer have to be tailored to take these problems into account. In the past, many contracts were made for periods of 20 years or longer, mainly to ensure an adequate supply to finance the major pipelines. The situation has since changed dramatically and we seldom see long-term contracts now, as most have yearly renegotiation clauses.

Examples of Exploration Participation Programs

1) There are many companies today that are drilling for their own energy supplies. Quoting from Business Week, Cleveland's Park-Ohio Industries Inc., when warned by East Ohio Gas Co. that it faced curtailments as high as 60%, had two possible alternatives; one was to shut down their Drop Forge Division,

which was consuming approximately one billion cubic feet of natural gas annually, or to go find the energy and try to keep it operating. Park-Ohio launched its own $4.5 million drilling program and made the company potentially self-sufficient. They are now doubling the size of their drilling commitment to nearly $9 million. If its projections are accurate, Park-Ohio will get its money back in less than two years.

Chicago-based Stone Container Corp. has been drilling gas wells near its paperboard plant in Ohio. They figure their cost of new gas at less than $1.50/Mcf. Stone estimates that the plant is already saving more than $1,500 a day even though only five wells are on production. General Motors has drilled more than 100 wells near its Lordstown assembly plant. This is not to say that all industrial investors have been successful. Investing in the oil exploration game, as you know, is very risky. The risk can be diminished by the use of competent, technical personnel and, more importantly, by "Lady Luck."

2) An example of how one exploration company entered into an exploration venture with industrial users is as follows:

Their agreement calls for an expenditure of some $12 million, from which the industrial users pay overhead, leasehold, seismic and dry hole costs. Funds required to complete an initial well on a prospect and for development wells are provided by the participating companies, in

addition to the exploration budget. Based on their past experience, they will spend $15-16 million in 1977. Of this amount, probably $2-3 million will be invested in unevaluated prospects at year-end.

The exploration company is reimbursed for overhead on an actual cost basis subject to audit by the participating companies. However, they have guaranteed that the overhead will not exceed a certain level, which is $950,000 for 1977. The exploration company has the full authority to spend the exploratory funds up the point of drilling the initial exploratory well on a prospect; i.e., to buy the necessary leasehold, buy seismic data or do original shooting, and to make the other investments necessary to bring a prospect up to the point of drilling; at which time they submit to the investing companies their recommendation to drill, farm-out, etc. The participating companies retain a consultant who reviews their prospect reports and makes a recommendation.

The program's risk investment (leasehold, seismic, dry hole costs) in any one prospect is limited to $800,000. When the risk is in excess of this level, they seek other companies to participate, generally on the basis of one-third to earn a quarter interest at the casing point. The participating companies benefit from this promotion.

After a prospect pays out (including an overhead allocation), the exploration company owns 25% of the program's working interest and is obligated for its proportionate share of all expenditures and revenue to date from this point.

The following six exhibits are the initial presentations made by the exploration company to the investor companies several years ago. It should be emphasized that these projections do not indicate the success or the failure of this program but were merely the company's best-guess estimates as to the amount of reserves which they felt could be found by the projected expenditures of $20 million for exploration and $13 million for development (Exhibit VI). The total five-year investment is $18,690,000 after taxes. As shown on Exhibit VII, the gross reserves which they have projected are 267 Bcf of gas and 6.7 million barrels of condensate. Using prices of $1.25/Mcf of gas and $7.50/barrel of condensate, less operating costs and all taxes, the return on investment would be 4.68/1. On the following Exhibit VIII you can see that in the fifth year the gross production was projected to be 73 MMcf per day. They calculate that the gross gas delivered to the investor's plant would cost 68.2¢/Mcf, which included buying the partners' and royalty gas at $1.25/Mcf plus a cost of 29.7¢/Mcf for the investor's gas (Exhibit IX). Under this program, the

projected debt capacity would increase to over $20 million in the sixth year while the loan value was estimated to be 40% of the remaining net operating income (Exhibit X). Exhibit XI shows a return on investment, after federal income tax, which varies from 16% to 30%. As you can see, this program, if it worked out as projected, would be a successful venture. As we have cautioned, there can be no guarantee that any exploration program will be successful but the chances of success can be improved by doing business with a technically competent firm that enjoys a good reputation in the industry.

3) Another example of how investor funds can be used is as follows: the investor furnishes all the intangible drilling costs which enables the investor to take a 100% deduction for tax purposes. For this contribution, the investors eventually receive 60% of the production found. The exploration company provides the capital dollars for tangible expenses and then receives 40% of the production found. The exploration company receives a 9% management fee; however, this is not paid unless commercial production is found. Furthermore, this structure means that all the investors' dollars are used to find new reserves. This particular program spends 70% on low-risk projects and 30% on high-risk projects.

After the drilling program is complete, the company then goes to the bank to borrow non-recourse money on the basis of the proven reserves. The reserves are the collateral for the loans. (Some general lending criteria used by banks are presented in Addendum I to this paper.) These loans can then be reinvested to find more oil and gas should the investor so desire. Based on actual numbers, the average return on investment for programs in each of the last four years is projected to be 2.86 to 1, with an average payout of approximately four to five years. Again, it is recommended that a company play the averages and plan to stay in the exploration business for at least a five-year period.

4) As mentioned earlier, another avenue for investing in exploration programs lies with interstate pipeline companies. Because of their new exploration and production ventures there is need for outside investment capital. This provides an opportunity for an end user to secure energy for his own account by participating in these programs where the end user will supply the needed capital, with the pipeline company being the operator. An example of this is a recent purchase of offshore leases by a major gas transmission company in which they expended over a hundred million dollars, having had several outside investors in the group.

In summary, your company should be made thoroughly aware of the pitfalls of exploration and be prepared for substantial losses if the program is not successful. You should take into account your tax position, the corporate desire to enter into the oil and gas business, and the corporate resolve to go through several years of disappointing exploration results, if necessary. It should also be kept in mind that the exploration business is keenly competitive in the United States today and will grow increasingly more competitive as many industries begin to feel the energy shortage. One thing is clear -- the competition is never going to be less than it is today.

METHOD III

RESERVE PURCHASES

The third method of acquiring gas is to purchase existing reserves in the ground. One advantage of this method is that it is often possible to calculate with reasonable accuracy the proved reserve potential using sophisticated engineering and geological methods. However, in cases of semi-proved reserves, this may be very difficult to do. In addition, initial volumetric gas reserve estimates are sometimes inaccurate and difficult to make due to a variety of technical reasons. Obtaining oil and gas reserves by acquisition is also an extremely competitive business as there are many domestic companies who have been doing this for many years and have developed very sophisticated evaluation programs and contacts in the industry. Any company acquiring gas reserves by acquisition for the first time should exercise caution as to who made the appraisals and how the reserves were determined. The price a com-

pany pays for reserves is based upon the engineering report. You will find that there can be a wide range of reserve estimates as reserves from different engineering reports can vary as much as 100%. A discussion of engineering reports and reserve determination is presented as Addendum II to this paper.

We estimate that the going price for acquiring gas in the ground is approximately $.50 to $.80 per Mcf and the price of oil in the ground from $4.00 to $8.00 per barrel. Much depends on where the oil or gas is located, the surety of the reserves, and the life of the reserves. As an index of recent transactions, we have set out several examples of purchases that have occurred within the last year in Exhibit XII. In order to convert the oil to gas equivalent, we would suggest that you use an average price of between $11.00 and $12.00 per barrel for oil, and $1.30 to $1.50 per Mcf for gas, or a ratio of 7/1 on a BTU basis. There have been a number of similar transactions made in recent years involving the same economics. Most of these acquisitions are structured on a 2-to-1 return on investment and/or a 15+% rate of return before taxes and perhaps a 10+% rate of return after taxes. It is possible at this time to borrow 70-80% of the purchase price through normal lending institutions such as the larger banks and/or insurance companies.

It is our feeling that due to the energy shortage that exists here in the United States, the price for oil and gas in the ground will increase substantially over the next ten years and reserves will become more difficult to purchase. In addition, more of the acquisition packages will probably include a great deal of undeveloped acreage and a company will probably be faced with having to pay something for what is commonly referred to in

the industry as "romance" in order to finalize a transaction. However, if you have a strong acquisition program and approach it from a businesslike standpoint - that is, not only being concerned with securing call on the oil and gas, but also making sure that each project is economically sound in its own right - you can be successful in securing adequate supplies of gas.

It is also possible to get a call on oil and gas reserves by giving the operator a prepayment to be used for exploration and development work, for future development at his discretion, or for recoupment of costs in developing the reserves. In recent years there have been large sums of money paid to operators to finance their exploration or development programs in return for a call on the gas. Sometimes the advance payments are recoverable out of a percentage of the production. End user prepayments to operators are not subject to Order 770-A penalties as are pipeline company prepayments to operators.

Example Reserves Purchase

I would like to take you through a hypothetical example of what it might cost to purchase the gas needed for a petrochemical plant in the Gulf Coast area. The assumptions are that the plant uses 250 MMcf of gas per day. Based on an average life of 10-15 years, a company would have to acquire reserves in the range of 1 to 1.5 trillion cubic feet. We estimate that a program of this nature could be completed within a 3- to 7-year time period at an average cost of approximately $.60/Mcf, or between $500 million and one billion dollars. It is difficult to predict how much per year a company could acquire, but we

estimate that something in the range of 20 to 50 MMcf per day per year would be obtainable. It should be kept in mind, however, that some of these purchases would involve buying existing companies whose gas may be in other areas of the United States or whose gas is already dedicated to other markets but, presumably, it would be possible to trade some of this gas for gas in the desired area. If the plant is located in the East, then appropriate transporation arrangements would be necessary.

Example Transportation Agreements

1) An interesting certification occurred in December of 1976 concerning transportation of gas purchased in place by an industrial consumer. The FPC issued certificates to Transcontinental and United Gas Pipe Line to transport up to 3,500 Mcf per day for New Jersey Zinc Co. The gas will be used by New Jersey Zinc for processing purposes and as feedstock at its zinc smelting plant in New Jersey.

The instant transactions differ somewhat from most other transportation proposals in that the gas involved was purchased in-place by New Jersey Zinc. Zinc advised that the seller, Trident Oil & Gas Corp. et al., refused to sell the gas on a conventional basis. Accordingly, Zinc entered into an agreement with Trident et al. to purchase in-place approximately 4.8 Bcf of reserves underlying six wells in Winn Parish, North Louisiana at a total price of $3.2

million. Zinc computed the unit price at $1.37/Mcf in the first year and at $1.48/Mcf over the estimated eight-year life of the reserves.

The Commission stated that transportation of industry-owned gas is beyond the scope of Order No. 533, which established a policy to encourage interstate pipeline transportation of natural gas directly purchased by curtailed industrial (non-resale) customers for high priority usage. However, the Commission granted the requested transportation certificates pursuant to Section 7 of the Act after a review to "carefully scrutinize the availability of the subject reserves to the intrastate market." The FPC noted an affidavit from Trident stating that the subject reserves (absent the sale of New Jersey Zinc) would not have been dedicated to interstate commerce because of refund obligations imposed by the D. C. Circuit with respect to Opinion No. 770 prices, and an affidavit from Zinc stating that it would arrange to sell the gas in intrastate commerce if the instant transportation applications were denied.

Trident agreed to construct a gathering system to connect the subject gas to a point on United's line in Caldwell Parish, Louisiana. United will charge 20.52¢/Mcf for delivery to Transco. Transco will transport the gas to the distributor supplier of New Jersey Zinc at an initial rate of 22¢/Mcf, plus retention of 4.4% of the volumes received as makeup for compressor fuel and line loss.

2) A few weeks earlier, on November 24, 1976, the FPC set a hearing on transportation of up to 3,317 Mcf/D proposed by Texas Gas Transmission Corp. for National Steel Corp. and Southwire Company on the ground that the gas involved was needed by National-Southwire to offset volumes being curtailed by a nonjurisdictional supplier and hence was beyond the scope of Order No. 533. At the same time, however, the Commission granted Texas Gas temporary authorization to provide the transportation service because of indicated cutbacks in operations by National-Southwire at their plant in Hawesville, Kentucky, and a consequent loss of more than 425 jobs if additional gas were not obtained.

These are examples of two of the recent transactions which lead us to believe that in the future it will be easier for an end user to move its own gas to its plant through various methods, either with or without deregulation.

There is a great deal of competition in buying reserves or buying companies with oil and gas reserves. Some of this competition comes from production-purchasing fund companies. An example of the structure of one of the larger production-purchasing fund companies is as follows:

Assume that the limited partners' investment is $100.00. The sales commission is $7.00; general overhead and administrative expenses is $6.00; the management fee is $15.00; thus, the net partnership capital available

prior to the general partners' investment is $72.00. The general partners then invest $9.00, bringing the total partnership capital available to $81.00. The partnership then borrows an additional $81.00 from a bank to be used for the property acquisition. Thus, the total funds available are $162.00. After the production purchase, all costs and revenues are shared 85% by the limited partnership and 15% by the general partners. In other words, the general partner has been carried for 15% and has reinvested 60% of its 15% management fee (9%).

This particular fund attempts to get an 11% to 14% rate of return before tax and a payout period of around 5 years, with a final return on investment to the limited partner of 1.8 to 2.5/1. This is typical of some of the competition that is in the marketplace today for acquiring oil and gas reserves.

SUMMARY

We have discussed several ways of acquiring natural gas. I believe the important thing to put in perspective is that there is an energy shortage and a company that needs energy for its business has to think about developing its own reliable energy source. Energy is going to become increasingly more difficult to obtain even at higher prices. There are many good operators, both majors and independents, and pipeline companies who are actively pursuing oil and gas exploration and acquisition programs. These companies need investment capital. I think you will find there are ample opportunities to get into the oil and gas business. It should be

restated, however, that there is substantial risk involved in securing your own energy sources and that these risks should be carefully evaluated from an economic, legal, and corporate standpoint. I have only briefly touched on the implications of governmental intervention into the energy business as it is very difficult to predict what will happen in the future. However, governmental intervention and regulation is the law of the land. It has to be dealt with and accepted for what it is. This is a factor that should also enter into your corporate planning for acquiring gas reserves.

You might ask yourself, being an end user, why good oil and gas investment opportunities would be submitted to your companies. I think the answer to this is that there is simply not enough capital in the oil industry to internally finance all of its needs. Some years ago most majors and large independents were able to finance themselves through internal cash flow. This is no longer possible in all cases. Because of federal controls and taxes, many oil and gas companys' cash flows simply do not generate enough capital to carry out their total exploration needs. We feel that a balanced program of acquiring gas reserves is to approach the problem utilizing all three methods: first, to buy gas at the wellhead from producers; second, to also explore for oil and gas on a long-term basis; and, third, to purchase oil and gas reserves in the ground. I would also suggest a minimum program of five years. By proper corporate planning and the utilization of good, competent technical people, companies such as yourselves should be able to adequately ensure your energy needs in the difficult years that lie ahead for our country.

Energy is the lifeblood of our industrial nation. It is a resource without which all of our other resources are of no avail. This nation with its factories, its transportation, and its standard of living, moves basically on petroleum. You industrial users have a significant stake in securing and controlling your future energy supplies for your companies. There is no short-term solution to our energy dilemma. Over the long-term, perhaps by the turn of the century, solar and other types of exotic energy will be used. While we will continue to use more coal, we will still be dependent on foreign and domestic oil and gas in the foreseeable future. There are large quantities of natural gas still to be found in this country but it is going to require more wildcat drilling, deeper drilling, development of low reserve areas, offshore drilling, and frontier drilling of wells. Each of these programs are more expensive than ever and will result in higher priced natural gas and oil.

The ingenuity of the oil and gas industry, if allowed to operate in a free enterprise market, together with adequate capital from companies such as your own, should be able to meet the challenge. I think the future holds many interesting and innovative arrangements that will be made by the end users in securing their own supply of natural gas.

ADDENDUM I

BANK FINANCING CRITERIA

It is usually possible to borrow money against proved reserves from banks or other lending institutions. As a rule of thumb, if the reserves can be classified in a good proved category, a bank will usually make a loan utilizing various criteria or empirical tests as set out below. No single test is overriding and the loan is usually a composite or average of the various approaches.

1. Banks normally limit the maximum loan to 50% of the discounted cash flow from the proved producing reserves, operated under existing conditions, predicated on generally accepted reservoir engineering approaches.

   The discounted cash flow is derived by applying present worth factors to the projected operating profit, employing a present worth discount rate of 2% over the prevailing prime rate. Projected operating profit on an annualized basis is the result of forecasting the future oil and gas production applicable to the interest involved and multiplying by the respective crude oil and gas prices to reflect an operating revenue. The operating revenue is reduced to account for ad valorem and severance taxes, and also for the required expenses to operate the properties to an economic limit. This yields the operating profit which is discounted as noted above.

2. A second criterion is to limit the total loan so that 50% of the initially forecast future net operating profit will be remaining at payout of the loan.

3. A further consideration is the ratio of the loan to fair market value. In this connection, a bank attempts to limit the loan to a maximum of 80% to 85% of the estimated fair market value which, in turn, is normally considered to be some percentage of the discounted cash flow. The logic behind this criterion is to permit the bank to sell the property, if the occasion should arise, for a price equal to or greater than the loan. This provides the basis for also requiring a minimum equity position of 15% to 20% in the package.

Over and above the empirical tests summarized above, it is obvious that intuitive judgement must also be exercised. This might be construed as a reliability factor based upon the qualitative aspects of the engineering study; such as the accuracy of the various parameters used in the volumetric calculations, the consistency in the performance trends of the properties, or the diversification involved.

ADDENDUM II

RESERVE ESTIMATES

The price a company pays for reserves is based upon the engineering report. You will find that there can be a wide range of reserve estimates as reserves from different engineering reports can vary as much as 100%. I would like to briefly discuss engineering reports and reserve estimates, and present an example on reserve variance.

The engineering report is a compilation of the reserve estimates and associated economics for all properties of interest to the buyer or seller in any given transaction. In preparing these reports, we utilize all of the pertinent geological, engineering, and economic data available in the company's files, and supplement this with data from our files or from published information sources when necessary.

Reserve estimates are prepared from widely spaced samples and readings from a reservoir. Because of the number of factors which must be considered in preparing these estimates, and because each estimator must make judgments based on his own experience, any two estimates for a particular reservoir derived by the same methods may not correspond exactly.

We can establish reserves by several methods such as analogy, volumetric calculations, material balance, and well performance. We have prepared Exhibit XIII which will show when we use the various methods.

Assume that this chart represents one well. As in most things, the more information available to an engineer, the more accurate his reserve esti-

mates will be. It is important to remember that the more properties or wells that are included in a reserve report, the better balance we will have, with the "plus and minus" of various estimates tending to approach what the true ultimate production will be.

Point "A": Geological Period. This is the point where we do not have proved reserves. Reserves are calculated before the well is drilled. Reserves assigned here are based on what the geologist thinks of the potential reservoir thickness, areal extent, depth, etc., along with analogy to other reservoirs of a similar nature. This is the time when the reserves assigned to the reservoirs are seen to vary the most. It is a period of high hopes and great expectations, and usually the estimates are too optimistic.

Point "B": Initial Completion. Here we have some data developed by drilling the well: logs, flow tests, fluid analyses, reservoir temperature and pressure. We can now do some volumetric calculations and estimate proved reserves. The reserves established here are subject to interpretation by the reservoir engineer, due to many unknowns concerning the reservoir's ability to produce and to the areal extent of the reservoir. The accuracy is also heavily dependent upon reliable geological and well information, along with the experience of the geologist and reservoir engineer.

Between Points "B" and "C", Material Balance calculations can be made. The material balance equation tries to take into account all things

happening in the reservoir - oil, gas and water produced, change in pressure, expansion of all phases, etc.

Point "C": Mid-life, or after sufficient production history has developed a trend. This is where we use decline curves, rate cumulative curves, water cut curves, or pressure versus cumulative curves for the estimation of reserves. At this time we have much more reliable information and the degree of ability to predict the ultimate recovery is improving.

Point "D": Economic Limit. This is the point at which all oil and/or gas has been produced through primary means and the ultimate recovery is known. This is a very simplified drawing and explanation. Secondary recovery operations may have started and that would complicate the reserve calculations.

In general, the range of reserve estimates we see on an individual property will depend upon the completeness and accuracy of available data and, to some extent, upon the experience of the engineer.

It is a mystery to most people why reserve estimates from two engineers of equal capability can deviate so much. I would like to take you through an example of how such a difference can come about. The following is an example calculation of reserves at three stages in the life of a gas well: the initial volumetric reserve calculation, the mid-life volumetric reserve calculation, and the calculation of reserves after the well is on

decline with considerable production history behind us. This information is summarized on Exhibit XIV.

The basic assumed parameters and discussion of this example are as follows:

1. The example shown is limited to "minor" or "reasonable" variations in interpreting various reservoir characteristics with the variations being a reflection of judgment or best-guess parameters.

2. In general, this example of a gas well is analogous to an oil well in that only those variables common to oil or gas well analysis are considered.

3. Economics are not considered.

4. Note the difference between "ultimate recoverable reserves" and "remaining recoverable" reserves. In the example, the increases in Appraisal "B" over Appraisal "A" at the three stages of production are as follows:

Stage	% Increase Ultimate Rec. Reserves	% Increase Remaining Rec. Reserves
Volumetric	93	93
Mid-Life	27	52
Decline	12	87

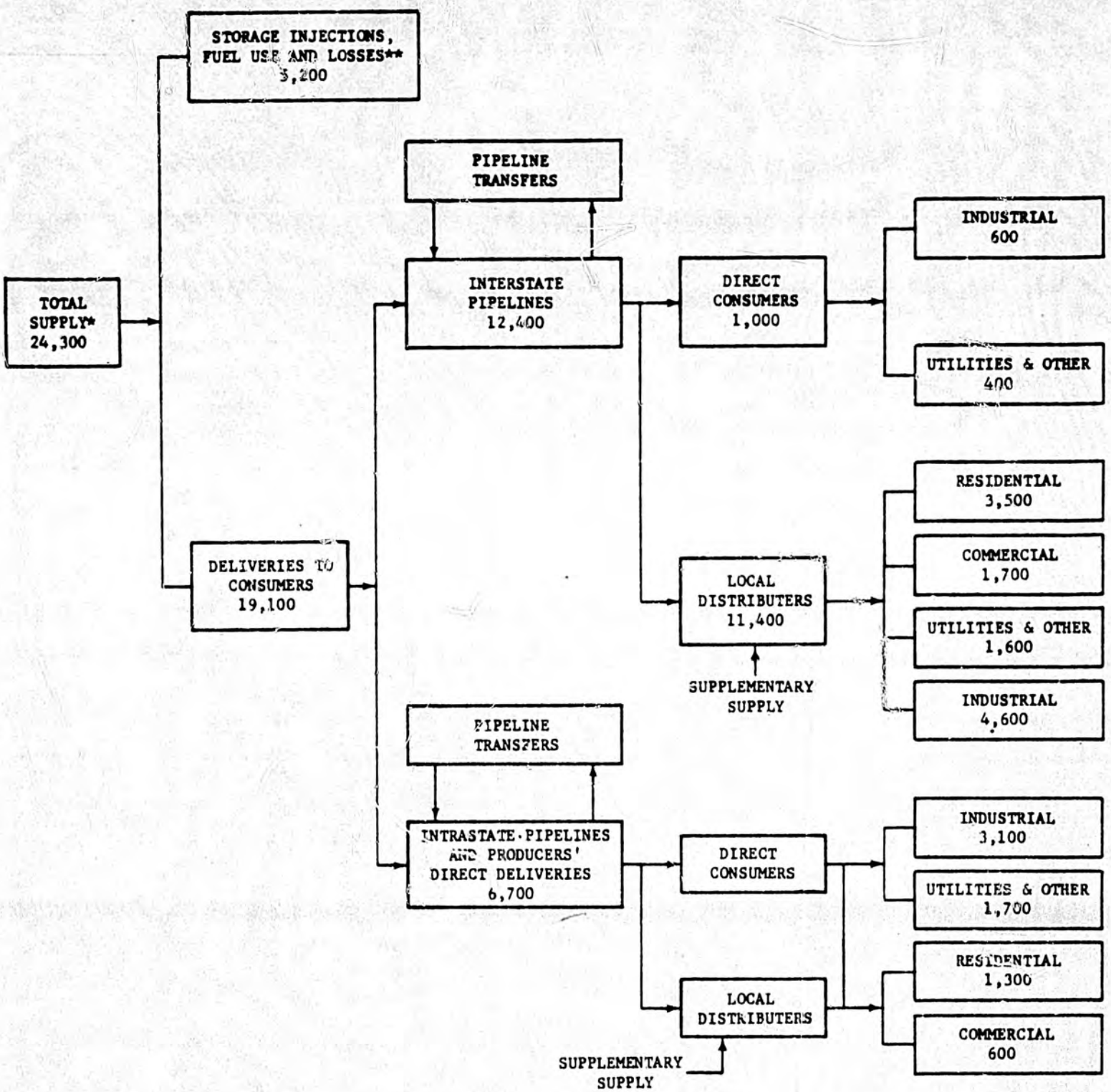
In general, even though the percentage change in remaining recoverable reserves is large, the magnitude of the difference in reserves decreases as more data becomes available, and the economic impact is lessened considerably.

Stage	Remain. Rec. Reserves "A" - MMcf	Remain. Rec. Reserves "B" - MMcf	Difference B-A - MMcf
Volumetric	2,969	5,741	2,772
Mid-Life	1,529	2,327	798
Decline	425	795	370

The reserves that we project are neither optimistic nor pessimistic, but what we believe can reasonably be expected from the property under the economic and operating conditions that prevail at the time of the study. We have found in the vast majority of cases that accurate, reliable reserve calculations can be made through proper engineering and geological assumptions, accumulation of adequate data, and familiarity with the geological and reservoir characteristics of the area.

EXHIBIT I

OVERVIEW OF U.S. NATURAL GAS SYSTEM, IN BCF



* Supply includes U.S. marketed production, withdrawals from storage, and imports.

** Gas for such purposes as lease and plant fuel, pipeline compressor fuel, extraction loss, and transmission losses.

Note: Amount delivered to interstate pipelines and amount delivered to intrastate pipelines are estimated.

Source: Based primarily on data from "Natural Gas Production and Consumption: 1974" (Washington, D.C.: Bureau of Mines, Mineral Industry Surveys, 1975).

EXHIBIT II

1976-77 CURTAILMENTS

(Pipeliners Pinpoint The Shortages)*

Winter Deficiency 40% or More	Winter Deficiency 25-40%	Winter Deficiency 10-25%	Winter Deficiency 0-10%
Arizona	Florida	Alabama	Alaska(2)
Arkansas	Indiana	California	Colorado
Delaware	Kansas	Connecticut	Georgia
Louisiana(1)	New Jersey	Delaware	Hawaii(2)
Mississippi	New Mexico(1)	District of Columbia	Maine
Nevada	Ohio	Idaho	Massachusetts
North Carolina	Pennsylvania	Illinois	Michigan
		Iowa	Montana
		Kentucky	New Hampshire
		Maryland	North Dakota
		Minnesota	South Dakota.
		Missouri	Utah
		Nebraska	Vermont(2)
		New York	Wisconsin
		Oklahoma(1)	
		Oregon	
		Rhode Island	
		South Carolina	
		Tennessee	
		Texas(1)	
		Washington	
		West Virginia	
		Wyoming	

*Example of how "shortage" or "deficiency" is computed: interstate pipeline companies have previously contracted to supply 100 million cu. ft. of natural gas to customers in a certain state between Nov. 1, 1976, and March 31, 1977, but now find that they will be able to deliver only 70 million cu. ft. In that case the anticipated deficiency would be 30%.

(1) Industrial customers are primarily supplied on an intrastate basis.

(2) Not supplied by interstate transmission companies. Source: Federal Power Commission.

REGULATED GAS PRICES
AS OF JANUARY 1, 1977

	Large Producers	Small Producers(a)
OLD GAS - PRIOR TO 1/1/73 - FPC OPINIONS #749 and #742-A		
Base Price(b)	$ .2950	$ .3500(d)
Add state severance taxes - assume Texas - 7.5%(c)	.0239	.0284
Add BTU adjustment - assume 1030 BTU	.0096	.0114
Add gathering allowance - assume Texas Gulf Coast(e)	.0040	.0040
	$ .3325	$ .3938
OLD GAS - PRIOR TO 1/1/73 (Dedicated to Interstate Commerce After 1/1/73 or Subject to New Contracts Which Replace Contracts Expiring on Their Own Term After 1/1/73) - FPC OPINIONS #699-H and #770-A		
Base Price(b)	$ .5300	$ .5300
Add small producers allowance (130%)	-	.1590
Add state severance taxes - assume Texas - 7.5%(c)	.0430	.0559
Add BTU adjustment - assume 1030 BTU	.0172	.0224
Add gathering allowance - assume Texas Gulf Coast(e)	.0040	.0040
	$ .5942	.7713
1973-1974 VINTAGE GAS (From Wells Drilled(f) 1/1/73 but Prior to 1/1/75) - FPC OPINION #770-A		
Base Price(b)(g)	$ .9400	$ .9400
Add small producers allowance (130%)	-	.2820
Add state severance taxes - assume Texas - 7.5%(c)	.0762	.0991
Add BTU adjustment - assume 1030 BTU	.0305	.0396
Add gathering allowance - assume Texas Gulf Coast(e)	.0040	.0040
	$ 1.0507	$ 1.3647
NEW GAS (From Wells Drilled(f) After 1/1/75 - FPC OPINION #770-A		
Base Price(b)(h)	$ 1.4400	$ 1.4400
Add small producers allowance (130%) - does not apply	-	-
Add state severance taxes - assume Texas - 7.5%(c)	.1168	.1168
Add BTU adjustment - assume 1030 BTU	.0467	.0467
Add gathering allowance - assume Texas Gulf Coast(e)	.0040	.0040
	$ 1.6075	$ 1.6075

(a) Small producer - 10,000,000 Mcf per year or less
(b) Unless prior area rate is higher
(c) Tax reimbursement calculated as follows (per Opinion #699 - App. D)
[.2950 ÷ (1 - .075)] - .2950 = .0239
Basic formula applies to all rates
(d) Permian Basin and Rocky Mountain Area = $.4050
(e) Gathering allowance varies with area
(f) Spud-date controls
(g) Subject to 1¢ per year escalation
(h) Subject to 1¢ per quarter escalation

EXHIBIT IV

SECOND QUARTER 1976 INTRASTATE PRICES

(Prepared by FPC Staff)

	New Contracts				Renegotiated Contracts			
	April	May	June	April-June	April	May	June	April-June
Price								
High ($/MCF)	2.16	2.01	2.04	2.16	2.09	2.34	2.18	2.34
Average ($/MCF)	0.51	0.15	0.29	0.15	0.18	0.16	0.49	0.16
Low ($/MCF)	1.73	1.39	1.67	1.59	1.22	1.83	1.71	1.66
Percent Contract Volumes Sold Between:								
$2.01 - $2.50	16.10	0.20	4.70	7.40	2.90	5.10	21.30	9.30
$1.51 - $2.00	61.70	52.80	79.60	62.50	29.80	90.50	56.50	66.70
$1.01 - $1.50	20.00	42.90	14.90	27.50	29.50	0.80	14.70	11.50
$0.51 - $1.00	2.20	4.10	0.30	2.50	36.90	3.30	4.20	11.30
$0.00 - $0.50	-	-	0.50	0.10	0.90	0.30	3.30	1.20
Contract Volumes (BCF)	45.30	44.00	27.00	116.30	28.70	59.90	36.70	125.30

Summary price data by FPC pricing area for three months, April - June 1976, are below:

New Contracts

	Appal.-Ill.	Other S.W.	South La.	Texas Gulf Coast	Permian Basin	Hugoton-Anadarko	Rocky Mt.	Other
Price								
High ($/MCF)	-	1.64	1.90	2.16	1.96	1.95	0.77	1.95
Average ($/MCF)	-	1.16	1.50	1.98	1.35	1.61	0.76	1.35
Low ($/MCF)	-	0.70	0.98	0.45	0.51	0.15	0.76	1.22
Percent Contract Volumes Sold Between:								
$2.01 - $2.50	-	-	-	42.90	-	-	-	-
$1.51 - $2.00	-	12.40	23.00	53.60	34.90	95.90	-	21.20
$1.01 - $1.50	-	83.20	74.10	2.50	34.60	3.00	-	78.80
$0.51 - $1.00	-	4.40	2.90	0.30	30.50	1.10	100.00	-
$0.00 - $0.50	-	-	-	0.70	-	-	-	-
Contract Volumes (BCF)	-	3.80	12.30	20.20	4.40	54.90	0.30	20.30

Renegotiated Contracts

	Appal.-Ill.	Other S. W.	South La.	Texas Gulf Coast	Permian Basin	Hugoton-Anadarko	Rocky Mt.	Other
Price								
High ($/MCF)	0.75	2.09	1.61	2.18	2.34	1.98	1.08	1.90
Average ($/MCF)	0.75	0.79	1.46	2.00	1.45	1.56	0.85	0.71
Low ($/MCF)	0.75	0.16	0.59	1.11	0.49	0.18	0.52	0.60
Percent Contract Volumes Sold Between:								
$2.01 - $2.50	-	3.40	-	14.30	16.10	-	-	-
$1.51 - $2.00	-	4.50	43.60	85.50	27.90	92.30	-	8.60
$1.01 - $1.50	-	-	51.60	0.20	48.70	4.10	57.90	-
$0.51 - $1.00	100.00	92.00	4.80	-	0.20	2.00	42.10	91.40
$0.00 - $0.50	-	0.10	-	-	7.10	1.60	-	-
Contract Volumes (BCF)	0.04	12.70	9.00	59.20	17.30	25.40	0.20	1.50

EXHIBIT V

EXPLORATION AND PRODUCTION EXPENDITURES BY SIX LARGE PIPELINE COMPANIES

(Growth in direct E&P by six large lines)(1)

Company	Total Expenditures(2) 1975	1976	1977
Transco Inc.	$ 29,577,000	$ 93,207,000	$ 143,741,000
Consolidated Natural Gas Co.	64,811,000	78,735,000	92,555,000
Panhandle Eastern	40,000,000(3)	85-90,000,000	75,000,000(4)
Florida Gas Exploration Co.(5)	9,000,000	13,000,000	22,000,000
Northern Natural Gas Co.	22,700,000	20,000,000	25,000,000
United Gas Pipe Line(6)	4,500,000	7,000,000	-

(1) Amounts do not include advance payments.

(2) Expenditures for 1976 and 1977 are estimates.

(3) Annual average for 1970-75.

(4) Estimate does not include possible lease-sale participation.

(5) Affiliate of Florida Gas Transmission Co.

(6) Figures do not include Cotton Petroleum.

EXHIBIT VI

PROJECTED FIVE YEAR BUDGET
($1,000)

	YEAR OF EXPENDITURE						
EXPLORATION	1	2	3	4	5	6	TOTAL
Drilling	$2,100	$2,475	$2,875	$3,250	$3,725	-	$14,425
Leasehold	450	500	500	600	600	-	2,650
Geophysical	150	225	300	300	300	-	1,275
Overhead	300	300	325	350	375	-	1,650
TOTAL	$3,000	$3,500	$4,000	$4,500	$5,000		$20,000
DEVELOPMENT	-	$2,025	$2,350	$2,650	$3,000	$3,350	$13,375
TOTAL	$3,000	$5,525	$6,350	$7,150	$8,000	$3,350	$33,375
CURRENT YEAR TAX DEDUCTIONS	$2,640	$4,862	$5,588	$6,292	$7,040	$2,948	$29,370
REDUCTION OF TAXES PAYABLE (50%)	$1,320	$2,431	$2,794	$3,146	$3,520	$1,474	$14,685
NET INVESTMENT (AFTER TAXES)	$1,680	$3,094	$3,556	$4,004	$4,480	$1,876	$18,690

EXHIBIT VII

PROJECTED ECONOMIC RESULTS

Gross Reserves		
Natural Gas, Billion Cubic Feet		267
Condensate, Barrels		6,700,000
Net Reserves Owned by _____		
Natural Gas, Billion Cubic Feet		164.2
Condensate, Barrels		4,120,000
Net Cash Flow to _____		
$1,000		
Revenue		
Gas @ $1.25/MCF	$205,250	
Condensate @ $7.50	30,900	$ 236,150
Less: Production Taxes (11%)	$ 25,976	
Operating Expenses	11,807	$ 37,783
Net Operating Income		$ 143,014
Less: Statutory Depletion (22%)	$ 51,953	
Depreciation	3,400	$ 55,353
Taxable Operating Income		$ 143,014
Less: Income Taxes @50%	$ 71,507	
Plus: Current Year Deductions	29,370	$ (42,137)
Net Income (After Tax)		$ 100,877
Plus: Depletion & Depreciation		55,353
Net Cash Flow (After Taxes)		$ 156,230
Investment		$ 33,375
Net Cash Flow Per $ Invested (After Taxes)		$4.68
Discounted Cash Flow Rate of Return (After Taxes)		Exceeds 50%
Investment Per Net Equivalent MCF (Pre-Tax)		$0.177

EXHIBIT VIII

PROJECTED GAS SUPPLY

	YEAR						
	1	2	3	4	5	6	TOTAL
PROSPECTS DRILLED	8	9	11	12	13	-	53
DISCOVERIES	1	1	2	1	2	-	7
DEVELOPMENT WELLS							
Productive	-	3	3	4	3	5	18
Dry Holes	-	2	2	2	2	3	11
GROSS RESERVES (BCF)							
RESERVES PROVED	10.7	42.8	53.5	53.5	53.5	53.5	267.5
LESS: Production	NIL	4.0	8.7	14.6	20.2	26.8	74.3
RESERVES (END OF YEAR)	10.7	49.5	94.3	133.2	166.5	193.2	193.2
PRODUCTION RATE @ END OF YEAR (MMCF/DAY)	NIL	22	46	67	73	73	N/A
PRODUCTION NET TO _____ (MMCF/DAY)	NIL	16	31	45	50	50	N/A

EXHIBIT IX

PROJECTED DELIVERED GAS COST
($1,000)

	Gross Gas	Net Gas
Transportation @5¢ per MCF	$ 13,350	$ 8,210
Investment of _____	33,375	33,375
Purchase of Royalty and _____ Gas (@ $1.25)	128,500	-
Lease Operating Expenses & Production Taxes	37,783	37,783
Less: Condensate Revenue	(30,900)	(30,900)
Total Cost of 267 (164.2 Net) Billion Cubic Feet of Gas Delivered to _____	$182,108	$48,768
Plant Delivered Cost Per MCF	68.2¢	29.7¢

EXHIBIT X

PROJECTED DEBT CAPACITY
($1,000).

	1	2	3	4	5	6
REMAINING NET RESERVES @ FIRST OF YEAR (BCF)	-	7.8	33.6	63.9	90.3	112.9
LOAN VALUE PER MCF	-	$ 0.48	$ 0.48	$ 0.48	$ 0.48	$ 0.48
LOAN VALUE @ FIRST OF YEAR	-	$3,744	$16,128	$30,672	$43,344	$54,192
PROJECTED INVESTMENT	$3,000	$5,525	$ 6,350	$ 7,150	$ 8,000	$ 3,350
CUMULATIVE INVESTMENT	$3,000	$8,525	$14,875	$22,025	$30,025	$33,375
LESS: CUMULATIVE DEBT	-	3,744	14,875	22,025	30,025	33,375
CUMULATIVE EQUITY INVESTMENT	3,000	4,781	-	-	-	-
EXCESS DEBT CAPACITY	$ -	$ -	$ 1,253	$ 8,647	$13,319	$20,817

NOTE: LOAN VALUE IS ESTIMATED TO BE 40% OF REMAINING NET OPERATING INCOME.

EXHIBIT XI

PROJECTED FINANCIAL EARNINGS
($1,000)

	1	2	3	4	5	6
PROVEN REMAINING NET RESERVES (BCF)	7.8	36.5	69.8	100.2	125.9	148.0
CUMULATIVE INVESTMENT	$3,000	$8,525	$14,875	$22,025	$30,025	$33,375
LESS: RESERVE	-0-	-0-	677	1,877	3,867	6,657
NET INVESTMENT	3,000	8,525	14,198	20,148	26,158	26,718
DEPLETION & DEPRECIATION RATE (¢/MCF)	N/A	23.4	20.3	20.1	20.8	18.0
NET PRODUCTION (BCF)	NIL	2.9	5.9	9.9	13.0	17.0
REVENUE	NIL	$4,170	$ 8,484	$14,236	$18,694	$24,446
LESS: PRODUCTION TAXES	NIL	459	933	1,566	2,056	2,689
OPERATING EXPENSES	NIL	209	424	712	935	1,223
DEPLETION & DEPRECIATION	NIL	677	1,200	1,990	2,700	3,069
NET EARNINGS (BFIT)	-0-	$2,825	$ 5,927	$ 9,968	$13,003	$17,465
LESS: INCOME TAXES (50%)	-0-	1,412	2,963	4,984	6,501	8,732
NET EARNINGS	-0-	$1,413	$ 2,964	$ 4,984	$ 6,502	$ 8,733
RETURN ON NET INVESTMENT (AFIT)	N/A	16.6%	20.9%	24.7%	24.8%	32.6%

EXHIBIT XII

RECENT PRODUCTION PURCHASES

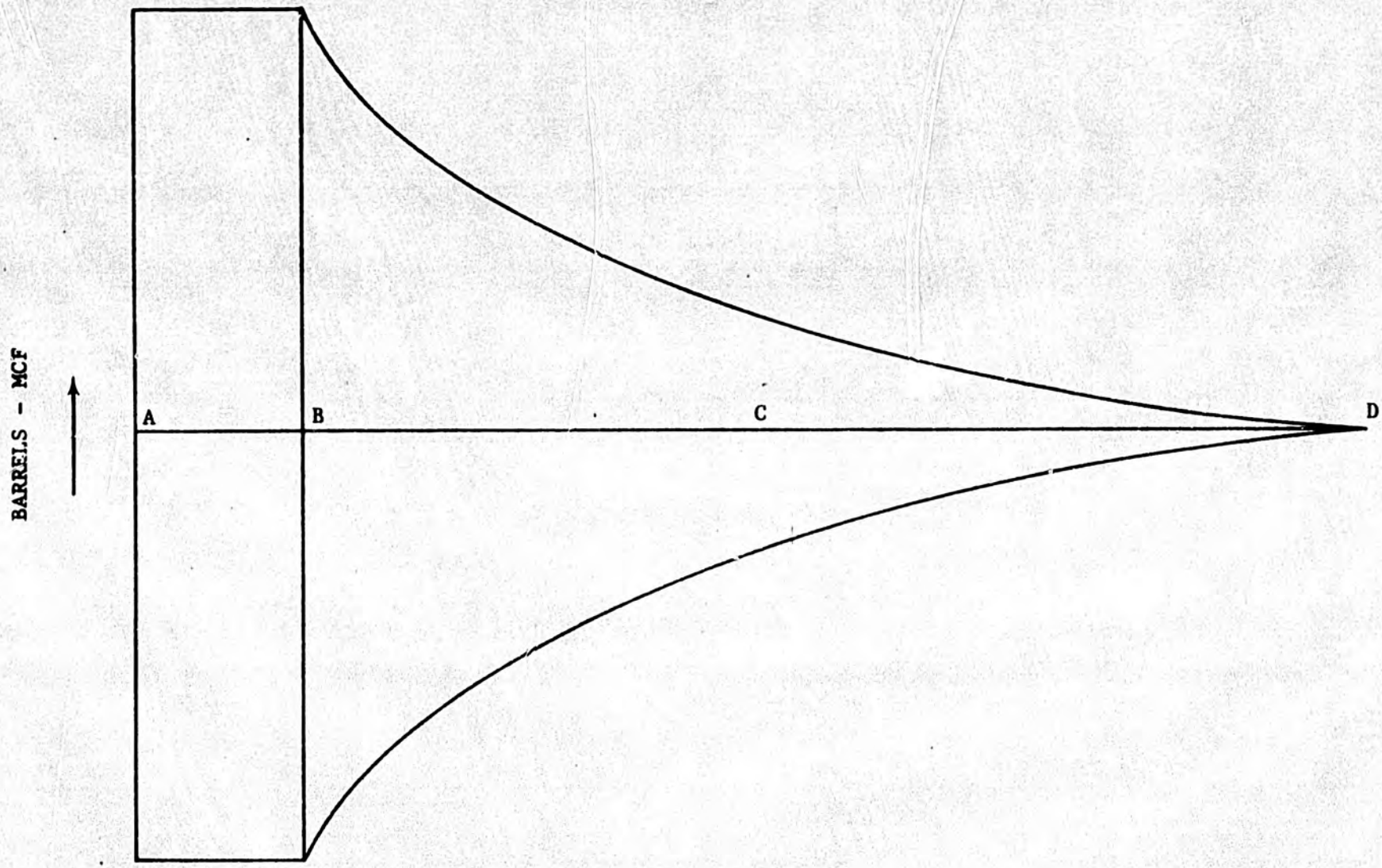
	Net Reserves		Net Production		
	Oil, Bbls.*	Gas, MMcf*	BOPD	Mcf/D	Price Paid
I.	8,000,000	160,000	3,200	55,000	$130,000,000
II.	35,000,000	190,000	12,000	40,000	160,000,000
III.	4,000,000	18,000	1,250	8,500	30,000,000
IV.	2,000,000	35,000	1,000	9,000	18,000,000

* Most of these reserve numbers include varying degrees of probable and possible reserves.

EXHIBIT XIII

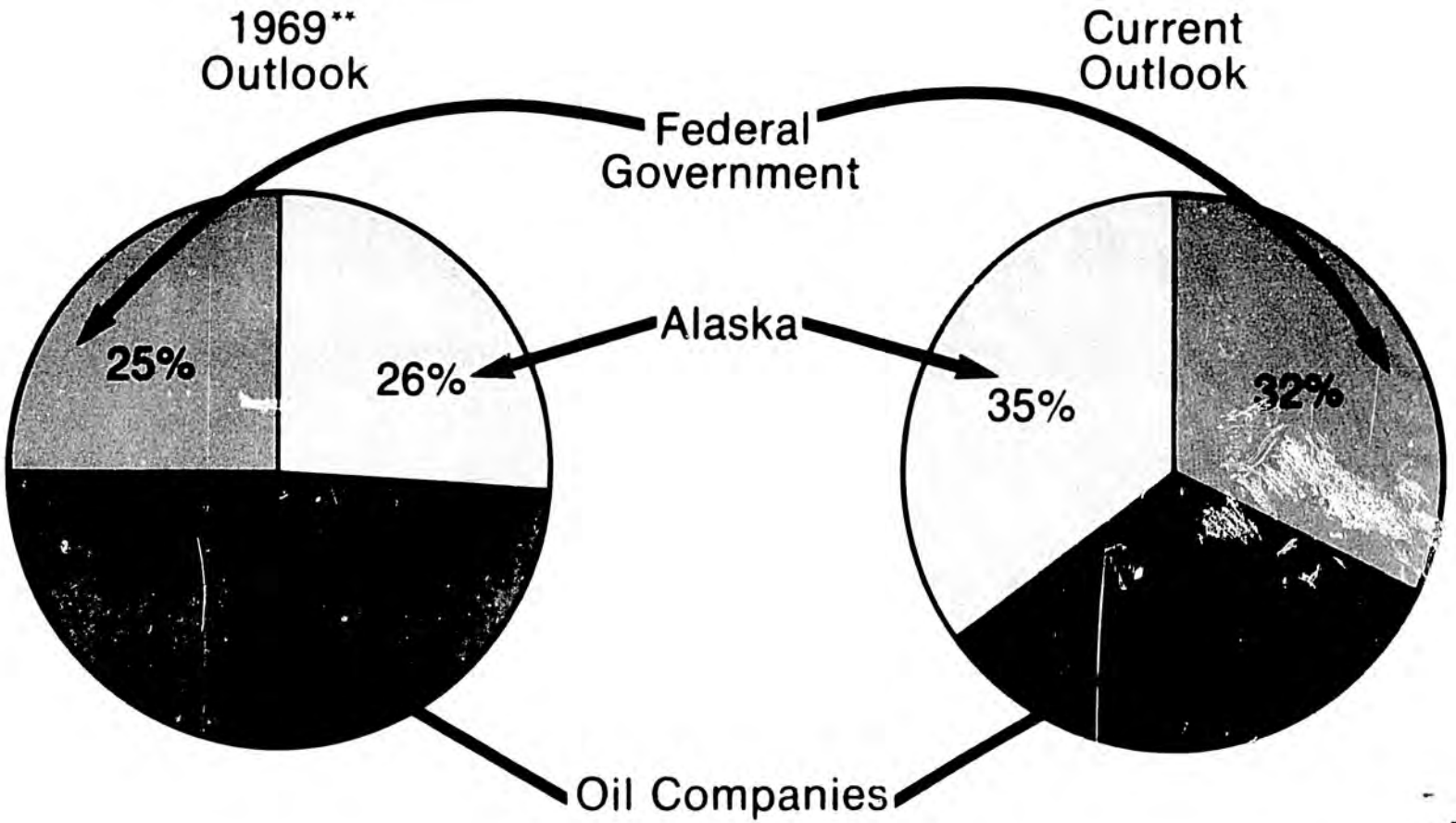
RANGE OF RECOVERY ESTIMATES

INDIVIDUAL WELL



PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

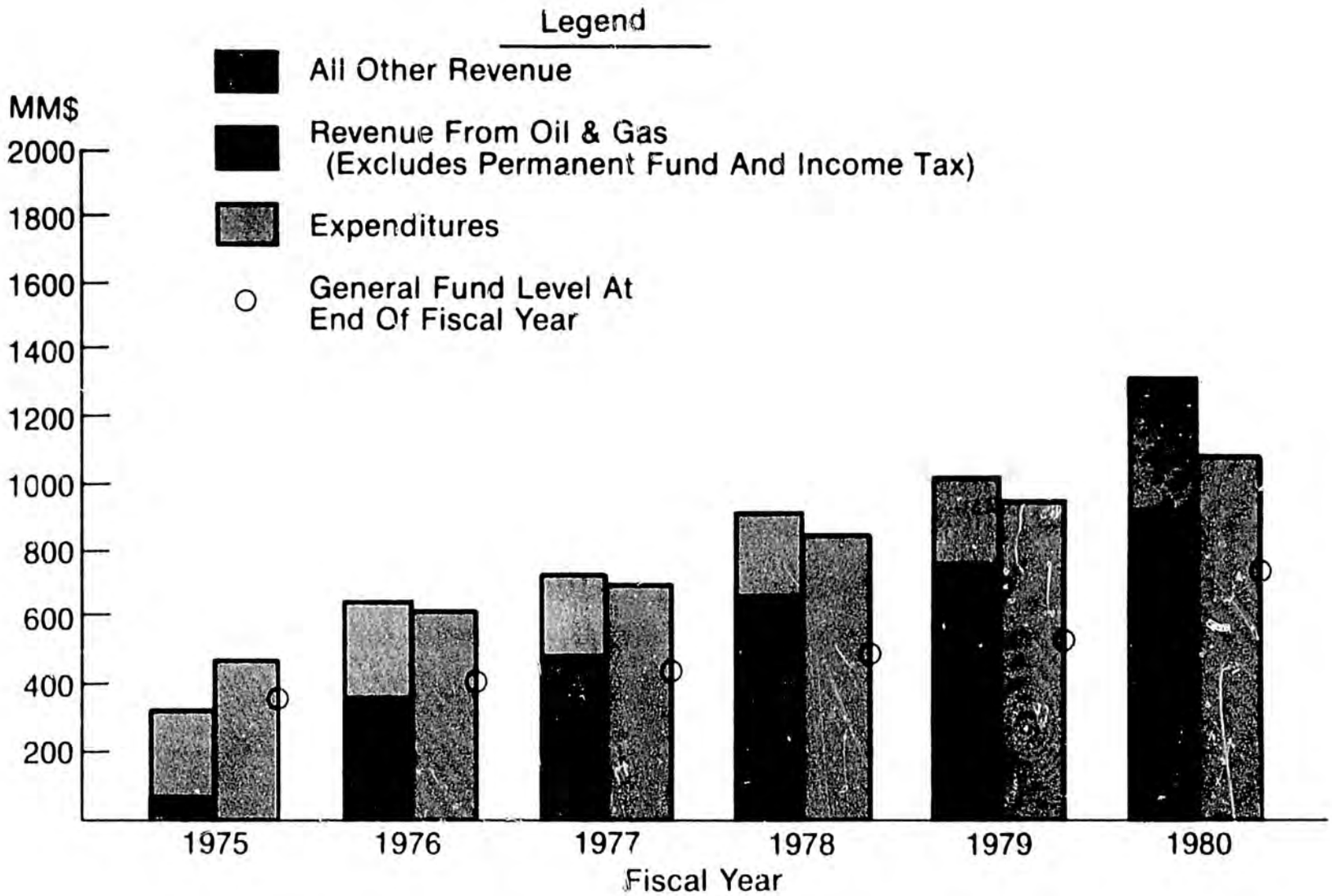
Distribution Of Prudhoe Bay Field Level Income*



*Field level revenues for the life of the field less investments and operating expenses.

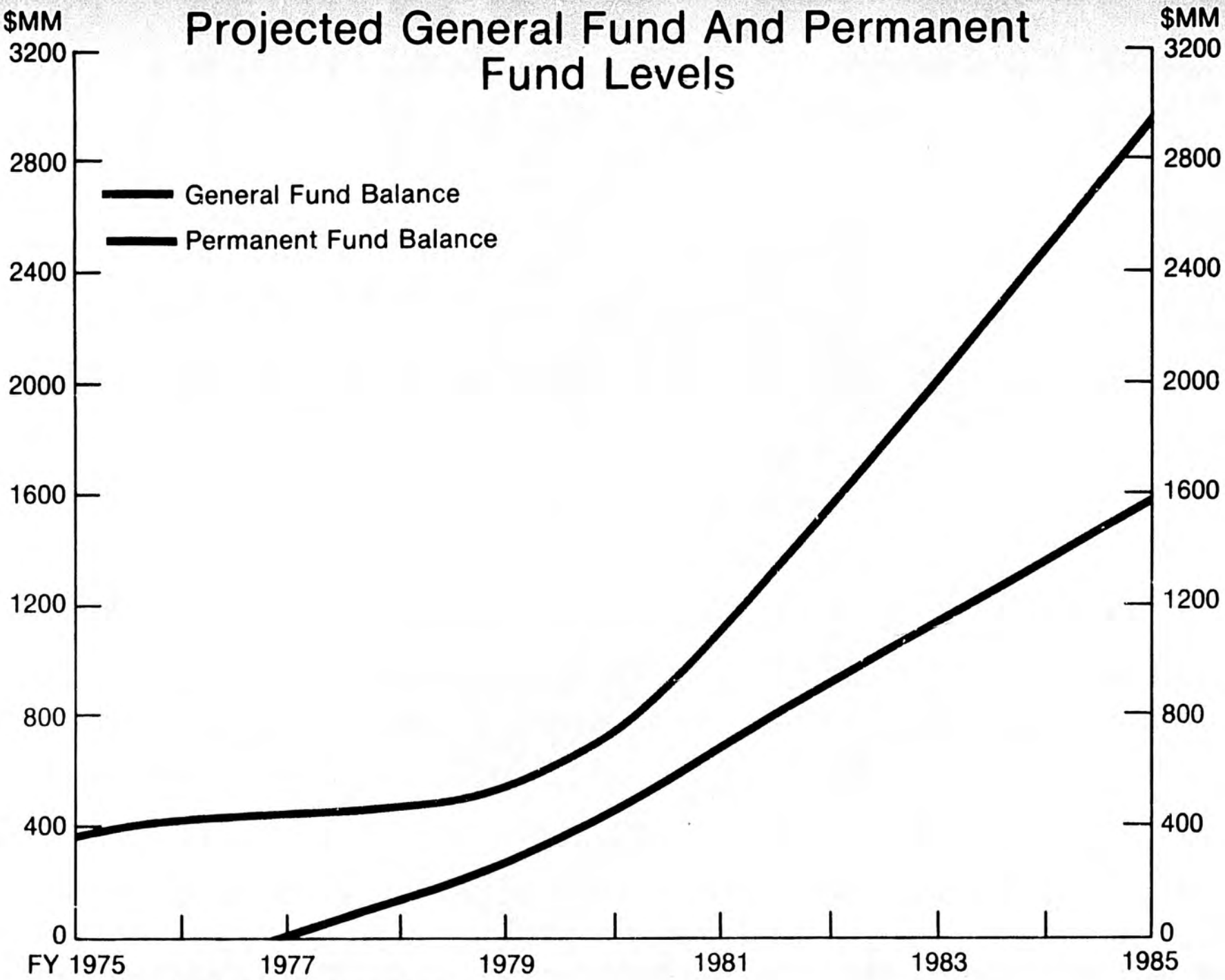
**Date of major lease sale by the state of Alaska

Estimates Of State Of Alaska's Revenues, Expenditures And General Fund Level*



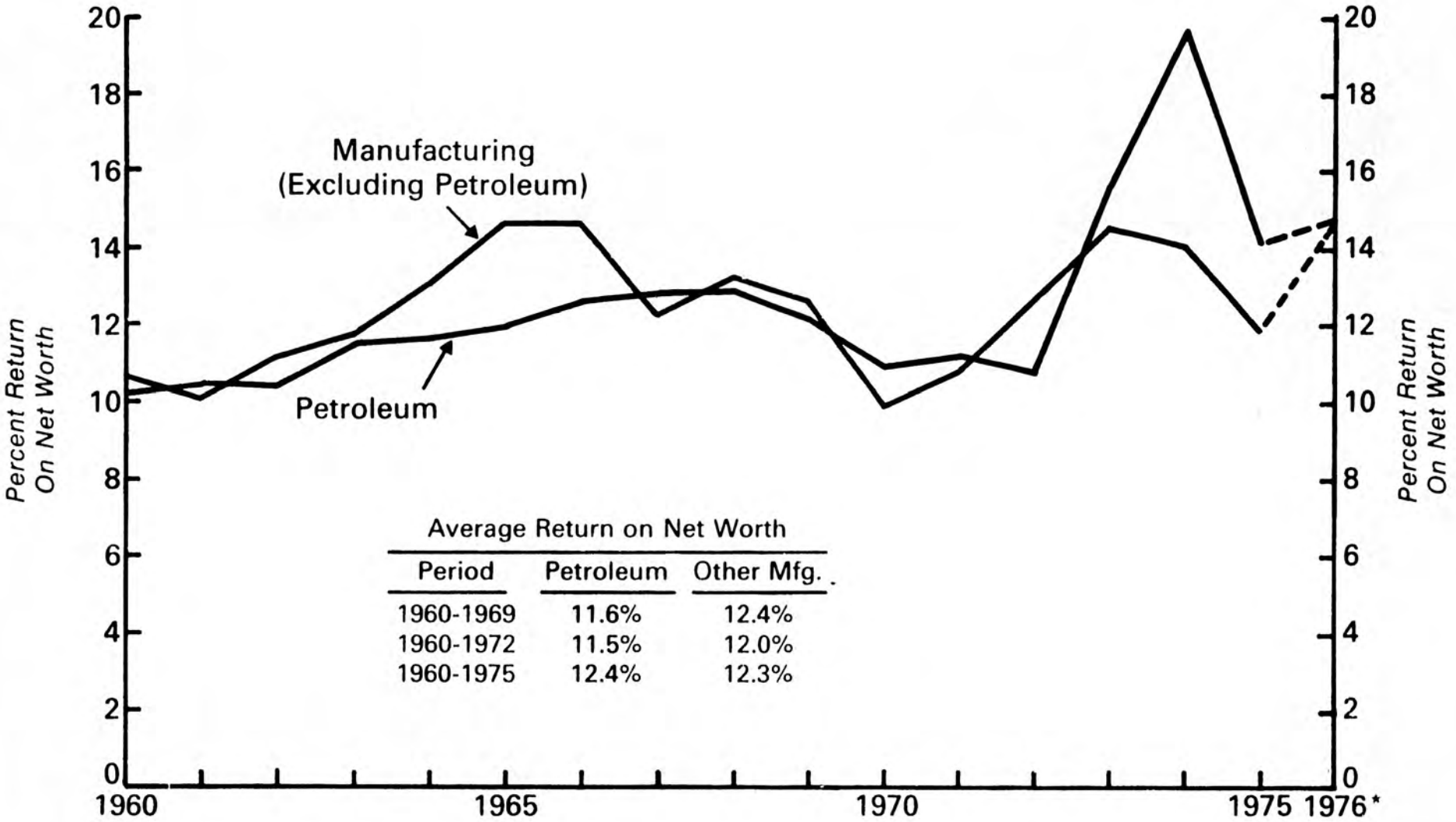
Projections By The Legislative Affairs Agency Dated 5/26/76

Projected General Fund And Permanent Fund Levels



Source: Legislative Affairs Agency
State of Alaska (May 26, 1976)

Petroleum Industry Returns Historically About Equal To All Other Manufacturing



Average Return on Net Worth

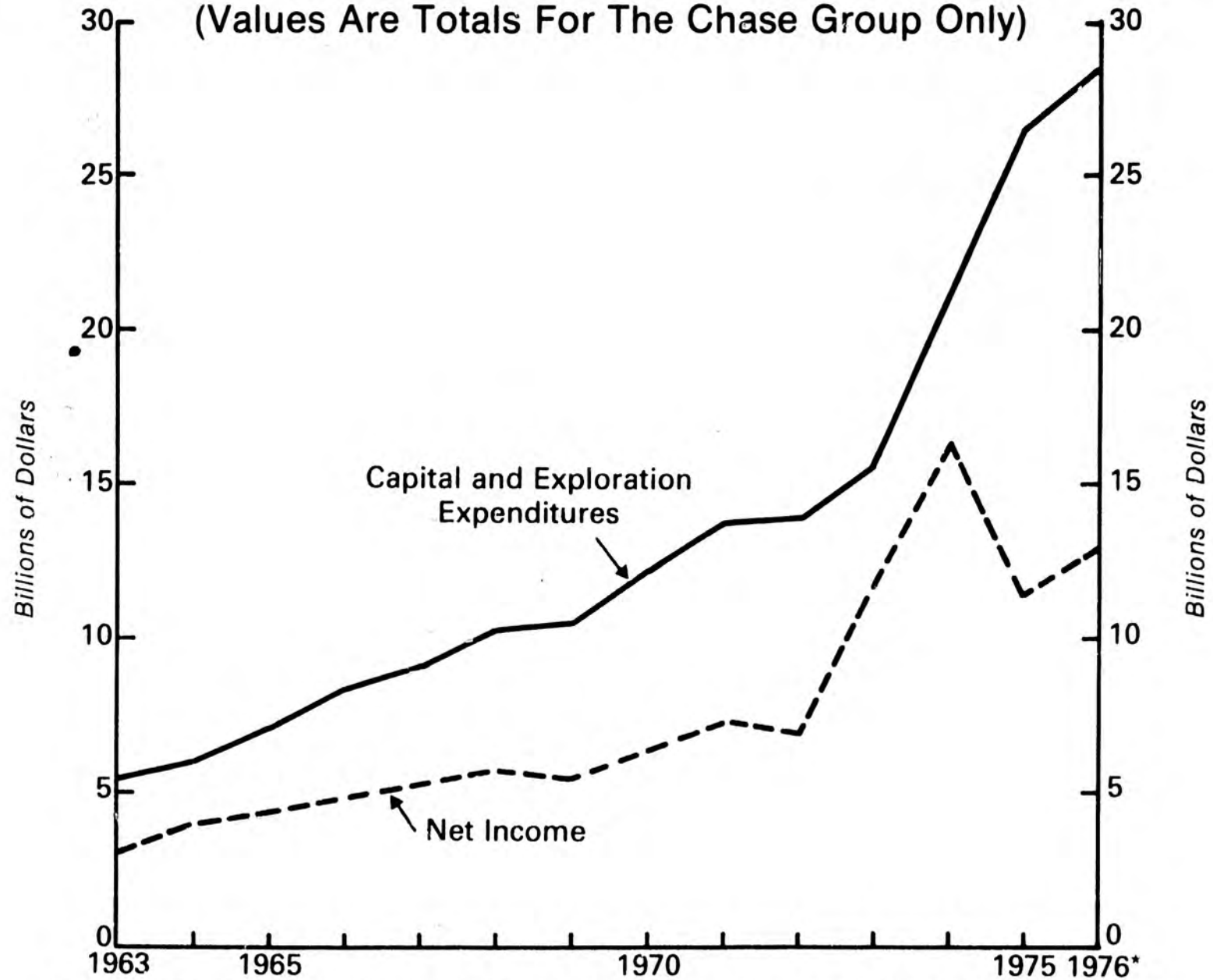
Period	Petroleum	Other Mfg.
1960-1969	11.6%	12.4%
1960-1972	11.5%	12.0%
1960-1975	12.4%	12.3%

**Estimate based upon 6 months 1976 FTC data*
Source: First National City Bank

A-5.1
B-2.1

Worldwide Petroleum Industry Investments Have Historically Been Greater Than Profit Levels

(Values Are Totals For The Chase Group Only)



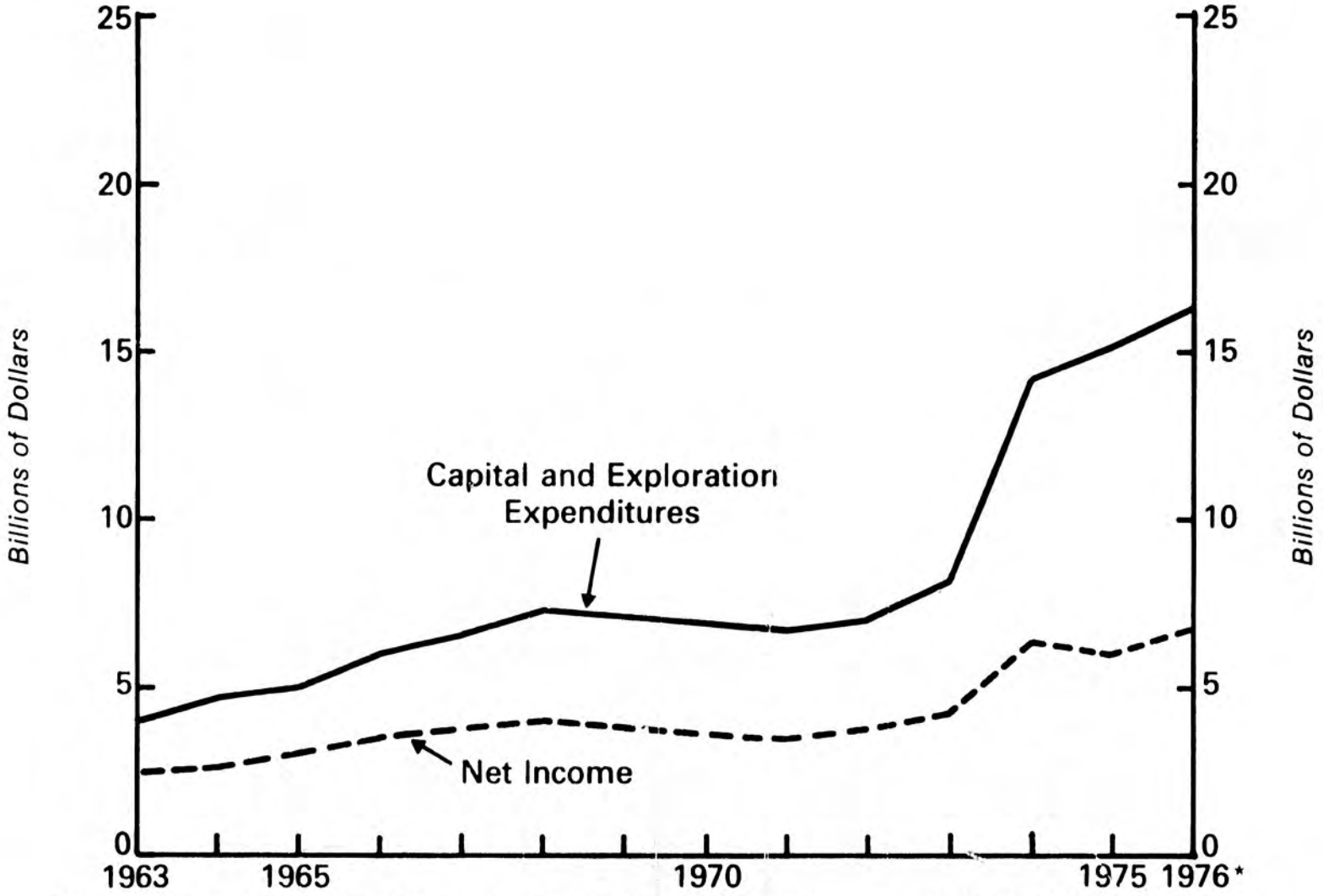
Source: Chase Manhattan Study of a Group of Petroleum Companies Which Constitute a Major Portion of the Industry

**1976 Estimated Based Upon 9 Months Preliminary Results*

B-2.4
A-5.3

Domestic Petroleum Industry Investments Have Historically Been Greater Than Profit Levels

(Values Are Totals For The Chase Group Only)

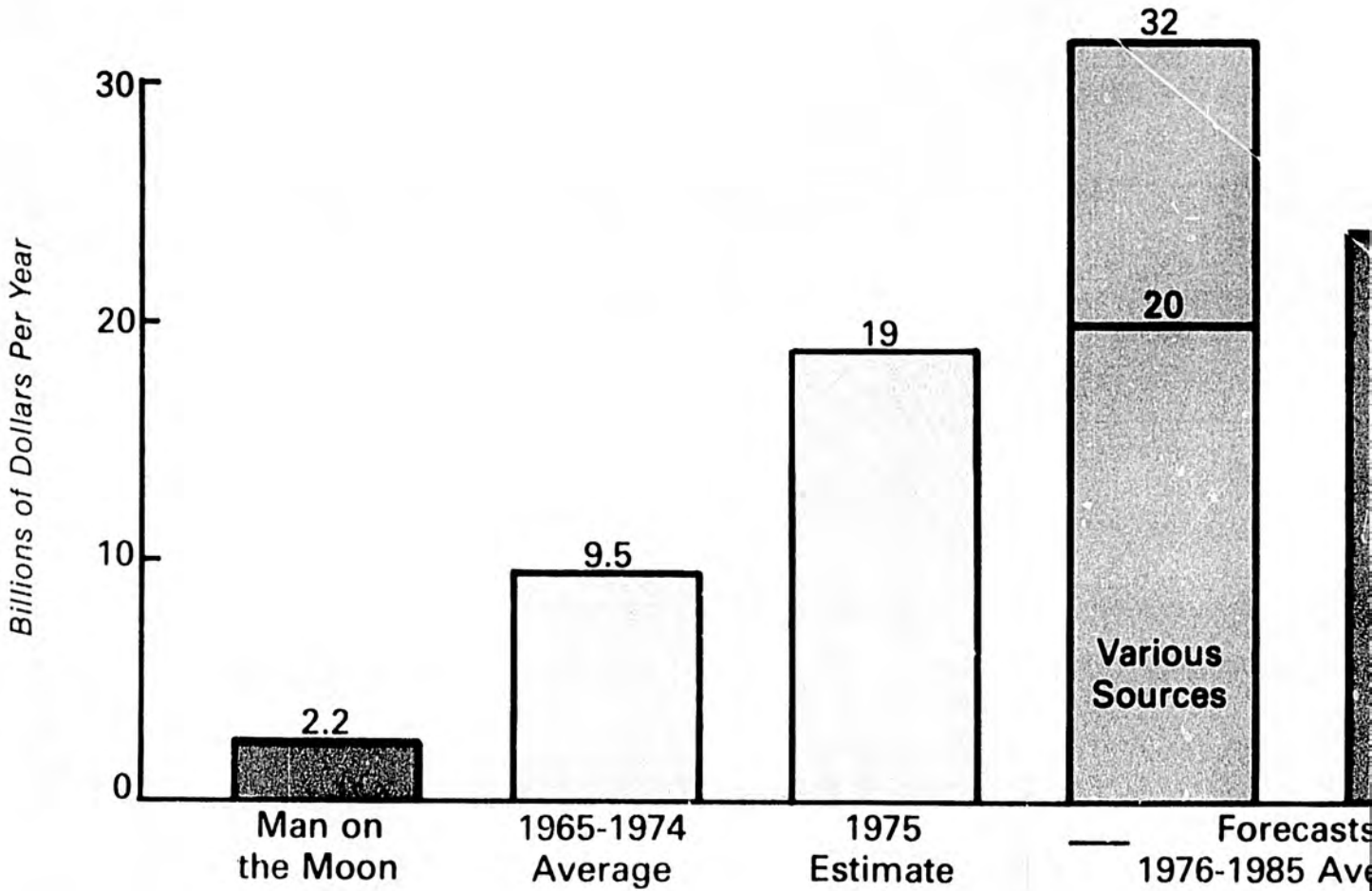


Source: Chase Manhattan Study of a Group of Petroleum Companies Which Constitute a Major Portion of the Industry

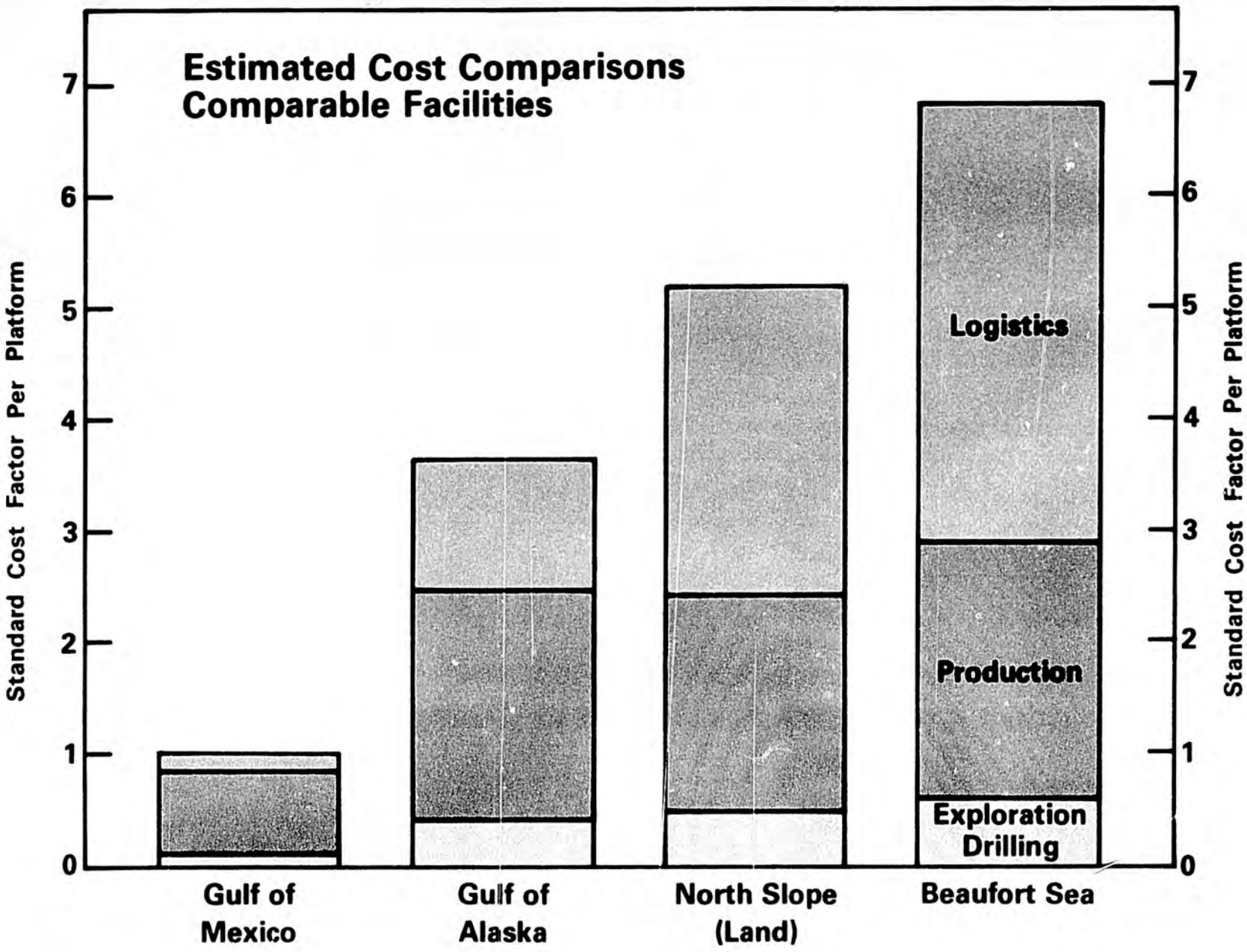
**1976 Estimates Based Upon 9 Months Preliminary Results*

B-2.5
A-5.4

Domestic Capital Expenditures For Oil And G
Are Forecast To Increase Over The Next Dec



B-2.6:


Estimated Cost Comparisons
Comparable Facilities
Standard Cost Factor Per Platform
0
1
2
3
4
5
6
7
Logistics
Production
Exploration Drilling
Gulf of Mexico
Gulf of Alaska
North Slope (Land)
Beaufort Sea

SCOMM

#217


Fairbanks
ALASKA
YUKON
Inuvik
Northway Jct.
Whitehorse
NORTHWEST TERRITORIES
Fort Simpson
Yellowknife
Hay River
Ft. Nelson
Westcoast
CANADA
Edmonton
Calgary
A.G.T.L.
Regina
Winnipeg
A.N.G.
T.C.P.L.
Great Lakes
Montreal
U. S. A.


Fairbanks
ALASKA
YUKON
Inuvik
FOOTHILLS PROPOSAL
NORTHWEST TERRITORIES
Northway Jct.
Whitehorse
Fort Simpson
Yellowknife
Ft. Nelson
Hay River
Westcoast
CANADA
Edmonton
Calgary
A.G.T.L.
Regina
Winnipeg
A.N.G.
T.C.P.L.
Great Lakes
Montreal
U. S. A.


ALASKA (USA)
Inuvik
Norman Wells
YUKON
NORTHWEST TERRITORIES
Fort Simpson
Yellowknife
Hay River
ARCTIC GAS PROPOSAL
Westcoast
CANADA
Edmonton
Calgary
A.G.T.L.
Regina
Winnipeg
A.N.G.
T.C.P.L.
Great Lakes
Quebec C
Montreal
to
U. S. A.


ALYESKA
Fairbanks
ALASKA
TRANS ALASKA ROUTE
YUKON
Inuvik
Northway Jct.
Whitehorse
NORTHWEST TERRITORIES
Fort Simpson
Yellowknife
Hay River
Ft. Nelson
ALASKA HIGHWAY ROUTE
Westcoast
CANADA
Edmonton
Calgary
A.G.T.L.
Regina
Winnipeg
A.N.G.
T.C.P.L.
Great Lakes
Quebec Ci
Montreal
U. S. A.

TESTIMONY SUBMITTED BY:

S. ROBERT BLAIR
PRESIDENT AND CHIEF EXECUTIVE OFFICER
THE ALBERTA GAS TRUNK LINE COMPANY LIMITED

for the joint hearings of the

INTERIOR AND INSULAR AFFAIRS COMMITTEE

and

COMMERCE COMMITTEE OF THE U. S. SENATE

regarding

THE FOOTHILLS OR "MAPLE LEAF" PROJECT FOR TRANSMISSION OF MACKENZIE DELTA GAS

- - -

THE ALTERNATIVE METHODS FOR TRANSMISSION OF PRUDHOE BAY GAS

(1) FAIRBANKS - ALASKA HIGHWAY ALL-PIPELINE ALTERNATIVE

(2) GAS TO METHANOL CONVERSION ALTERNATIVE

March 24, 1976

Mr. Chairman Jackson;
Mr. Chairman Magnuson;

My name is Robert Blair and I reside in Alberta, Canada. I am here today through invitation of a letter from Senators Magnuson and Jackson and offer to describe to you as background information, the Maple Leaf Project for connection of Canadian gas from the Mackenzie Delta/Beaufort Sea area. Also I agree to respond to the request of the Joint Committee for information with my views with respect to the transportation of Alaska gas across Canada via a Fairbanks Corridor - Alcan Highway system or its marketing through a methanol conversion system.

My principal job is President and Chief Executive Officer of The Alberta Gas Trunk Line Company Limited (Alberta Gas Trunk). That Company was formed in 1954, by special act of the Alberta Legislature, to provide the residents of Canada's principal petroleum-producing province with a medium for direct investment as shareholders in the petroleum industry then emerging. Alberta Gas Trunk gathers and transmits about 70% of the natural gas produced in Canada and is also engaged in other natural gas business and in petrochemicals and manufacturing.

I serve also as President and Chief Executive Officer of Foothills Pipe Lines Ltd. (Foothills), an applicant Company incorporated by special act of the Parliament of Canada which is proceeding, sponsored by Alberta Gas Trunk and Westcoast Transmission Company Limited (Westcoast), through regulatory

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procedures and parliamentary review in Canada. Westcoast gathers and transmits the gas produced in the province of British Columbia and so handles another 20% of the natural gas produced in Canada. The Chairman and Chief Executive Officer of Westcoast is also the Chairman of the Board of Foothills and the President of Westcoast is also a Vice President and Director of Foothills and so these two of the three major gas pipeline companies in Canada are joined in sponsorship of Foothills. Westcoast, Alberta Gas Trunk and Foothills propose to constitute the gas transmission service arrangement called the "Maple Leaf Project".

Foothills' one and only application is to install a pipeline for the new frontier gas being developed in the Mackenzie Delta and Beaufort Basin in Canada, to connect to the main existing systems in Canada and provide gas to the communities in the Mackenzie Valley and Great Slave Lake areas.

The pipeline design proposed by Foothills represents the best assessment of Westcoast and Alberta Gas Trunk of the most orderly, economic and manageable route and sizing for connection of the Mackenzie Delta gas.

In response to the Committee's Questionnaire dated January, 1976, Foothills, and its sponsors filed a submission with your Committee on February 11, 1976. My remarks today will first summarize the material contained in that submission, if you approve, Mr. Chairman.

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The application by Foothills is to construct an entirely Canadian-owned and operated natural gas pipeline of 42 inch diameter from the Mackenzie Delta/Beaufort Sea area south through the Mackenzie Valley to a delivery point near the 60th parallel (northern boundary of the Provinces of Alberta and British Columbia). From this point, interconnections will be made with the mainline facilities of Westcoast and of Alberta Gas Trunk. The gas will then be transported through the present western Canadian transmission companies facilities, much of it to a point of interconnection near the Alberta/Saskatchewan border with TransCanada PipeLines Limited (TransCanada). The gas will then be transported by TransCanada to the markets east of Alberta. A map is attached at the end of this testimony.

Presently, the applications of Foothills and Canadian Arctic Gas Pipeline Ltd. (Arctic Gas) for construction of their respective pipelines are pending before the National Energy Board. A hearing of those applications, which commenced on October 27, 1975, has been effectively terminated by a decision of the Supreme Court of Canada which held that the Chairman of the Panel hearing those applications should not hear the applications.

At the date of the preparation of these remarks, the National Energy Board had appointed a new panel to hear the applications but had not fixed a new date to commence a new hearing, although

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I expect such a hearing might commence during the latter part of April. The hearing will have to start from the beginning and it is my view that they will continue well into 1977. The report to be made by the National Energy Board as a result of the hearing will then be forwarded to the Canadian Cabinet, which has committed to referring the entire matter to the Canadian Parliament for debate.

In addition to the proceedings before the National Eenrgy Board, there is a concurrent hearing being held by Mr. Justice Thomas Berger to inquire into and report to the Canadian Government upon the terms and conditions that should be imposed in respect of any right of way that might be granted by the Canadian Government for the purposes of a Mackenzie Valley pipeline. It is my expectation that this hearing will not conclude until late in 1976, at which time Mr. Justice Berger's recommendations will go forward to the Government for its consideration. In addition to these proceedings, there are transactions involving definition of the future lands entitlements and political rights of the native and other residents of the entire Northwest Territories which must also proceed before construction of any main pipeline there.

Therefore, while Foothills' requirements for authorizations are simple, and its engineering and construction plan is completed, it is acknowledged that considerable time is still needed for regulatory and government decisions. The first

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production of gas in the Mackenzie Delta is presently scheduled nominally for 1981 by the producers. It is not known yet whether the overall development will achieve that schedule. Foothills itself is ready to proceed at whatever time a gas pipeline service is in fact required.

In this forum today I am supposing that you will not want a review of every reason for the difference between the Maple Leaf and Arctic Gas projects. That comparision is occurring on record in Canada and is available to your staffs. May I just present to you in that respect that we know the situation in Canada, are natural gas pipeline operators by trade, and are committed very earnestly and optimistically to Foothills' project. I will just summarize some major differences between the Maple Leaf project and the Arctic Gas project, insofar as the Canadian public interest is concerned. First, rather than construct an entirely new express system through Canada as Arctic Gas would do, Foothills proposes to utilize existing Canadian pipeline facilities to the fullest extent possible with resulting benefit to other users. Secondly, by this same approach, we are able to hold our initial capital requirements down so as to avoid a depletion of financial resources needed for other worthy projects. Third, since the initial capital requirements are minimized and spread over several operations, financing can be achieved with less

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difficulty. Fourth, our project provides for complete share ownership by Canadians. Fifth, the Maple Leaf project offers Canada a project which will be subject to present and future regulation by only one sovereign jurisdiction. Sixth, the Maple Leaf project can be financed without government funds. Seventh, our project relies upon pipe produced in Canada and is more cautious in its construction plan and operating pressures.

Another major point of contention is sufficiency of Mackenzie reserves. The latest estimate of reserves in the Mackenzie Delta/Beaufort Sea area on a most likely basis, made by Foothills, was 6.2 trillion cubic feet (Tcf). The designation "likely", or "most likely", refers to that quantity of gas which, on an engineering basis, will ultimately be produced from a reservoir. This is the nomenclature gaining preference for frontier sources by other organizations, including the Geological Survey of Canada. Foothills' consultants believe that it is still unrealistic to use conventional designations such as "proved, probable, and possible" insofar as reserves in the Mackenzie Delta are concerned, since delineation drilling, which is required to make a final evaluation of reserves on this basis, will not be sufficiently advanced until after a pipeline is certificated.

Drilling activity during the 1975/76 drilling season has resulted

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in a significant gas find by Sun Oil Canada Ltd. at their Sun Gary location, and delineation drilling by Gulf Oil Canada Ltd. at Parsons Lake has resulted in increased reserves for that reservoir. Foothills expects that once the well information on these successes is made available, reserves in the Mackenzie Delta area will be approximately 7.7 Tcf on a most likely basis at this date, excluding gas which may be added as a result of other exploratory wells now being drilled.

Foothills' consultants have estimated the ultimate potential for the Mackenzie Delta area, including the offshore to a water depth of 600 feet, to be 39.1 Tcf. This is the most conservative estimate of ultimate potential made to the National Energy Board (NEB) of Canada during its 1974/75 supply-requirements hearings. Estimates ranged from 39.1 Tcf by Foothills to 110 Tcf by the Canadian Petroleum Association.

Representatives of the Arctic Gas consortium have frequently asserted that Canadians have no choice other than to "piggy-back" their Mackenzie Delta reserves on top of Alaskan gas being transported through Canada. Mackenzie Delta reserves alone, it is argued, are not sufficient to finance and economically justify an all-Canadian pipeline. Foothills, Alberta Gas Trunk, and Westcoast strongly disagree with this claim. The construction of the Foothills pipeline to deliver 1.2 billion cubic feet of gas per day requires only 2 billion dollars. This provides

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a complete 42-inch line with four compressor stations. Later expansion from that level to a capacity of 2.4 billion cubic feet per day is accomplished by the addition of more compressor stations and the money for this expansion can come from internal cash flow and normal financing by the established companies. Therefore, at the time the project is financed - and it looks now as if this will be not earlier than late 1978 for equity and late 1979 for debt -- it will only be necessary to show that there are enough reserves to sustain a flow of 1.2 billion cubic feet per day, or less, for sufficient years to pay out the line. This is calculated to require from 7 to 8 trillion cubic feet.

Threshold volumes to build the pipeline are, therefore, not 15 to 18 trillion cubic feet as some people have publicly claimed; they are more like 7 to 8 trillion cubic feet.

With regard to cost of service, or unit cost of transportation, the claim has been made that the unit cost of delivering Mackenzie Delta gas to Canadian markets through the Maple Leaf project will be too high, and that for this reason, also, Delta gas must be "piggy-backed" on top of Alaskan gas in a 48 inch line to obtain acceptable unit costs. This is not so. We are completely familiar with normal economies of scale which make unit costs somewhat lower as line sizes get larger but, in this case, there are some offsetting factors. Main among these is

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that the Maple Leaf project makes use of conventional materials and present organizations and facilities to transport the gas south through Alberta and British Columbia instead of having a wholly new organization and new facilities for this section. This Alberta section amounts to about half the total distance between the Mackenzie Delta and the delivery point to Trans-Canada at the Alberta-Saskatchewan border.

When the Arctic Gas project was originally conceived, it was anticipated that substantial quantities of natural gas from the Mackenzie Delta would be declared "surplus" to Canadian requirements, and, therefore, would be made available for additional export to the United States. It is now generally recognized, however, that Canada will need the Delta reserves to satisfy its own growing demand. In fact, the National Energy Board of Canada has recently issued a report finding that:

> "Without substantial supplies from Canada's Frontier areas, growing domestic requirements could not be satisfied beyond 1984 even if all exports were diverted to domestic markets as required. Without substantial further development of the conventional producing areas they could not be satisfied beyond 1979 even with exports diverted to domestic markets as required to meet domestic deficiencies."

Another topic closely associated with the northern pipeline project is the native land claims issue. Foothills is sympathetic to native land claims and would prefer to have them settled

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before construction of a pipeline begins. Because of regulatory requirements, Foothills believes there is time for this to happen. Foothills is also aware of the growing need in eastern Canada for the energy from the north. This need must be weighed against the need for time to settle northern affairs. The Maple Leaf group is actively attempting to find a solution to these divergent requirements by working diligently on a program to increase the supplies of gas from Alberta over the interim period until the northern pipeline can be completed. There is definite probability of this being accomplished.

Foothills' construction schedule can be tailored to suit Canadian needs for thorough regulatory proceedings and settlement of native land claims. Arctic Gas's construction schedule cannot be tailored to meet Canadian requirements because of the urgent need of the United States for the Alaska gas.

Foothills and its sponsor companies, Alberta Gas Trunk and Westcoast, fundamentally believe that United States - Canadian relations will be strengthened through the construction of separate and distinct Arctic transmission systems. Accordingly, we are differing from the joint project which has been proposed by the Arctic Gas consortium.

Above all, the Congress should not labor under the impression that Canada needs the Arctic Gas project in order to gain access

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to its Mackenzie Delta reserves. The Maple Leaf project offers Canadians an opportunity to own, operate, and manage their own Arctic transmission system for their own total benefit.

In Canada we are therefore considering some of the same problems which you are considering for United States gas. Your invitation asked for our views on alternative approaches for the delivery of Alaskan gas to its intended markets.

In Alberta Gas Trunk and with Westcoast, we have made some assessment of such alternatives. We are certainly not presuming any responsibility or initiative. Our interest occurs so far partly because we have business friends and other contacts in the United States who have raised the question with us of whether there is not something more that we could contribute to a difficult situation over and above our present actions to maintain the present export deliveries from Canada to the United States. Another interest is from our realization that if there is any main development coming our way as a matter of natural self protection we had better keep our heads up and size it up and see what it might do to us. One thing plain to all of us is that each and any arctic gas pipeline project has the potential to really rock our whole natural gas service industry and shake up regional industrial economy and even our Canadian economy by requirement of capital, materials and construction forces; and could quite possibly rock our political environment through

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focusing of international, provincial and territorial government issues. In light of past Canadian pipeline experience we would be foolish not to see that such impacts are there potentially so we do try to keep all of the main possibilities under continuing review.

Whichever choices of routes and specific service objects may exist, we do believe consistently in the practices of identifying a manageable project design, keeping the initial capital cost as modest as we can correlate with long-term unit cost advantages and above all in watching out for public and political concerns at all levels. Our companies are large in western Canada but they are not large enough to afford to share in any serious international investment or utility mistake.

In this atmosphere, we have not been surprised to receive inquiry from business and government people in the United States in a direction very similar to that which we expound within Canada. It has been suggested to us that compared to the present applications there may occur a somewhat smaller initial production of the oil-associated natural gas from Prudhoe Bay than advertised, a more gradual or at least a less certain build-up of those production quantities in the early years of operation, more accommodation of the State of Alaska's positions on gas routing and more utilization of existing transportation installations. We have considered what our views would be about a deliberate plan to minimize and also spread out the initial capital cost of

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transmission facilities for Alaska gas until more information becomes available. We would have some immediate cautions about Canadian participation that I'll note shortly. However we have made an estimate of the cost of carrying Alaska gas from the Alaska-Yukon Border near Northway Junction along the Alaska highway to Fort Nelson and thence through Westcoast's and Alberta Gas Trunk's systems to the 49th parallel in southern B.C. and Alberta; the gas destined for the western United States to go through Westcoast's system and that destined for the eastern United States to go through Alberta Gas Trunk's system. Our estimate was based on a 42 inch diameter pipeline being built along the Alaska highway from Northway Junction to Fort Nelson to carry an initial volume of 1 billion cubic feet per day, rising over 4 years to 2.4 billion cubic feet per day. At Fort Nelson the gas was assumed to split approximately 30% through Westcoast's system and 70% through Alberta Gas Trunk's system by gradual expansion of these systems as required. I should point out that our estimates are of a preliminary nature but have been done with enough care so that we are confident they give reasonably accurate results.

In addition, in order to be able to get an idea of the total cost of delivering Prudhoe Bay gas to the 49th parallel we have made an estimate of the costs of a 42 inch pipeline across Alaska from the North Slope along the route of the Alyeska pipeline to Delta Junction and thence from Delta Junction along

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the Alaska highway to Northway Junction. This estimate must be considered less reliable than the estimate we have made for Canada.

The Joint Committee's invitation to file testimony in advance has developed on brief notice to us and my colleagues are using the days before my appearance on March 24 to work up our most current figures which I will be able to give at the time of the appearance. I will provide the information we have.

Such study of a Fairbanks - Alaskan Highway Corridor is probably worthy because, besides the assumptions mentioned above, attention has been called by others to its relatively low environmental sensitivity, good construction logistics, good operations access, prompt lands claims settlement and other favourable factors. However, I emphasize that a real business response to this kind of arrangement could only occur if there was an initiative from the United States to seek such a service and also if the governmental authorities in Canada let us know that it was their choice that we endeavour to work out such an alternative. I just mean to underline from my own limited base of authority in Alberta Gas Trunk that while we are far from "isolationalist" and do act energetically to market commodities or services to the United States, whenever we can develop new business at arm's length and obtain a satisfactory return and value added in Canada, for this Alaska situation we are not

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ourselves sponsoring or proposing a new project. We are just explaining our reaction now to a future possibility which has been raised. We could only go further if there were an American request and Canadian government request and sanction and also if there were the express endorsement of our close partner Westcoast.

It is a fact of life that pipelines do a great deal more for the highly populated areas that they go to than for the country through which they pass. For the large capital investment needed the region traversed gets relatively small benefits in cases in which the transmission operation is strictly an express-through job. This is a matter requiring the greatest of attention by the State of Alaska. This is also the reason Foothills proposes certain accommodations to the Northwest Territories through which our pipeline will pass. And it is a weighty factor my Company has to consider in agreeing to carry any foreign gas across the Province of Alberta.

For under $50 million of capital investment Alberta Gas Trunk and a partner have installed enough methanol manufacturing capacity in this province to change Canada from being a 90% importer of methanol into being self-sufficient in this supply plus having about 75% more than Canadian requirements available for export sales until the Canadian market grows to need it all.

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In the matter of priorities I would have, I feel more interested in investing $50 millica that way than in investing $250 million to express Alaskan gas through Alberta, frankly. The demands of capital investment as well as management and engineering-construction would quite outweigh the commercial gain in transmission business. So while as a utility operation it is not in our policy to refuse any help to a neighbour with a problem I have wanted to emphasize that my own judgment is that any such help should be partial and supplementary and that in no way are we out selling ourselves into seeking the whole job and responsibility.

We have given some thought to the kind of cautionary provisions which we should point out early in any such discussion and in our view they are as follows:

1. That in any application by a pipeline company in Canada to provide transmission services for some of the gas to be produced from Alaska there be particular recognition, expressed in the application and any forms of contract, that besides the commercial undertakings for transmission there needs to be also a future decision of principle by the Government of Canada. The principle is whether to confer a long-term transmission service access for Alaskan gas to U.S. markets through routes crossing

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western Canada by 1500 miles or more, subject to Canadian regulatory authority.

2. Similarly, that there be particular recognition that there must be decisions by the provinces of Alberta and British Columbia and the National Energy Board that the gas pipeline companies providing service for gas produced in those provinces may integrate through their systems a further service for the transmission of Alaskan gas to U.S. markets.

3(a) That the arrangements for transmission of some Alaskan gas across western Canada be accompanied with other long-term arrangements to move other Alaskan gas intrastate and also interstate as by liquefaction and ocean transport within the U.S. jurisdiction, so that Canadian companies shall not inherit complete responsibility for all future investment in providing and expanding transmission capacity for future gas production from the North Slope of Alaska.

(b) That the design of the new 800-mile pipeline connection in Canada not exceed the size and specification of pipe available tried and true from Canadian and other North American pipe mills nor exceed the project scale capable of orderly financing without financial contribution or guarantee by governments in Canada.

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4. That transmission services to move Alaskan gas a further 700 miles to 800 miles through British Columbia or Alberta to delivery points from those provinces across the 49th parallel or through TransCanada to points of delivery eastward, be provided on terms to United States shippers of Alaska gas which are not more favourable to such shippers than to concurrent terms of service to Canadian users.

.. That Canadian pipeline operators transmitting Alaska gas shall exercise similar rights and responsibilities in the operational use and handling of the gas as for Canadian gas in their possession.

After having pointed out all these serious conditions which must be considered I would like to point out that in our opinion this overall scheme could have some definite advantages.

One extremely important point is that it removes several uncertainties about construction. The construction in Alaska can take place along the route of the Alyeska oil line, it can be built off the same gravel pad. From Fairbanks to Fort Nelson it follows the Alaska highway which provides excellent access for materials and construction. From Fort Nelson south, it is merely expansion of existing systems. Along the whole route of the pipeline there are excellent airstrips providing quick access. Construction of all sections of the line would

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therefore be by conventional methods and this should not only reduce the initial capital costs but substantially reduce the possibility of cost overruns. The fact that there would be excellent all-year access to all sections of the line would eliminate the possibility of lengthy interruptions of service and could eliminate the need for an all events tariff.

If this project could be started shortly after the completion of the Alyeska line all the equipment, and camps, and all the manpower mobilization and administration associated with that project could be utilized for the gas line project, thus effecting substantial savings.

There is the other alternative which we have been asked about because of our recent installation of two world-scale methanol manufacturing plants in Alberta, which is that quantities of natural gas be converted to methanol and moved to market as a liquid energy source. We have had a brief look at that alternative and have two immediate reactions. The first is that some of the factors which have caused us to move aggressively in Alberta in the manufacture of chemical grade methanol probably exist in Alaska too. The merits of developing industrial benefits for the producing state or province by adding value through processing locally, using some of the raw hydrocarbon for locally based and owned industry, are bound to come up in Alaska too and personally I cannot do anything but

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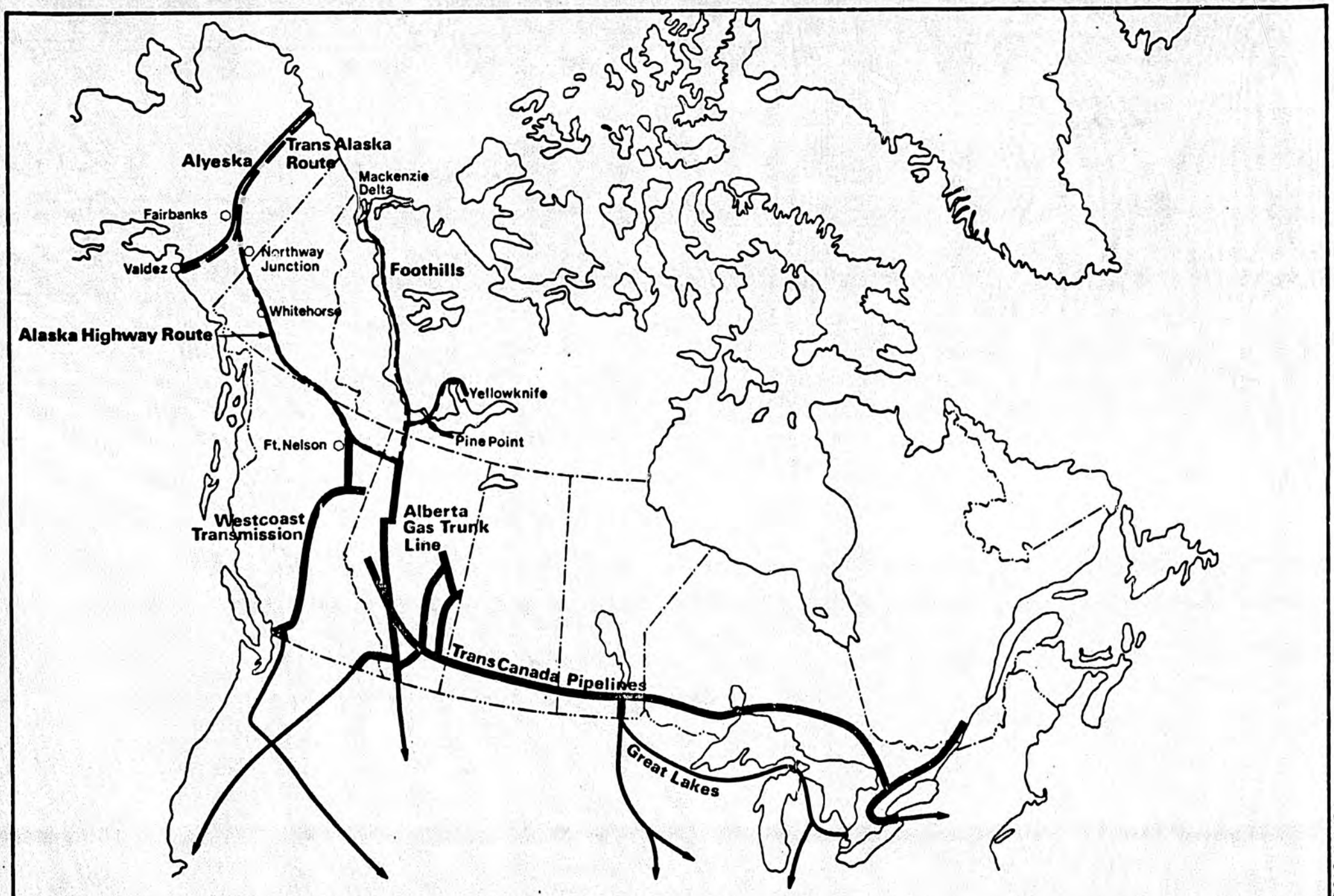
enthuse about those purposes. It doesn't take much gas to make methanol or ammonia-based petrochemicals and we maintain that while exporting all those jobs to other more populated areas through a pipeline, it is just plain right to keep a bit of a supply at home and give the local economy a share of the action.

However, as to converting all of the natural gas produced into methanol, as an energy transportation mode, our people are very negative. I admit of course that because we have become one of the larger producers and marketers of chemical-grade methanol in North America, we would have a clear conflict with the sudden appearance on the market of new methanol in quantities which, for each 1 BCFD converted, would be equal to three times the United States requirement in 1973 - 74, even if its cost-base were much higher than ours. So please don't consider us to be detached as to business interest.

My methanol-expert colleagues have been asked about the possible feasibility of this alternative and judge that it would be both too expensive and too inefficient in terms of energy conversion to stand comparison with pipeline transmission as the means of moving the main gas stream from Prudhoe Bay. I have asked them for their latest figures and estimates and for their appraisal of the Institute for Energy Analysis Report dated November 1975 and will report our information and views when I appear as a witness.


Alyeska
Trans Alaska Route
Mackenzie Delta
Fairbanks
Valdez
Northway Junction
Foothills
Whitehorse
Alaska Highway Route
Yellowknife
Pine Point
Ft. Nelson
Westcoast Transmission
Alberta Gas Trunk Line
Trans Canada Pipelines
Great Lakes

PLAN. 0100-0

ADDENDUM TO THE TESTIMONY SUBMITTED
BY
S. ROBERT BLAIR TO THE
JOINT HEARINGS OF THE
INTERIOR AND INSULAR AFFAIRS COMMITTEE
AND
COMMERCE COMMITTEE OF THE U.S. SENATE

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However, we have also completed estimates of the capital costs and transmission service charges for a pipeline connection for Prudhoe Bay gas across Alaska and Western Canada to the head ends of the existing transmission systems in Western Canada, and by using those systems, to delivery points along the 49th parallel. The total capital investment required to place this system in operation for 1981 is just under $4.0 billion, in escalated dollars. The system estimated would employ 42" diameter pipe for the whole of the route of the new connection, to carry about 1 billion cubic feet per day initially, increasing to 2.4 Bcf per day with progressive expansion of capacity by adding compressor stations. Of the initial investment about $1.9 billion would be invested in the State of Alaska along the route of the Alyeska pipeline shown yellow on the attached map, $1.6 billion would be invested in the new main line connection within Canada as shown in green along the Alaska Highway on the attached map, and $0.5 billion would be investment in expansion of the existing systems of Westcoast Transmission in the Province of British Columbia and

of Alberta Gas Trunk Line Company Limited in the Province of Alberta. When the system is expanded to full capacity the cumulative escalated capital investment would be about $5.4 billion and the total costs of service to move the Alaskan gas to points on the International boundary would run about $1.12 per million Btus. We have confidence in the accuracy of these estimates within Canada and believe that our approximation of the costs in Alaska is reasonably indicative. We conclude that as far as engineering and construction factors are concerned such a system is manageable and even rather superior in its practicality. If approved by all concerned, it could apparently provide the capacity to move the Alaskan gas to the lower 48 states at a unit cost favorably comparable with any other project or proposal submitted.

For these estimates our engineering and construction management staffs assumed that 30% of the Alaskan gas would go down to the State of Washington through the Westcoast Transmission system and the remaining 70% would go to U.S. companies taking delivery from the south end of the Alberta Gas Trunk Line system or to TransCanada Pipeline, for further transmission to the midwestern and northwestern states. I should also mention that in these overall estimates we have covered the costs of all of the systems shown on the map, except that eventual gas pipeline from the Fairbanks area to Valdez also shown in yellow on the map, about which I will comment shortly in explaining our basic policies about this whole proposition.

Page 20
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My company's Planning and Development Department has reviewed carefully a copy of a report by the Institute for Energy Analysis and perhaps I can most effectively summarize their conclusions by comparison with the conclusions of the Institute's report, which I know have been submitted to this Committee. Our people believe that the conversion efficiency of methanol synthesis in arctic manufacture would be lower, 49% rather than 63%, that capital costs would be about double those estimated by the Institute and that it would be appropriate to assume substantially higher field gas prices; we used $1.70 per MMbtu compared to the Institute's 50¢. We also believe it appropriate to use a faster depreciation rate and to assume that the tariff for the Alyeska Pipeline would apply to the methanol as much as to the oil. When all of these major estimating changes are applied our people have calculated that the cost of methanol F.O.B.-Los Angeles would be about 66¢ per gallon or $10.91 per million Btu's. That compares to 25¢ per gallon of methanol, equivalent to $3.69 per million Btu's as estimated by the Institute. On this basis the alternative mode of conversion to methanol appears beyond economic feasibility as a means to market the main Prudhoe Bay gas stream.

The report which I have received on this particular subject was prepared by our Department in conjunction with the President of the affiliate company through which we participate in methanol manufacturing and marketing. The company, Alberta Gas Chemicals

Ltd., has two methanol manufacturing plants and ranks fourth in methanol production capacity within North America. The report has been prepared especially for today's testimony and, Mr. Chairman, is available for the record or staff use or for such purpose as you wish.

AGENDA

GAS PIPELINE IMPACT COMMITTEE
MARCH 31

Rutherford

1:00-- Foothills Pipeline Co./ Westcoast Transmission.

Canadian industry to discuss feasibility of gasline down Alcan corridor. They are not sponsoring an AlCan routing.

3:00-- Northwest Energy Co.

Possible sponsors of an AlCan route. They might be willing to be US applicants if they can obtain some State royalty gas. Joe Beecroft

4:00--Response from Arctic Gas and El Paso to proposed routing.

Foot hill - 80% Albert Ba Trenkler
Bob Blair
Ron Rutherford

20% West coast Transmission
operate B.C. Pres Ed Phillips
here

Northwest says sponsor if get gas
Joe Beecroft

ADDRESS BY - R. M. RUTHERFORD
EXECUTIVE VICE-PRESIDENT, FOOTHILLS PIPE LINES LTD.
TO

THE ALASKAN GAS PIPELINE IMPACT COMMITTEE
MARCH 31, 1976

Mr. Chairman and members of the Alaskan Gas Pipeline Impact Committee - We are delighted to have been invited to appear before you to describe our Foothills - Maple Leaf Project.

My name is Ron Rutherford, and I am Executive Vice-President - the senior full time officer - of Foothills Pipe Lines Ltd. I bring you regrets from Mr. Robert Blair, the President of Foothills and also the President and Chief Executive Officer of The Alberta Gas Trunk Line Company Limited - one of Foothills' sponsors - that he could not be here. He was looking forward to coming but was called overseas to handle a crisis in one of Trunk Line's other subsidiary companies. It is really too bad that you did not have the pleasure of hearing Bob Blair, rather than me - because he is a giant in the gas industry in Canada. He is either President, Chairman, or Director of many Canadian companies, including Alberta Gas Chemicals Ltd., Alberta Gas Ethylene Company Limited, Grove Valve and Regulator Company, The Bank of Montreal, Canron Limited, Burns Foods and The Canadian Enterprise Development Corporation. He is also a member of the Economic Council of Canada, the Canadian Institute of International Affairs and the Canadian-American Committee.

He has also pioneered a great deal of the research into gas pipelining in the far North. His company has been actively involved in these efforts since early 1970. As operator of the original Gas Arctic Systems Study Group, AGTL initiated and supervised extensive studies in 1970, 1971 and 1972 to determine the feasibility of a major pipeline to connect Arctic supply areas with southern markets. Following the merger between that group and the Northwest Project Study Group in 1973 to form Canadian Arctic Gas Study Limited (CAGSL), AGTL continued to actively participate in similar studies as a member of CAGSL. When that group eventually established its own payroll in early 1974, by far the largest number of its technical staff were people who had been transferred from AGTL. By September, 1974, however, AGTL concluded that vital Canadian objectives, interests and timing were not being accorded sufficient recognition by the Study Group. As a result, AGTL withdrew from the Arctic Gas Consortium and soon thereafter launched, as an alternative, the Maple Leaf Project, which is an all-Canadian proposal to construct and operate a pipeline system that will connect the Mackenzie Delta supply area with Canada's existing transmission systems.

My own background is exclusively in the utility business and particularly in the gas utility business. I have both Engineering and Commerce Degrees, have been a senior officer in several gas transmission and distribution companies and for seven years worked world wide, out of San Francisco, as a consulting engineer for Bechtel Corporation. I have been involved in

several previous schemes designed to bring a project from the grass roots phase, right through to construction and operation. I came to Foothills from Westcoast Transmission Company Limited, where I was a Vice-President of the parent company and President of an operating subsidiary transmission and distribution company.

It is my intention today to describe to you the Foothills - Maple Leaf Project and tell you why we feel our project is in the best interests of Canada. Then I will describe to you the limited studies we have done on the Fairbanks-Alcan Highway Pipeline Route and the assessment AGTL has made of the transportation of Prudhoe Bay gas as methanol. I will be following very closely the outline given in Washington on March 24th by Mr. Blair to the United States Senate Committees on Interior and Insular Affairs and Commerce and I should point out that the material presented on the Fairbanks Corridor and methanol transportation came as a direct result of the Senate Committees' letter requesting such information - not at the instigation of Foothills.

But before I begin, I would like to introduce my colleagues. With me today is John Burrell, Vice-President of Corporate Development of Foothills, Dianne Narvik, Secretary of Foothills and Assistant Secretary of AGTL, and, Mr. Ed Phillips, President of Westcoast Transmission Company Limited, the other

sponsor of Foothills. When I finish I will ask Mr. Phillips to say a few words on behalf of Westcoast and then we will all be available to answer questions.

I have a set of four charts which I would like to hand out, because I will be referring frequently to these charts in my outline.

Firstly, I would like to describe the natural gas industry as it exists in Canada today. Chart 1, shows the existing gas transmission systems in Canada and the areas where gas reserves are located.

You will note that the gas productive areas in Canada - shown in red hatching - are located throughout Alberta; in northern British Columbia and the southern Territories; and along the western boundary of Saskatchewan.

The largest area of gas reserves in Canada is in Alberta where about 72 trillion cubic feet of reserves have been discovered to date, and where remaining reserves amount to 51 trillion cubic feet. Almost all the gas produced in Alberta is gathered and transmitted by The Alberta Gas Trunk Line Company Limited - the network of black lines shown in Alberta on Chart 1 - the only exception being some small portion of gas for local utility use.

The Alberta Gas Trunk Line Company Limited was formed in 1954, by Special Act of the Alberta Legislature, to provide the residents of Canada's principal petroleum-producing Province with a medium for direct investment as shareholders in the petroleum industry then emerging. Alberta Gas Trunk gathers and transmits about 70 per cent of the natural gas produced in Canada and is also engaged in other natural gas business and in petrochemicals and manufacturing.

AGTL transmits the gas produced in Alberta to various locations on the southern boundaries of Alberta for further transmission to markets east of Alberta and to the eastern United States, by TransCanada PipeLines, and south of Alberta into the export market by Alberta Natural Gas Company.

The second largest area of gas reserves in Canada is in northern British Columbia and the southern Territories. In this area some 11 trillion cubic feet of gas has been discovered to date and remaining reserves are approximately 8 trillion cubic feet. Westcoast Transmission Company Limited - the black line shown in B.C. on Chart 1 - gathers all the gas produced in northern British Columbia and the Yukon and Northwest Territories and transmits this gas south through B.C. to serve the B.C. market and to export to the Pacific Northwest. Westcoast handles approximately 20 per cent of the natural gas presently being produced

in Canada.

These are the two main producing areas in Canada. There is a relatively small volume of gas produced in Saskatchewan which is used within that Province and a still smaller volume produced in Ontario.

In the last few years significant volumes of gas reserves have been discovered in the Mackenzie Delta around the town of Inuvik - shown on Chart 1 - and even larger reserves in the far northern Arctic Islands.

Although not in Canada, we have also shown the location of Alaska's Prudhoe Bay gas on our chart. As you know, it is these Mackenzie Delta and Prudhoe Bay reserves which have resulted in the competitive applications for pipelines out of these areas.

I am not going to take the time to describe Gas Arctic's pipeline plan or El Paso's LNG plan in any detail because I am sure you are familiar with those. From time to time I will refer to them however - probably in a disparaging manner - when I am pointing out the superior aspects of our project.

THE FOOTHILLS - MAPLE LEAF PROJECT (Will you please refer to Chart 2)

The Foothills Project is a plan to construct a wholly Canadian owned and operated 42" diameter natural gas transmission pipeline from the Mackenzie Delta/Beaufort Sea area, up the Mackenzie Valley to a point near the 60th Parallel (the southern boundary of the Northwest Territories). This line is shown in red on Chart 2. From this point, a 30" mainline, to be owned and operated by Westcoast Transmission, will branch off and lead generally southwesterly about 140 miles to connect with the existing Westcoast Transmission system. Also, from the point near the 60th Parallel, another 42" mainline, to be owned and operated by The Alberta Gas Trunk Line (Canada) Limited, a Federal subsidiary of AGTL, will continue southward about 80 miles into Alberta to connect with the mainline system of AGTL. Lateral lines will be built to bring natural gas services to a number of the communities in the Mackenzie Valley region of the Northwest Territories.

The intention behind the project is to transport gas from the Mackenzie Delta/Beaufort Sea area through the Foothills' line to its points of connection with the systems of Westcoast and AGTL, thence through those systems and, on the eastward side of Alberta, through the TransCanada PipeLines Limited (TCPL) system to Canadian markets. The whole system to get the gas

to market, including Foothills, Westcoast, AGTL and TransCanada PipeLines is termed the "Maple Leaf Project".

As I have stated, the Foothills' portion of this system will be the 800 mile 42" diameter pipeline built in the Northwest Territories. The size and specifications of the pipe, as well as the compressor stations required thoughout its length, are planned to be standard and conventional. The pipeline design proposed by Foothills represents the best assessment of Westcoast and Alberta Gas Trunk of the most orderly, economic and manageable route and sizing for connection of the Mackenzie Delta gas.

NEED FOR NORTHERN FRONTIER GAS

Foothills' projections of natural gas requirements to meet Canadian markets plus existing export commitments; and supply from conventional sources, show that a shortage of supply will commence in Canada as early as 1977 and increase in severity in subsequent years as production from Alberta and British Columbia declines. This forecast was substantiated by most parties appearing before the National Energy Board in its Supply/Requirements Hearing in 1974, and indeed was confirmed by the Board's report following the hearing. Frontier supplies are therefore required as quickly as they can be attached, and in ever increasing volumes, if Canada is to meet its natural gas requirements.

The Delta of the Mackenzie Valley offers the most appropriate source for first supplies of additional gas. For the interim period, prior to the time that delta gas can be attached, the sponsors of the Foothills' project are attempting to develop a practical method whereby the supplies from Alberta to eastern and western Canadian markets can be increased.

OWNERSHIP OF FOOTHILLS

Foothills Pipe Lines Ltd. is a joint undertaking of Westcoast Transmission Company Limited and the Alberta Gas Trunk Line Company Limited. At present 80 per cent of the common shares are held by, or for, The Alberta Gas Trunk Line Company Limited and 20 per cent by, or for, Westcoast Transmission Company Limited. The two sponsor companies of Foothills (AGTL and Westcoast) expect other sponsors to join this venture in due course and have resolved that new participants must meet two prime qualifications as conditions precedent to the acquisition of shares in Foothills. Firstly, they must be able to provide substantial aid in getting the Mackenzie Delta gas to Canadian markets and, secondly, they must be Canadian; that is to say, a majority of their issued and outstanding shares must be clearly and demonstrably in Canadian hands. In addition, each must be of substance and have a high degree of financial integrity. As other sponsor companies join as participants, the AGTL percentage of the issued and outstanding shares will be reduced by transfers to the new sponsor companies.

The Chairman and Chief Executive Officer of Westcoast, Mr. Kelly Gibson, if also the Chairman of the Board of Foothills and the President of Westcoast, Mr. Ed Phillips, who is here with us today, is also a Vice-President and Director of Foothills and so these two of the three major gas pipeline companies in Canada are joined in sponsorship of Foothills.

PLAN OF OPERATIONS

Foothills will operate as a transporter for others who purchase the gas, charging for this service on a "cost of service" basis. "Cost of service" studies, based on planned throughput of the Foothills' pipeline, indicate that the Maple Leaf Project is an economically viable means of bringing Beaufort Basin gas to Canadian markets.

STATUS OF HEARINGS

Foothills and other members of the Maple Leaf Project filed applications before the National Energy Board to construct the various sections of the project and hearings commenced before that body on October 27th. At the same time, a companion application was filed with the Department of Indian Affairs and Northern Development and Foothills is presently appearing before Mr. Justice Berger in that regard. The hearing before

the National Energy Board was effectively terminated by a decision of the Supreme Court of Canada which held that the Chairman of the Panel, hearing those applications should not hear the applications. However, the National Energy Board has appointed a new panel to hear the applications and has fixed a new date of April 12th to commence a new hearing.

The hearing will have to start from the beginning and it is my view that they will continue well into 1977. The report to be made by the National Energy Board as a result of the hearing will then be forwarded to the Canadian Cabinet, which has committed to referring the entire matter to the Canadian Parliament for debate.

It is my expectation that the hearing being held by Mr. Justice Thomas Berger to inquire into and report to the Canadian Government upon the terms and conditions that should be imposed in respect of any right-of-way that might be granted by the Canadian Government for the purposes of a Mackenzie Valley pipeline will not conclude until late in 1976, at which time Mr. Justice Berger's recommendations will go forward to the Government for its consideration.

In addition to these proceedings, there are transactions involving definition of the future lands entitlements and political rights of the native and other residents of the entire Northwest Territories which must also proceed before construction of any main pipeline there.

Therefore, while Foothills' requirements for authorizations are simple, and its engineering and construction plan is completed, it is acknowledged that considerable time is still needed for regulatory and government decisions. The first production of gas in the Mackenzie Delta is presently scheduled nominally for 1981 by the producers. It is not known yet whether the overall development will achieve that schedule. Foothills itself is ready to proceed at whatever time a gas pipeline is in fact required.

CAPITAL COST AND FINANCING PLAN

It is estimated that the capital cost of the Foothills' system, when expanded to full capacity, will be 2.4 billion dollars in escalated dollars. Of this amount 1.9 billion dollars

will be financed and used to construct the pipeline to its initial minimum capacity and the balance of 500 million dollars to expand the system to full capacity will come from internal cash generated during operations.

AGTL will spend 406 million dollars to expand its system to transport first year volumes received from Foothills and progressively spend an additional 415 million dollars on further expansion to carry Foothills' full capacity volumes.

Westcoast will spend 310 million dollars initially expanding progressively by an additional 85 million dollars.

The Maple Leaf Project costs in escalated dollars to the time of construction - excluding expenditures to be made by TransCanada PipeLines to expand its system to carry the gas from Alberta to Eastern Canada - are initially 2.6 billion dollars expanding to 3.6 billion dollars at full capacity.

ADVANTAGES OF MAPLE LEAF PROJECT

Many advantages will accrue to Canada from the construction of a Mackenzie Valley pipeline and the Maple Leaf Project has many advantages over the rival Canadian Arctic Gas Pipeline Limited plan. Firstly, as far as advantages to Canada are concerned, the pipeline will provide the populated area of Canada

with additional much-needed energy from Canada's own frontier resources. This will be a major contribution towards making Canada self-sufficient in energy. Secondly, with regard to advantages of the Maple Leaf Project over the CAGPL project, the Maple Leaf Project provides Canada with the means by which it can tap its northern resources on its own without the need to be dependent on United States participation. This, in itself, will provide Canada with desirable freedom of action. CAGPL on the other hand has a majority of U.S. sponsors and although it is claimed that it will be 51% owned by Canadians, it will always be influenced by those U.S. companies who will each own large blocks of shares and who will also be either contractual transporters of gas through the pipeline, or producers selling gas for transportation by the pipeline.

A further important advantage of the Maple Leaf Project is that it is manageable and conservative in size and design. It makes use of most of the existing pipeline organizations and facilities in Canada. The only entirely new portion is an 800 miles, 42" line in the Northwest Territories. The balance is merely expansion of capacity of Westcoast, AGTL, and TransCanada's systems.

The Canadian Arctic Gas Pipeline Limited project on the other hand is not, as presently conceived, conservative in size and design and is not a manageable project, in Foothills' view and at this point I would like to refer you to Chart 3

which shows the CAGPL project and invite you to compare Chart 3 and Chart 2. CAGPL has stretched design paramenters to untried limits. It makes no use of existing organizations or facilities in Alberta but bypasses them with a completely new line. We don't believe that the Gas Arctic line can be built in the time and at the cost that they claim. We are very skeptical about the construction productivity their costs are dependent on and feel their construction time will be extended one or two years with tremendous cost overruns.

Nearly all of the requirements of the Maple Leaf Project can be supplied by Canadians. Most of the pipe, valves, fittings and other equipment can be made by Canadian manufacturers. Being conventially sized, the pipeline can be built by Canadian pipeline contractors and will, therefore, make maximum use of Canadian labour and construction capability. The CAGPL project will require much more foreign input. The 48" pipe can potentially only be made by one pipe mill in Canada and although this mill has tooled up to make pipe of this size, it has not carried out production runs as yet. This will mean that the majority of the pipe and other fittings for the CAGPL project will have to come from foreign sources.

One of the most important advantages of the Maple Leaf Project is that its financial requirements are so much less than CAGPL's and are within the capability of Canada. Consequently, the impact upon the Canadian capital market is not so severe

as to deplete resources that will be needed for other worthy Canadian projects. Since the initial capital requirements are minimized and spread over several existing operations with established earnings records, financing can be achieved with much less difficulty.

The financial requirements of the CAGPL project are currently estimated at 5.6 billion dollars. Their financial plan requires a common equity investment of 1.4 billion dollars and an investment by Canadian individuals and companies of over 700 million dollars to obtain 51% ownership. The extra dollars required by CAGPL from Canadians provides no more Canadian gas to Canadian consumers but is merely for the purposes of financing facilities to transport U.S. gas across Canada. As CAGPL's pipeline capacity is increased in the future, by looping, to carry more U.S. gas across Canada, a further drain on Canadian financial resources will be required. CAGPL's financing requires the purchase by Trans-Canada PipeLines, Consumers' Gas, Union Gas, and Northern and Central, of such large blocks of equity that these companies can only comply if they can receive rate base treatment for their respective investments, something which is not presently allowed by regulatory authorities.

On the other hand, if these companies were all to participate in the Foothills' project, the more modest financial requirements could be provided without the necessity of rate base treatment.

The Maple Leaf Project can be financed without government funds. We doubt very much if the CAGPL project can be financed without both Canadian and U.S. government assistance.

With regard to unit costs of transportation of Canadian gas from the Mackenzie Delta to Empress, the filings made before the National Energy Board show that the Maple Leaf Project costs are slightly lower than those of CAGPL. Any economies of scale which might have been expected from CAGPL's use of a 48" line compared to Foothills' 42" line are more than offset by the Maple Leaf Project's use of existing AGTL organization and facilities.

A topic closely associated with the northern pipeline project is the native land claims issue. Foothills is sympathetic to native land claims and would prefer to have them settled before construction of a pipeline begins. Because of regulatory requirements, Foothills believes there is time for this to happen. Foothills is also aware of the urgent need in Eastern Canada for the energy from the North. This need must be weigned against the need for time to settle northern affairs. The Maple Leaf group is actively attempting to find a solution to these divergent requirements by working diligently on a program to increase the supplies of gas from Alberta over the interim period until the northern pipeline can be completed. There is a definite possibility of this being accomplished, and it will have the further beneficial result of removing the pressures presently

on the Canadian government to take precipitous action on the pipeline applications.

Foothills' construction schedule can be tailored to suit Canadian needs for thorough regulatory proceedings and settlement of native land claims. Arctic Gas's construction schedule cannot be tailored to meet Canadian requirements because of the urgent need of the United States for the Alaska gas.

CANADIAN GAS FOR EXPORT

When the ARctic Gas project was originally conceived, it was anticipated that substantial quantities of natural gas from the Mackenzie Delta would be declared "surplus" to Canadian requirements, and, therefore, would be made available for additional export to the United States. It is now generally recognized, however, that Canada will need the Delta reserves to satisfy its own growing demand. In fact, the National Energy Board of Canada has recently issued a report finding that:

> "Without substantial supplies from Canada's Frontier areas, growing domestic requirements could not be satisfied beyond 1984 even if all exports were diverted to domestic markets as required. Without substantial further development of the conventional producing areas they could not be satisfied beyond 1979 even with exports diverted to domestic markets as required to meet domestic deficiencies."

ANSWERS TO ARGUMENTS PUT FORWARD IN OPPOSITION TO THE MAPLE LEAF PROJECT

The main argument put forward against the Maple Leaf Project is that the reserves in the Beaufort Basin are not adequate to support the project. This argument is not true - its sponsors are confident the Maple Leaf Project can be financed on the reserves that will have been discovered at the time financing takes place. Drilling activity during the 1975/76 drilling season has resulted in a significant gas find by Sun Oil Canada Ltd. at their Sun Gary location, and delineation drilling by Gulf Oil Canada Ltd. at Parsons Lake has resulted in increased reserves for that reservoir. Foothills expects that once the well information on these successes is made available, reserves in the Mackenzie Delta area will be approximately 7.7 trillion cubic feet, excluding gas which may be added as a result of other exploratory wells now being drilled.

There does not seem to be much dispute about the fact that the potential of the area is excellent, and much more gas will be found. Foothills' consultants say 39 trillion cubic feet and, CAGPL, over 50 trillion cubic feet.

To sustain the deliverability projected in the Foothills' project of 800 million cubic feet a day in the first year, rising to 2.4 billion cubic feet per day in the fifth year, and maintaining that level thereafter for sufficient years to pay out the pipeline investment, requires about 15 trillion cubic feet of reserves.

So the question becomes not whether enough gas will eventually be found to sustain the daily flow - no one disputes this - but are there sufficient reserves now, or will there be sufficient reserves found soon enough to finance the project?

CAGPL says there will not be sufficient reserves. Foothills says there will be, and for this reason:

> The construction of the Foothills' pipeline to a capability of delivering 1.2 billion cubic feet of gas per day requires only 1.8 billion dollars. This provides a complete 42" line with four compressor stations. The expansion from that level to a capacity of 2.4 billion cubic feet per day is accomplished by the addition of compression and the money for this expansion comes from internal cash flow. Therefore, at the time the project is financed - and it looks now as if this will be in late 1978 for equity and late 1979 for debt - it need only be shown that there are enough reserves to sustain a flow of 1.2 billion cubic feet per day, or less, for sufficient years to pay out the line. Foothills calculates this to require from 7 to 8 trillion cubic feet.

If Foothills had to run its pipeline at a level of 1.2 billion cubic feet per day for twenty years, or for sufficient years to pay out the line, the cost of service would be about 25¢ per MCF higher than running at 2.4 billion cubic feet per day. This would not change the price to the consumer - because, by government edict, the consumer is now going to pay the commodity value, independent of the cost of delivery - but it would flow back 25¢ per MCF less to the wellhead; that is, to the producer and the government. Operating at these reduced flows, the project would still be viable - but Foothills does not intend to operate at a level of only 1.2 billion cubic feet per day. This exercise is merely to demonstrate how financing can be obtained on the basis of the reserves that have been found. As more reserves are found - and they will be - the throughput will be increased to the volumes as filed in Foothills' application. Foothills is convinced that, if these extra reserves are not found by the time of financing, they will be available by the time the pipeline is completed in 1980 or 1981.

Threshold volumes to build Foothills' pipeline are, therefore, not 15 to 18 trillion cubic feet as some people have publicly claimed - they are more like 7 to 8 trillion cubic feet.

I would like to close this discussion about Foothills with the remark that the U.S.A. should not labor under the impression that Canada needs the Arctic Gas project in order to gain access to its Mackenzie Delta reserves. The Maple Leaf Project offers Canadians an opportunity to own, operate, and manage their own Arctic transmission system for their own total benefit.

FAIRBANKS - ALCAN HIGHWAY ROUTE

Now, I would like to turn to the topic of the Fairbanks-Alcan Highway route for a gas pipeline across Canada. Acting as a consulting arm of Westcoast and AGTL, Foothills has made some assessment of such an alternative. AGTL and Westcoast did this only because business friends and other contacts in the United States asked whether we could suggest some way that the gas from Prudhoe Bay could get to market at a far less initial capital cost. It was suggested to us that some other way must be found because initial volumes from Prudhoe Bay might be lower than originally supposed and that the capital costs of the present proposals might escalate to where the projects would never be built. It was suggested that a plan might be devised which would make more use of existing transportation facilities in Western Canada, would start at lower volumes and gradually increase, and would embrace more accommodation of the State of Alaska's position that any gas line to carry gas out of Alaska should cross that State. Following these verbal requests we received a letter from Senators Magnuson and Jackson requesting that we appear before their Senate Committee to give our views on such a route.

Could I now refer you to Chart 4, but before proceeding to describe our study, I would like to point out that Foothills has not applied for such a project in Canada. Foothills' one and only application is to install a pipeline for the new frontier

gas being developed in the Mackenzie Delta and Beaufort Basin in Canada, to connect to the main existing systems in Canada and provide gas to the communities in the Mackenzie Valley and Great Slave Lake areas.

However, we have made an estimate of the cost of carrying Alaska gas from the Alaska-Yukon Border near Northway Junction along the Alaska highway to Fort Nelson - shown by the red line on Chart 4 - and thence through Westcoast's and Alberta Gas Trunk's systems to the 49th parallel in southern B.C. and Alberta; the gas destined for the western United States to go through Westcoast's system and that destined for the eastern United States to go through Alberta Gas Trunk's system. Our estimate was based on a 42" diameter pipeline being built along the Alaska highway from Northway Junction to Fort Nelson to carry an initial volume of 1 billion cubic feet per day, rising over 4 years to 2.4 billion cubic feet per day. At Fort Nelson the gas was assumed to split approximately 30% through Westcoast's system and 70% through Alberta Gas Trunk;s system by gradual expansion of these systems as required. I should point out that our estimates are of a preliminary nature but have been done with enough care so that we are confident they give reasonably accurate results.

In addition, in order to be able to get an idea of the total cost of delivering Prudhoe Bay gas to the 49th parallel we have made an estimate of the costs of a 42" pipeline across Alaska from the North Slope along the route of the Alyeska

pipeline to Delta Junction and thence from Delta Junction along the Alaska highway to the Yukon border near Northway Junction - as shown in green on Chart 4. This estimate must be considered less reliable than the estimate we have made for Canada.

The total capital investment required to place this system in operation for 1981 is just under $4.0 billion, in escalated dollars. Of the initial investment about $1.9 billion would be invested in the State of Alaska, $1.6 billion would be invested in the new main line connection within Canada and $0.5 billion would be investment in expansion of the existing systems of Westcoast Transmission in the Province of British Columbia and of Alberta Gas Trunk Line Company Limited in the Province of Alberta. When the system is expanded to full capacity the cumulative escalated capital investment would be about $5.4 billion all of which additional capital could come from internally cash generated during operation, and the total unit cost of transportation to move the Alaskan gas from Prudhoe Bay to points on the 49th parallel would be about $1.12 per million BTU's. We conclude that as far as engineering and construction factors are concerned such a system is manageable and even rather superior in its practicality. If approved by all concerned, it could apparently provide the capacity to move the Alaskan gas to the lower 48 States as a unit cost favorably comparable with any other project or proposal being considered.

I should mention that in these overall estimates we have

covered the costs of all of the systems shown on Chart 4, except the eventual leg from the Fairbanks area to Valdez - shown in green on the chart, about which I will comment shortly in explaining our basic policies about this whole proposition.

Now having given you the results of our study, I would like to quote verbatim from Mr. Blair's testimony to the Senate Committee about such a project.

First he stated:

> "We would have some immediate cautions about Canadian participation that I'll note shortly."

Then later:

> "I emphasize that a real business response to this kind of arrangement could only occur if there was an initiative from the United States to seek such a service qnd also if the governmental authorities in Canada let us know that it was their choice that we endeavour to work out such an alternative. I just mean to underline from my own limited base of authority in Alberta Gas Trunk that while we are far from 'isolationalist' and do act energetically to market commodities or services to the United States, whenever we can develop new business at arm's length and obtain a satisfactory return and value added in Canada, for this Alaska situation we are not ourselves

sponsoring or proposing a new project. We are just explaining our reaction now to a future possibility which has been raised. We could only go further if there were an American request and Canadian government request and sanction and also if there were the express endorsement of our close partner, Westcoast."

So while as a utility operation it is not in our policy to refuse any help to a neighbour with a problem I have wanted to emphasize that my own judgment is that any such help should be partial and supplementary and that in no way are we out selling ourselves into seeking the whole job and responsibility.

We have given some thought to the kind of cautionary provisions which we should point out early in any such discussion and in our view they are as follows:

1. That in any application by a pipeline company in Canada to provide transmission services for some of the gas to be produced from Alaska there be particular recognition, expressed in the application and any forms of contract, that besides the commercial undertakings for transmission there needs to be also a future decision of principle by the Government of Canada. The principle is whether to confer a long-term transmission service access for Alaskan gas to U.S. markets through routes crossing

western Canada by 1500 miles or more, subject to Canadian regulatory authority.

2. Similarly, that there be particular recognition that there must be decisions by the provinces of Alberta and British Columbia and the National Energy Board that the gas pipeline companies providing service for gas produced in those provinces may integrate through their systems a further service for the transmission of Alaskan gas to U.S. markets.

3(a) That the arrangements for transmission of some Alaskan gas across western Canada be accompanied with other long-term arrangements to move other Alaskan gas intrastate and also interstate as by liquefaction and ocean transport within the U.S. jurisdiction, so that Canadian companies shall not inherit complete responsibility for all future investment in providing and expanding transmission capacity for future gas production from the North Slope of Alaska.

(b) That the design of the new 800-mile pipeline connection in Canada not exceed the size and specification of pipe available tried and true from Canadian and other North American pipe mills nor exceed the project scale capable of orderly financing without financial contribution or guarantee by governments in Canada.

4. That transmission services to move Alaskan gas a further 700 miles to 800 miles through British Columbia or Alberta to delivery points from those provinces across the 49th parallel or through TransCanada to points of delivery eastward, be provided on terms to United States shippers of Alaska gas which are not more favourable to such shippers than to concurrent terms of service to Canadian users.

5. That Canadian pipeline operators transmitting Alaska gas shall exercise similar rights and responsibilities in the operational use and handling of the gas as for Canadian gas in their possession.

After having pointed out all these serious conditions which must be considered I would like to point out that in our opinion this overall scheme could have some definite advantages.

One extremely important point is that it removes several uncertainties about construction. The construction in Alaska can take place along the route of the Alyeska oil line, it can be built off the same gravel pad. From Fairbanks to Fort Nelson it follows the Alaska highway which provides excellent access for materials and construction. From Fort Nelson south, it is merely expansion of existing systems. Along the whole route of the pipeline there are excellent airstrips providing quick access. Construction of all sections of the line would

therefore be by conventional methods and this should not only reduce the initial capital costs but substantially reduce the possibility of cost overruns. The fact that there would be excellent all-year access to all sections of the line would eliminate the possibility of lengthy interruptions of service and could either eliminate the need for al all events tariff or at least reduce the severity of such a tariff.

If this project could be started shortly after the completion of the Alyeska line all the equipment, and camps, and all the manpower mobilization and administration associated with that project could be utilized for the gas line project, thus effecting substantial savings.

There is the other alternative which AGTL was asked about because of AGTL's recent installation of two world-scale methanol manufacturing plants in Alberta, and that is that quantities of natural gas be converted to methanol and moved to market as a liquid energy source.

AGTL's Planning and Development Department has reviewed carefully a copy of a report by the Institute for Energy Analysis and perhaps I can most effectively summarize their conclusions by comparison with the conlusions of the Institute's report, which was submitted to the Senate Committee and must be available to your Committee. AGTL's people believe that the conversion efficiency of methanol synthesis in arctic manufacture would be lower, 49% rather than 63%, that

capital costs would be about double those estimated by the Institute and that it would be appropriate to assume substantially higher field gas prices; $1.70 per MMbtu. compared to the Institute's 50¢. AGTL also believe it appropriate to use a faster depreciation rate and to assume that the tariff for the Alyeska Pipeline would apply to the methanol as much as to the oil. When all of these major estimating changes are applied AGTL has calculated that the cost of methanol F.O.B. - Los Angeles would be about 66¢ per gallon or $10.91 per million BTU's. That compares to 25¢ per gallon of methanol, equivalent to $3.69 per million BTU's as estimated by the Institute. On this basis the alternative mode of conversion to methanol appears beyond economic feasibility as a means to market the main Prudhoe Bay gas stream.

The report which AGTL's people prepared on this particular subject was prepared in conjunction with the President of the affiliate company through which AGTL participates in methanol manufacturing and marketing. The company, Alberta Gas Chemicals Ltd., has two methanol manufacturing plants and ranks fourth in methanol production capacity within North America.

Northwest Pipeline Corporation

JOHN G. McMILLIAN
CHAIRMAN AND
CHIEF EXECUTIVE OFFICER

March 26, 1976

P. O. BOX 1526
SALT LAKE CITY, UTAH 84110
(801) 328-8252

Commissioner Guy R. Martin
Department of Natural Resources
Pouch M
Juneau, Alaska 99811

Dear Commissioner Martin:

Northwest Alaska Company, an affiliate of Northwest Pipeline Corporation, proposes to contract for a portion of the State of Alaska's royalty gas which will emanate from the Prudhoe Bay Oil Pool upon completion of an Arctic gas transportation system.

We have attempted to formulate a proposal which meets your criteria of being "respons[ive] to changing conditions and interests in the State of Alaska". We are willing to consider any variations which you believe appropriate.

Northwest Pipeline Corporation is the sole supplier of natural gas to the States of Washington, Oregon, and Idaho, and also provides a substantial portion of the gas available to the States of Colorado, Wyoming, and Utah.

The Pacific Northwest is the market with the greatest geographic, economic and social relationship to Alaska. Not only does continuing such historical and geographical affinity make good economic sense, but we believe such affinity could have a significant impact on matters ranging from the price we can pay for gas, to the nature and extent of the support we believe can be generated from members of the communities served in our market area and their elected and appointed representatives. We think it an important economic fact that the less cost incurred in moving the gas to market, the greater the available proceeds for distribution to the owner of the gas at the wellhead.

Our effort, in support of a trans-Alaska pipeline delivery system, which will be outlined to you in greater detail in our initial meeting on this proposal, will include the probable support of many of our congressional delegation, the support of our distributors in the local market areas, and the support of our various state regulatory bodies. To ensure that a maximum effort will be made, we propose to accept a penalty in terms of reserve commitment if a trans-Alaskan route is not approved.

The principal features of our proposal follow:

I. The State's Royalty Gas Commitment to Northwest Alaska

(a) A total commitment of 2.5 trillion cubic feet of gas would be committed by Alaska to Northwest Alaska.

(b) We are willing to enter into a contractual arrangement which provides the penalty of automatically reducing the volume of gas to be sold to us from 2.5 trillion cubic feet to 1.5 trillion cubic feet if one of the following three general routes is not adopted for transporting Prudhoe gas to the "lower 48" states:

i. Prudhoe to Fairbanks and then through Canada;
ii. Prudhoe to Gulf of Alaska;
iii. Prudhoe to Cook Inlet.

(c) We are also willing to contractually assume the risk of total loss of our rights to Alaskan Royalty Gas by permitting the State to terminate if legislation mandating a routing other than set forth in Item (b) becomes effective.

(d) In addition, the State shall give Northwest Alaska a first call on future State of Alaska royalty gas as may be necessary to replace the volumes reserved by the State, below. Such additional commitment would be applicable to any area in Alaska accessible to a gas delivery system.

II. The State's Reservation of Committed Gas

The State shall reserve up to thirty percent (30%) of the daily royalty volumes available from the reserves committed under either I(a) or I(b), above. Said reservation may be exercised as follows:

(a) The State shall have the right to have up to one-half (1/2) of the reserved volume delivered to it, on a daily basis, at a mutually agreeable point or points on the trans-Alaska pipeline system during the first ten years of the contract and all of the reserved volumes delivered, on a daily basis, during the remainder of the contract. The State shall notify Northwest by July 1 of each year, of the amount of reservation gas it intends to take during the following calendar year, up to the maximum amounts specified herein.

(b) Northwest shall have the right to purchase all of the State's reserved gas not taken from time to time; provided, however, Northwest shall not be obligated to maintain capacity in its facilities from the point of liquefaction, and downstream therefrom, to accommodate variable quantities of State royalty gas. Northwest shall be obligated to purchase the amount

of reservation gas which the State elects not to take upon five years prior written notice given at any time during the contract term.

(c) The State shall reimburse Northwest for the cost-of-service incurred by Northwest in all operations incident to the redelivery of the gas including, but not limited to, gathering, treating, dehydration, compression, and transmission, including a reasonable rate of return on all investments and any costs incurred for service provided by third parties.

(d) It is recognized that Northwest may be required to provide, or to arrange for, all or part of the services enumerated in (c) above incidental to the redelivery of the State's royalty gas. It is anticipated, then, that Northwest will provide for the necessary capacity in all gathering and transmission phases to handle the full volumes committed in I(a) above, including the State's reserved gas. To the extent such facilities and capacity are provided by Northwest, the State's reservation gas shall be committed to this service for the life of the contract so that the project has sufficient certainty that financing can be reasonably obtained.

(e) Northwest contemplates the future acquisition of gas reserves in South Alaska. To the extent such reserves are available, Northwest would agree to negotiate an exchange of reserves controlled in South Alaska for the State's reserved royalty gas flowing into the "lower 48" via the trans-Canadian pipeline. The provision will provide the State with important additional assurances that volumes of Alaskan Prudhoe Royalty Gas will be available to the bulk of Alaska's population regardless of pipeline routing.

(f) The State shall commit all future royalty gas available to a gas transportation facility in Alaska to Northwest up to the total amount reserved to the State in this proposal. In other words, the State shall agree to no long term commitment of presently uncommitted or future royalty gas until such time as the gas can be declared surplus to the State's projected needs during the term of this proposed agreement. Any long term commitment shall immediately terminate the State's reservation of gas hereunder, at least to the extent of such commitment on a reserves or daily volume basis, and Northwest shall have the option of purchasing the State's reserved gas to the extent it thus becomes available.

III. Delivery Point

Northwest will provide the portion of the facilities (downstream from the delivery point) necessary for gathering and conditioning all of the State's Royalty Gas.

IV. The State's Reservation of Liquid Hydrocarbons

The State shall retain a call on the extractable hydrocarbons (ethane and heavier hydrocarbons) contained in the royalty gas stream sold to Northwest and shall

have the right to construct an extraction facility at a mutually agreeable location on Northwest's facilities in Alaska or at a mutually agreeable location on Northwest's facilities in the "lower 48" if the gas is delivered through Canada. We would propose the following additional specific points relative to processing:

(a) If the State does process the gas stream, it shall reimburse Northwest for the loss of gas, for which it has paid, attributable to the fuel and shrinkage occurring in processing plant operations and shall further reimburse Northwest for its cost-of-service in delivering the fuel and shrinkage to the plant location.

(b) Northwest is agreeable to negotiating with the State to determine an acceptable basis on which Northwest would be obligated to construct a plant and to perform the processing service giving the State a first call on all liquids produced; to arrange for delivery of liquid products to Alaskan distribution points and to provide marketing services into other areas from products surplus to the needs of the State.

(c) If the State actively seeks outside assistance in the exploitation of its processing opportunity, and in an effort to maintain continuity and compatibility in operations, Northwest requests that it be given a preferential right to join the State in the extraction and distribution of liquids from its royalty gas stream. We think this can be mutually advantageous, particularly in view of the fact that we are presently a substantial producer and marketer of liquids and, of course, would be in the best position to insure a processing operation complementary to our transmission operations.

V. <u>The Gas Price</u>

(a) The price to be paid for gas delivered and sold to Northwest shall be the higher of (1) the price permitted by the Federal Power Commission, or successor regulatory body having this jurisdiction, for the sale of the State's Prudhoe Bay royalty gas to be delivered to the "lower 48" States or (2) in the absence of regulation over the price to be received by the State, the estimated commodity value of natural gas at the time of initial deliveries in Northwest's market less the applicable costs of bringing the gas to this market. "Commodity value" shall reflect the value of natural gas in our market area based upon the price of competitive fuels with due allowance for the premium qualities and uses of natural gas. Due to the economic proximity of Northwest's market to Prudhoe Bay under any proposed transportation system, the "commodity value" approach under Northwest's contract could be a very valuable feature to the State.

(b) The price shall be redetermined annually, in the absence of regulation, to reflect any changes in the "commodity value" of gas in Northwest's market.

VI. Governmental Regulation

The definitive contract shall be subject to receipt and acceptance of all necessary governmental permits and authorizations required for the service contemplated thereby including the ability of Northwest to include in its rate base accounts the investments required, excluding any processing plant investments, or to include in its cost-of-service accounts any charges or tariffs required to be paid to others for any increment of service required by the contract and the purchased gas costs of the royalty gas.

VII. Natural Gas Storage

Northwest Pipeline has developed competency in the area of natural gas storage, both underground and above-ground LNG storage. The Company would be pleased to assist the State in reviewing the opportunities for natural gas storage in southern Alaska. Development of storage capacity would measurably aid the State in fully utilizing the gas available to its royalty interests from time to time. Gas that otherwise might go into the export market on a seasonal or even annual basis could be stored and produced as required.

Northwest Pipeline is prepared to commence immediately to negotiate to conclusion the necessary agreement with the State, along the lines outlined above. Whatever manpower and decision-making capability that may be required will be at the State's disposal until a formal agreement is completed.

Respectfully submitted,

John G. McMillian

JGM/ds

PROPOSAL TERMS
TENNESSEE GAS TRANSMISSION CO.

1. Advance payment.
   Three equal annual payments, amount to be specified later, payable first quarter of each calendar year beginning in 1977.

2. Recovery of payment.
   Repayment commences first day of month 3 years subsequent to each scheduled payment. Tenneco recovers each month for a 5-year period an amount equal to 1/60 of the amount of the scheduled payment. Repayment is made from proceeds of any hydrocarbon production attributable to Alaska's royalty interest.

   In the event the sale of hydrocarbon production has not commenced when repayment is due, repayment will commence first day of the month following sale of hydrocarbons in equal monthly amounts so that each scheduled payment is recovered in full within 8 years, provided that each monthly amount shall not exceed 25% of gross revenue from hydrocarbon production of area of interest.

3. Support Trans Alaska Gas Pipeline System.
   Tenneco will cooperate with Alaska and other interested parties to support Alaskan route. Alaska has right to terminate agreement if route across Alaska to southern coast of Alaska is not approved.

4. Commitment.
   Tenneco has exclusive right to purchase all of Alaska's interest in the natural gas production from the reserves of the area of interest.

5. Recall.
   Alaska has right to reserve up to 10% of its interest in gas production from area of interest during initial 5 years. If Alaska reserves less than 10% initially, each upward revision in percentage of production requires prior written notice of 1 year.

   During the second 5 years of gas deliveries, Alaska may reserve up to an additional 10% of its interest in gas production and during the remainder of the contract the percentage of its gas production actually being sold or used by Alaska plus up to an additional 10% of its interest in the area of interest. Revisions require prior written notice of 1 year.

6. Terms and provisions of contract.
   a. Quantity - Tenneco takes all of daily production from Alaska's interest in reserves in area of interest as made available and not used or sold by Alaska.
   b. Price (1) Regulated - highest price permitted by F. P. C.
      (2) Deregulation - price effective first day of seventh calendar month after deregulation, equal to average of 3 highest prices paid 6 months after deregulation paid by interstate pipeline purchases for gas from area of interest of same quality and quantity.
      (3) Unregulated - not mentioned.

   c. Point of delivery - at tailgate of gas treating plant located on acreage overlying area of interest.
   d. Dedication - all gas production attributable to Alaska's royalty interest in area of interest.
   e. Term - 20 years from initial date of delivery.
   f. Processing - Alaska retains processing right, but must not remove more than 10% of volume provided for delivery by Alaska to Tenneco and Alaska will reimburse Tenneco for transportation charges attributable to volume removed by processing including fuel and shrinkage.
   g. Quality - gas delivered to Tenneco shall be pipeline quality with gross heating value of 1000 btu per cubic foot at 14.73 psia and 60o F., water vapor less than 6 pounds per million cubic feet at standard conditions.

7. Other provisions:
   a. Consideration for right of recall
      (1) Alaska shall exercise option of recall if sufficient gas is available for Alaska's needs but outside area of interest at a price equal to FPC permitted gas producers for like sales. Alaska shall sell its gas at no less than the maximum price permitted by FPC for similar sales plus charge paid by Alaska for transporting such gas.

      (2) Tenneco has exclusive right to purchase gas production attributable to Alaska's interest and surplus to Alaska's needs outside area of interest and north of Arctic Circle.

This gas would be purchased under same contract terms except in absence of gas treating plant, the point of delivery shall be as mutually agreed upon by the parties.

Upon execution of this gas purchase contract, the subject oil and gas leases become part of the area of interest.

(3) Alaska will cooperate with Tenneco in making supplemental gas available to Tenneco; Alaska will not unreasonably withhold granting of gas and oil leases outside area of interest and will take all steps necessary including exercise of the right to take royalty gas in kind, so as to be able to seel supplemental gas to Tenneco.

b. Term of agreement:
Agreement is in full force and effect as long as Alaska, and/or its successors or assigns, owns an interest in the oil and gas leases located in the area of interest.

Contract terminates if gas pipeline route across Alaska to southern coast of Alaska is not approved.

If contract is terminated, Alaska agrees to refund to Tenneco, the full amount of any advance payments received by Alaska from TEnneco, together with interest at effective prime interest rate (Chase Manhattan Bank, NA) existing at time of each scheduled payment plus 1%.

Mcl 30

AGREEMENT

THIS AGREEMENT, made and entered into this ___ day of _____, 1976, between (Tenneco subsidiary) hereinafter referred to as "Tenneco" and the STATE OF ALASKA, hereinafter referred to as "Alaska."

W I T N E S S E T H T H A T:

WHEREAS, it is in the interest of the State of Alaska and of the United States that a pipeline to deliver gas from the North Slope of Alaska to markets in the contiguous forty-eight (48) states of the United States be built entirely within the State of Alaska to supply gas for liquefaction in Alaska and delivery to United States ports in United States flag vessels; and

WHEREAS, such delivery system totally under the jurisdiction of the United States provides certain advantages:

a) A trans-Alaska system can be completed and in operation a minimum of three years earlier than a delivery system that requires a pipeline to extend across Canada.

b) The construction and operation of a trans-Alaska system will provide an increased number of jobs in many segments of U. S. industry, to citizens of the United States, far in excess of such jobs provided through construction and operation of a pipeline across Canada.

c) A trans-Alaska system will provide a reliable and secure basis for delivering known gas reserves as well as for delivering future

gas discoveries on the North Slope of Alaska to all markets in the contiguous forty-eight (48) states, including those in the midwestern United States.

d) Financing for construction of a trans-Alaska system, the capital costs for such being essentially the same as for a system extending across Canada, can be arranged more easily than for construction of a system extending across Canada.

e) A trans-Alaska system will result in a lesser adverse environmental impact since it will follow the general route of, and be benefitted by the experience gained in the building of, the trans-Alaska oil pipeline as well as utilize an extensive number of the same support facilities utilized by the oil pipeline.

f) A trans-Alaska system will provide revenues for Alaska as well as the opportunity for increased domestic use of gas and for industrial development in Alaska.

g) A trans-Alaska system will provide the contiguous 48 states of the United States with additional long term flexibility to import liquefied natural gas from all areas of the world as well as from known and future gas discoveries in Alaska; and

WHEREAS, it is in the interest of Tenneco to purchase natural gas in Alaska and to support construction of a trans-Alaska gas pipeline so as to, at the earliest possible time, increase the supply of natural gas available to customers of its affiliate, Tennessee Gas Pipeline Company, a Division of

Tenneco Inc. (Tennessee). Tennessee serves customers in the states of Texas, Louisiana, Arkansas, Mississippi, Alabama, Tennessee, Kentucky, West Virginia, Ohio, Pennsylvania, New York, New Jersey, Massachusetts, New Hampshire, Rhode Island, and Connecticut and, through affiliated interstate natural gas pipeline companies, customers in Virginia, Illinois, Indiana, Minnesota, North Dakota, and Wisconsin.

WHEREAS, Alaska has notified the producers of its intent to take in kind its gas to be produced from the Sadlerochit formation underlying leases located in the Prudhoe Bay Field, Alaska, located within the area delineated on Exhibit "A" attached hereto and made a part hereof, hereinafter referred to as "Area of Interest"; and

WHEREAS, Alaska and Tenneco have considered present and projected future demand and supply of natural gas in Alaska and believe it is desirable to reach an agreement regarding the sale of Alaska's gas from the Area of Interest whereby the following objectives are met: (1) Alaska is assured of a future secure supply of natural gas sufficient to meet its expanding domestic requirements and to support industrial development in Alaska and (2) Tenneco is assured of an increased supply of natural gas for the customers of its affiliated interstate natural gas pipeline companies, which assurance encourages the purchase of Alaska's gas and the support of a trans-Alaska gas pipeline route; and

WHEREAS, Alaska desires to retain the flexibility to encourage and facilitate development of industry in Alaska, which industry, to a large extent,

will require the availability of substantial volumes of natural gas liquefiables; and

WHEREAS, Tenneco is agreeable to allowing Alaska to retain the right to have its gas processed within the boundaries of the State of Alaska so as to recover such natural gas liquefiables; and

WHEREAS, the Federal Power Commission should certificate a pipeline system extending across Alaska so as to hasten recovery from the economic impact in the United States of curtailment of customers in the contiguous forty-eight (48) states by virtually all major interstate natural gas pipeline companies; and

WHEREAS, Alaska has authority to enter into this Agreement pursuant to Chapters 5 and 6 of Title 38, Alaska statutes; and

WHEREAS, Tenneco is authorized to enter into this Agreement pursuant to its articles of incorporation and to the laws of the State of _____.

NOW, THEREFORE, Tenneco and Alaska, in consideration of the foregoing, do hereby mutually covenant and agree as follows:

I. Trans-Alaska Facilities.

Tenneco agrees that it will, in cooperation with Alaska and other interested parties, support official authorization --- by means of certification by the Federal Power Commission, by decision within the executive branch of the Federal government, by legislation, or otherwise --- of a project to transport gas from the Area of Interest to the contiguous forty-eight (48) states of the United States, which project includes a pipeline which extends from the

Area of Interest across the State of Alaska to the southern coast of Alaska (hereinafter sometimes referred to as "the Pipeline"). With respect to the sale of gas by Alaska to Tenneco, Tenneco's support will exclude any and all action with respect to any claim or assertion by Alaska, made in any forum, with respect to the jurisdictional status ~~thereof~~ of the State.

II. Commitment and Reservation.

Alaska agrees that Tenneco shall have the exclusive right to purchase all of Alaska's interest in the natural gas production from the reserves in the Area of Interest; provided however, Alaska shall retain an option to reserve for use in Alaska a certain portion thereof as set out below. It is expressly agreed and understood that Alaska shall exercise its option only for that volume to be used within the boundaries of the State of Alaska.

Section 1. Alaska shall have the right during the initial five (5) years of gas deliveries under the Gas Purchase and Sale Agreement, hereinafter referred to as "Contract," to be entered into between Tenneco and Alaska to reserve for use in Alaska up to twenty-five percent (25%) of its interest in the natural gas production from the Area of Interest.

Section 2. Alaska shall be entitled to exercise its option as set out in Section 1 of this Article II at the time of execution of the Contract. In the event Alaska elects initially to reserve less than twenty-five percent (25%) of its interest in production from the Area of Interest, then upward changes thereafter during the initial five (5) year period in the percentage of production reserved shall require prior written notice to Tenneco of one (1) year.

Section 3. Alaska shall be further entitled to exercise an option to reserve (a) during the second five (5) years of gas deliveries under the Contract the percentage of its natural gas production actually being used or sold by Alaska at the end of the fourth year of the Contract plus up to an additional twenty-five percent (25%) of its interest in the natural gas production from the Area of Interest, (b) during the third five (5) years of gas deliveries under the Contract the percentage of its natural gas production actually being used or sold by Alaska at the end of the ninth year of the Contract plus up to an additional twenty-five percent (25%) of its interest in the natural gas production from the Area of Interest; and (c) during the remainder of the Contract the percentage of its natural gas production actually being used or sold by Alaska at the end of the fourteenth year of the Contract plus up to an additional twenty-five percent (25%) of its interest in the natural gas production from the Area of Interest.

Section 4. Alaska shall exercise its option as set out in Section 3(a) of this Article II at the commencement of the fifth year of gas deliveries under the Contract to be effective at the commencement of the sixth year of gas deliveries under the Contract, as set out in Section 3(b) of this Article II at the commencement of the tenth year of gas deliveries under the Contract to be effective at the commencement of the eleventh year of gas deliveries under the Contract, and as set out in Section 3(c) of this Article II at the commencement of the fifteenth year of gas

deliveries under the Contract to be effective at the commencement of the sixteenth year of gas deliveries under the Contract. In the event Alaska elects at such times to reserve less than the additional twenty-five percent (25%) to which Alaska is then entitled, then upward changes thereafter in the percentage of production reserved shall require prior written notice to Tenneco of one (1) year.

Section 5. To assure the maximum efficiency of the total delivery system, Alaska will provide Tenneco at the beginning of each year its best estimate of volumes to be used or sold by it during each year of the next succeeding five (5) years.

Section 6. Tenneco will, in cooperation with Alaska and other interested parties, support authorization --- by means of certification by the Federal Power Commission, by decision within the executive branch of the Federal government, by legislation or otherwise --- for Alaska to arrange to have transported in the [~~natural gas system~~ Pipeline] authorized to transport natural gas from the Area of Interest and to have delivered for the account of Alaska at delivery points mutually agreeable to Tenneco and Alaska the percentage of production reserved by Alaska (less volumes attributable to fuel and unaccounted for volumes) pursuant to this Article II, which transportation will be under terms and conditions negotiated between Alaska and the owner(s) of said pipeline system.

Section 7. Alaska and Tenneco will cooperate to minimize any charges levied [~~as a result of the reservation, under the terms and conditions~~

~~of this Article II, of gas volumes by Alaska~~] on gas liquefied and transported to the lower forty-eight (48) states as a result of the reservation of gas volumes by Alaska under the terms and conditions of this Article II,

III. Terms and Provisions of Contract

Tenneco and Alaska shall, within ninety (90) days after receipt of authorization for a trans-Alaska project, which authorization is satisfactory to Tenneco and Alaska, or, alternatively, at such time as the Federal Power Commission requires executed contracts for the purchase of gas in order to go forward with then pending proceedings, enter into a Contract. Said Contract shall include the following general provisions and such other provisions that may be contained in contracts for gas sold in interstate commerce from the Area of Interest.

(a) Quantity: Tenneco shall take, on a daily basis, all of Alaska's interest in production from the reserves in the Area of Interest to the extent such production is made available to Tenneco and is not used or sold by Alaska.

(b) Price: The contract price shall initially be the highest price then being permitted to producers by the Federal Power Commission for gas of like quality produced from the Area of Interest and sold in interstate commerce to pipeline purchasers for resale under conventional certificates. Tenneco agrees that such price provision shall include all the price adjustment provisions permitted by the Federal Power Commission at the time of contract.

(c) Deregulation: If at any time during the term of the Contract, the Federal Power Commission (or any successor agency having jurisdiction)

ceases to have jurisdiction over the prices for sales of gas produced from the Area of Interest for resale, at Alaska's election, the price to be effective on the first day of the seventh calendar month after such cessation date shall be redetermined. The redetermined price shall be the highest price being paid on the first day of the sixth calendar month after such cessation date by pipeline purchasers for gas from the Area of Interest of substantially the same quality and quantity, under contracts for sales for resale containing comparable terms and conditions. The price to be paid by Tenneco to Alaska during the period following the cessation date and prior to the effective date of the redetermined price shall be that price then in effect at the cessation date. Furthermore, the price shall be redetermined on the same basis each two (2) years from and after the aforesaid cessation date.

(d) Point of Delivery: The point of delivery for all gas delivered to Tenneco by Alaska shall be at that point where the working interest owners make available to Alaska its royalty gas free of charges, except cleaning and dehydrating, or at such other point on or off the lease as mutually agreed to by the Parties.

(e) Dedication: Alaska shall commit to the Contract all of the gas production attributable to its interest in the Area of Interest, provided Alaska shall have the right to reserve that portion of the gas subject to reservation as specified in Article II of this Agree-

ment; provided further, Alaska will provide its pro-rata share of volumes of gas needed for line pack.

(f) Term: The term of the Contract executed pursuant to this Agreement shall be for a period not to exceed twenty (20) years from the date of initial delivery.

(g) Processing: Alaska shall retain the right to process the gas, or have same processed, before or after delivery to Tenneco, for the recovery of liquefiable hydrocarbons including the ethane and heavier constituents in the gas stream; provided, however, that such processing will not, including fuel and shrinkage, remove more than ten percent (10%) of the volume of gas provided for delivery by Alaska and purchased by Tenneco daily hereunder at the delivery point(s); provided, Alaska will reimburse Tenneco for transportation charges and for the price paid by Tenneco to Alaska attributable to that volume removed by processing, including fuel and shrinkage and provided, further, that after such processing the gas will continue to be pipeline quality gas.

(h) Quality: The gas delivered to Tenneco shall be pipeline quality gas, and shall have a gross heating value of not less than 1000 Btu per cubic foot at 14.65 psia and 60° F. It shall have been dehydrated for removal of entrained water present therein in a vapor state, and in no event contain more than six (6) pounds of entrained water per million cubic feet, at a pressure base of fourteen and

seven-tenths (14.7) pounds per square inch and a temperature of sixty degrees (60°) Fahrenheit as determined by dew-point apparatus approved by the Bureau of Mines or such other apparatus as may be mutually agreed upon.

IV. Consideration for Reservation.

Section 1. Alaska's right, pursuant to Article II, to reserve certain of its interest in natural gas production from the Area of Interest is expressly made subject to the following:

(a) Alaska shall not exercise its option of Article II in the event sufficient gas for Alaska's needs is available in Alaska, but outside the Area of Interest, for use within the boundaries of the State of Alaska and is available at a price not to exceed the price permitted to producers by the Federal Power Commission for sale of gas of like quality produced and sold in interstate commerce to pipeline purchasers for resale under conventional certificates.

(b) With respect to gas reserved by Alaska pursuant to Article II, the sale of such gas shall be at no less than the maximum price permitted to producers by the Federal Power Commission for sales of gas of like quality and quantity produced from the Area of Interest and sold in interstate commerce to pipeline purchasers for resale under conventional certificates plus the charge paid by Alaska for transporting such gas.

Section 2. Alaska's right, pursuant to Article II, to reserve certain of its interest in natural gas production from the Area of Interest is expressly made subject to Section 1 of this Article IV and is, further, in consideration of the following:

(a) Alaska agrees that, prior to entering into any contract for the sale or other disposition of any gas in interstate commerce, attributable to Alaska's interest and surplus to Alaska's need, produced outside the Area of Interest and delivered into the Pipeline, including expansions thereof, which gas is hereinafter referred to as Supplemental Gas, Alaska will give Tenneco a written notice of its desire to enter into a contract and shall transmit to Tenneco a form of contract reflecting among its provisions the terms and conditions offered. Within ninety (90) days of the date of said notice, Tenneco shall either elect to purchase or not purchase said gas. If Tenneco elects to purchase said gas, it shall execute said contract and return same to Alaska or it shall notify Alaska in writing wherein the terms and provisions of the contract are not in accord with the terms and conditions of Article III hereof. In the latter event, Tenneco and Alaska shall enter into good faith negotiations to determine by agreement terms and provisions which are in compliance with Article III hereof.

i) Upon execution of the Gas Purchase and Sale Agreement for Supplemental Gas, the oil and gas leases from which

production thereunder is delivered shall become a part of the Area of Interest hereunder.

ii) Alaska will cooperate with Tenneco in making Supplemental Gas available to Tenneco, including cooperation in the following respect, without limitation: Alaska will take all steps necessary, including exercise of the right to take royalty gas in kind, so as to be able to sell Supplemental Gas to Tenneco.

V. Term of Agreement.

This Agreement shall remain in full force and effect for as long as Alaska, and/or its successors and assigns, owns an interest in production from the oil and gas leases located in the Area of Interest; provided, however, Alaska shall have the right, but not the obligation, to terminate this Agreement in the event that a pipeline route from the Area of Interest other than a route across the State of Alaska to the southern coast of Alaska is hereafter authorized or approved and construction of such other route is commenced. It is agreed by Alaska that such termination will not prejudice any future attempts by Tenneco or an affiliated company to contract for the royalty gas.

VI. Miscellaneous.

Section 1. This Agreement shall bind and inure to the respective successors and assigns of the parties hereto.

Section 2. All notices hereunder shall be in writing directed to the

party to whom given, made or delivered at such party's address as follows:

Tenneco: Tenneco
P. O. Box 2511
Houston, Texas 77001
Attn: Mr. Robert C. Thomas

Alaska:

or at such other post office address as such party shall from time to time designate as the address for such purpose by registered letter addressed to the other party.

Section 3. Notice of Alleged Breach and Opportunity to Cure. In the event either Alaska or Tenneco alleges that this Agreement has been breached, then the party so alleging must provide written notice to the other specifying the alleged breach. The party receiving the notice shall thereafter have sixty (60) days from, but not including, the date of delivery of the notice within which to cure the alleged breach. If the alleged breach cannot be cured within sixty (60) days, the party receiving notice shall be entitled to such additional time as is necessary to cure; provided that necessary curative actions were undertaken promptly and have been diligently prosecuted; provided further that the additional time to cure shall not exceed ninety (90) days from, but not including, the last day of the initial sixty (60) day period.

Section 4. Arbitration: Any controversy between the parties, arising under this Agreement not resolved by mutual agreement shall be determined

by a board of arbitration upon notice of submission given either by Tenneco or Alaska, which request shall also name one arbitrator. The party receiving such notice shall, within ten (10) days thereafter, by notice to the other, name the second arbitrator, or failing so to do, the party giving notice of submission shall name the second. The two (2) arbitrators so appointed shall name the third, or failing so to do within ten (10) days, the third arbitrator may be appointed by the Chief Judge of the Ninth Circuit Court of Appeals. The arbitrators selected to act hereunder shall be qualified by education, experience and training to pass upon the particular question in dispute. The arbitrators so appointed shall promptly hear and determine (after giving the parties due notice of hearing and a reasonable opportunity to be heard) the questions submitted, and shall render their decision within sixty (60) days after appointment of the third arbitrator. If within said period a decision is not rendered by the board or a majority thereof, new arbitrators may be named and shall act hereunder at the election of either Tenneco or Alaska in like manner as if none had been previously named. The decision of the arbitrators, or of a majority thereof, made in writing shall be final and binding upon the parties hereto as to the questions submitted, and the parties will abide by and comply with such decision. Each party shall bear the expenses of its arbitrator, and the expenses of the third arbitrator shall be borne equally by Tenneco and Alaska except that each party shall bear the compensation and expenses of its counsel, witnesses and employees.

Section 5. No waiver by Tenneco or Alaska of any default of the other under this Agreement shall operate as a waiver of any future default, whether of a like or different character.

Section 6. Governmental Regulations: The terms and provisions of this Agreement are expressly made subject to all existing valid applicable Federal and State laws and orders, and to all directives, rules and regulations of any governmental body or official having jurisdiction, and no party hereto shall suffer a forfeiture or be liable in damages for failure to comply with any provision hereof if such compliance is prevented by, or if such failure results from compliance with, any such laws, orders, directives, rules or regulations; provided, however, nothing contained herein shall prevent either Tenneco or Alaska from questioning any such law, rule or regulation.

Section 7. Effect of illegality. If any provision or clause of this Agreement or application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of the Agreement which can be given effect without the invalid provision or application.

IN WITNESS WHEREOF, this instrument is executed in three (3) counterparts, each of which is an original as of the date first above-mentioned.

TENNECO

By _____
Agent and Attorney-In-Fact

STATE OF ALASKA

By _____

EXHIBIT "A"

ATTACHED HERETO AND MADE A PART OF

AGREEMENT

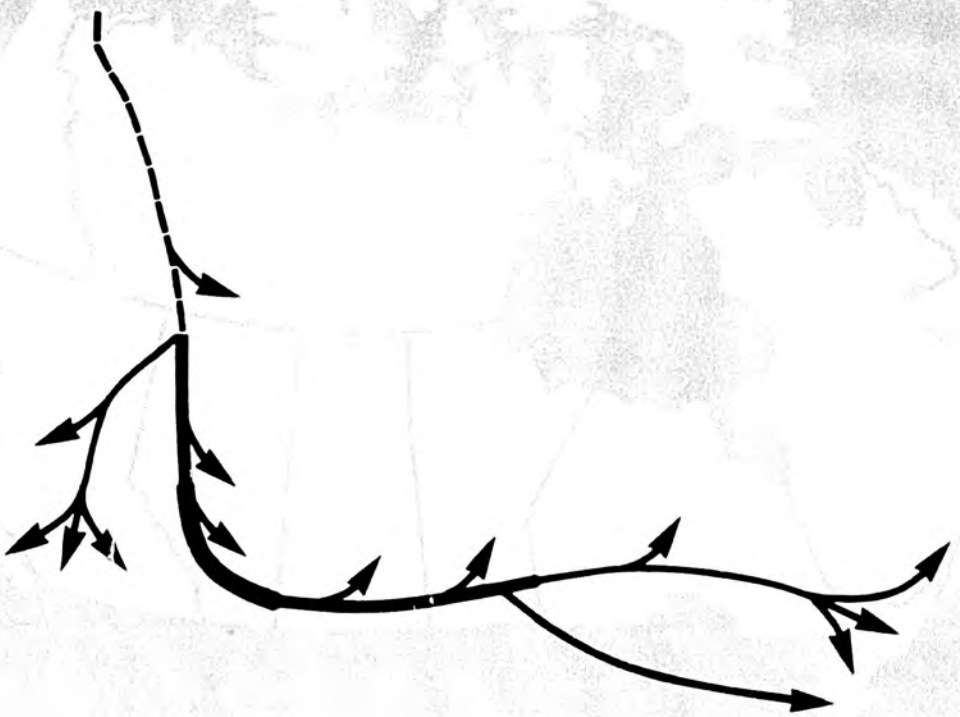
DATED

BETWEEN TENNECO

AND

STATE OF ALASKA

Area of Interest



FOOTHILLS PIPE LINES LTD.

and

THE MAPLE LEAF PROJECT

APRIL, 1975

FOOTHILLS PIPE LINES LTD.

and

THE MAPLE LEAF PROJECT

THE CANADIAN NATURAL GAS INDUSTRY AND THE NEED FOR NORTHERN GAS

For over 15 years the Canadian Natural Gas Industry has been able to increase gas supply each year in sufficient magnitudes to support very large demand increases in the various consuming sections, both domestic and export. Surpluses to both provincial and national requirements were regularly developed and periodically approved for removal from the producing provinces and Canada for resale elsewhere. To the best professional and technical minds in Canada the continued assurance of long-term supply for Canadian use and export commitments was so evident that it hardly needed to be stated.

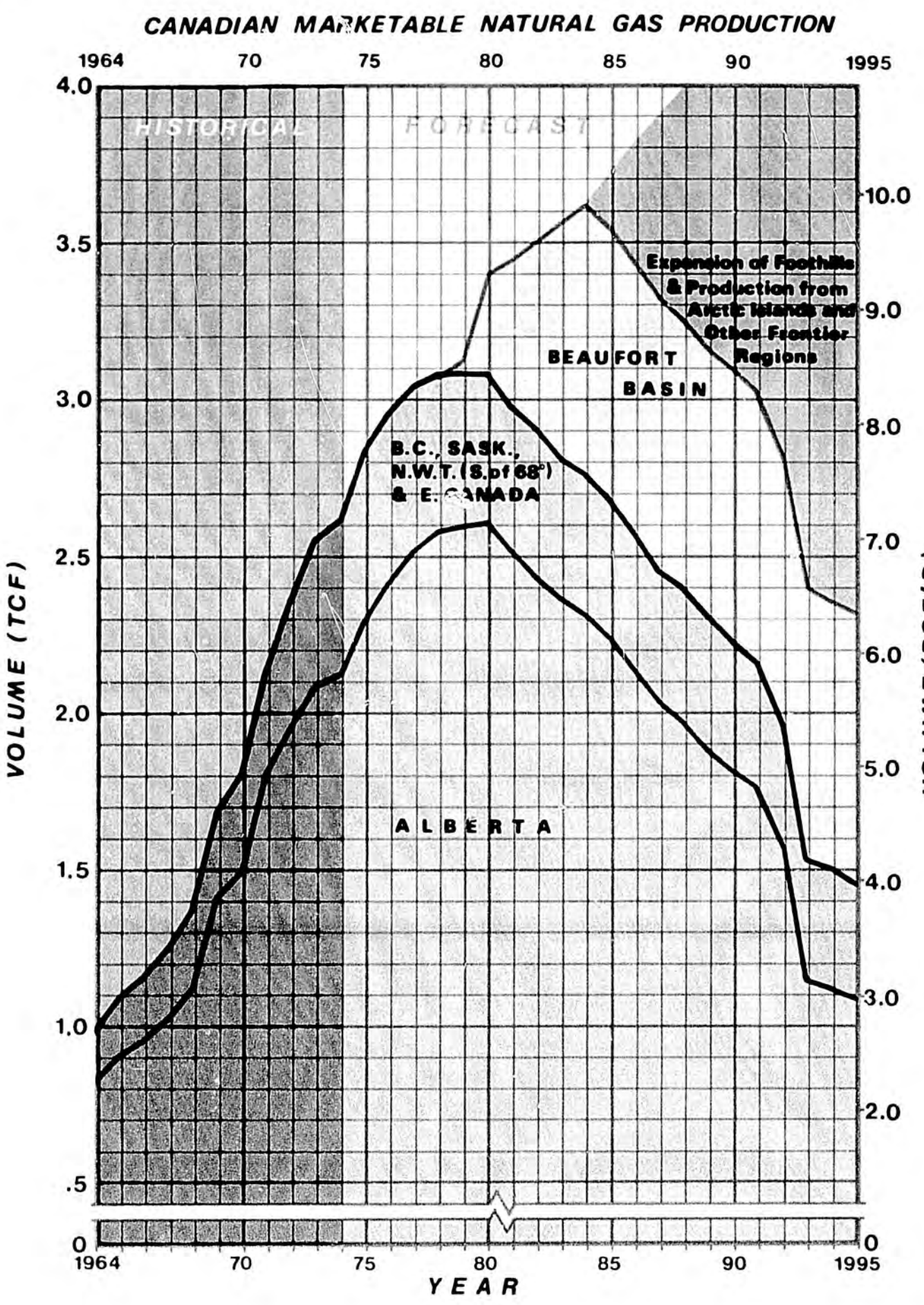
Suddenly, over the brief time span of one year, the atmosphere of confidence in supply was shattered. A number of unforseen events altered the whole supply/requirements relationship in Canada. These events included a startling increase in world crude oil prices commencing in 1973, continuing double digit rates of growth in demand for gas in Canada because of the price differentials between energies, demands for higher returns by resource owners, and a compounding of unfavorable economic factors which discouraged the exploratory and development processes. Coupled with these was the fact that the industry was already experiencing a reduction in volumes of reserves discovered each year. In summary, it has become apparent that the impact of these forces will culminate in an increasing inability of the Canadian Natural Gas Industry to meet requirements in the very near future unless facilities are constructed to obtain access to large gas reserves in Canada's North.

The Alberta Gas Trunk Line Company Limited and Westcoast Transmission Company Limited have joined together to form Foothills Pipe Lines Ltd. which is a part of the Maple Leaf Project. This project will meet the needs of the Canadian Natural Gas Industry by constructing the facilities required to access northern gas. The project is the only alternative advanced that will fulfill these requirements when needed while maintaining the position of being manageable together with the advantages of being more economical and wholly-owned and controlled by Canadians.

CURRENT FORECASTS OF SUPPLY

The graph on the opposite page presents, in visual form, the most recent Foothills forecast of Canadian marketable natural gas production. Historical experience is shown on the left of the graph. It demonstrates fairly consistent annual production growth for ten years through 1973 continuing to 1978. Production then levels-off for three years before commencing a steady decline in 1981.

Foothills, through the Maple Leaf Project, will bring Beaufort Basin production into supply, as shown on the graph, by the end of 1979. There will be a five-year build-up period to full pipeline capacity by the fall of 1983. Beaufort Basin production is maintained on the graph at the pipeline capacity of 2.4 billion cubic feet per day after 1984. Although not shown on the graph, the supply brought to market by Foothills could be increased through conventional looping of the system in proportion to further northern gas supply availability and/or market requirements.


CANADIAN MARKETABLE NATURAL GAS PRODUCTION
1964
70
75
80
85
90
1995
HISTORICAL
FORECAST
Expansion of Foothills & Production from Arctic Islands and Other Frontier Regions
BEAUFORT BASIN
B.C., SASK., N.W.T. (S. of 68°) & E. CANADA
ALBERTA
VOLUME (TCF)
VOLUME (BCF/D)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
0
YEAR

CURRENT FORECASTS OF REQUIREMENTS

On the opposite page is a graph showing Foothills' most recent forecasts of Canadian requirements and volumes required for export under licences approved in past years.

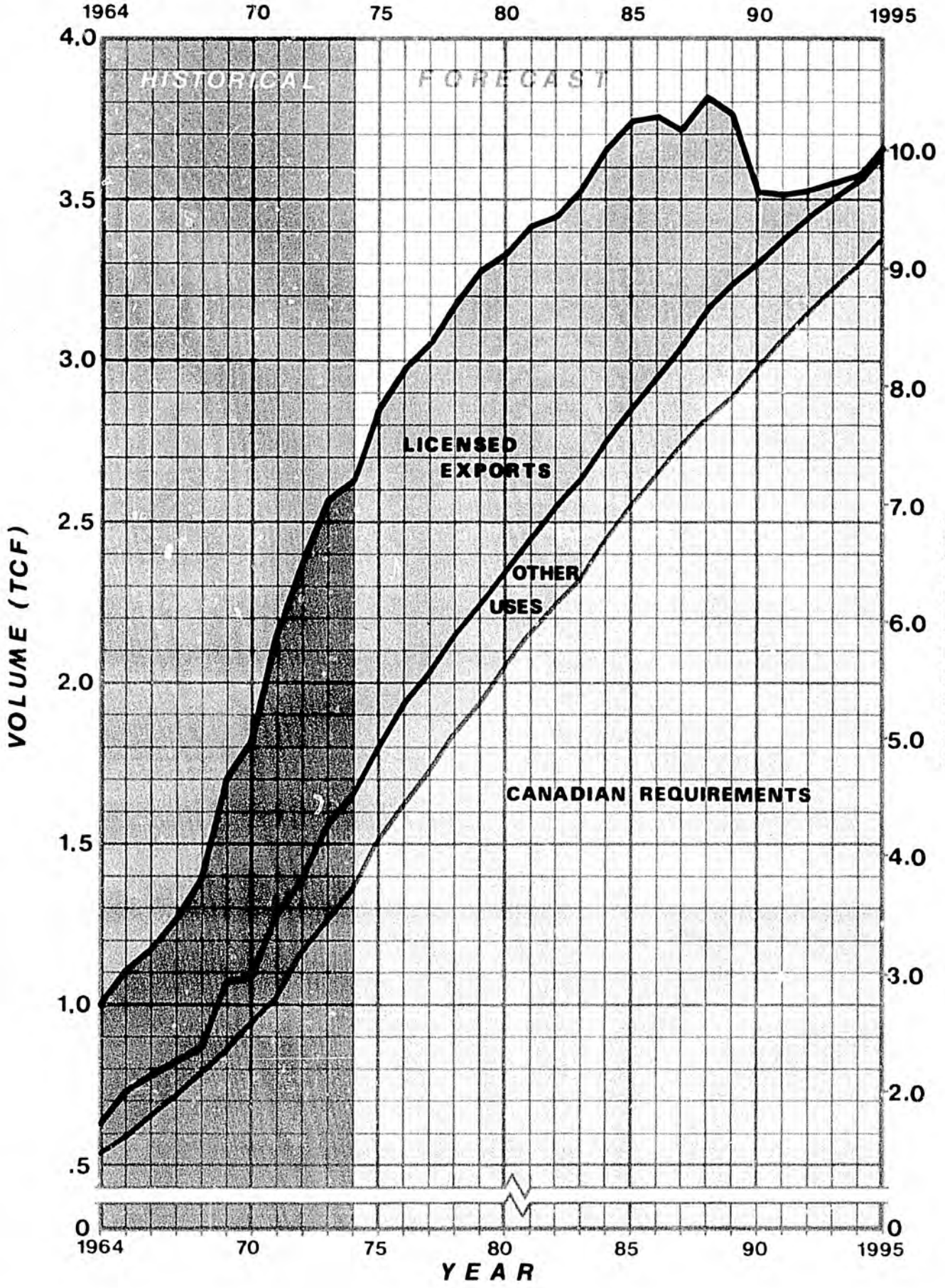
As with the supply graph, historical experience for the years through 1973 is shown on the left while the portion to the right of 1973 represents projections of future requirements.

As can be seen, Foothills is of the view that Canadian requirements will increase in a consistent pattern in the future, not unlike what has occurred in the past.

"OTHER USES" include pipeline compressor fuel, extraction plant consumption and like uses.

The "EXPORTS" requirement assumes that all existing licences for the export of gas from Canada will be honored as to volume and term; that they will not be renewed; and that no new export volumes will be licenced. The leveling-off and decline in total requirements, shown on the graph to occur after 1985, is due to sequential termination of export licences. Virtually all licences will terminate by 1994.

TOTAL REQUIREMENTS FOR CANADIAN NATURAL GAS



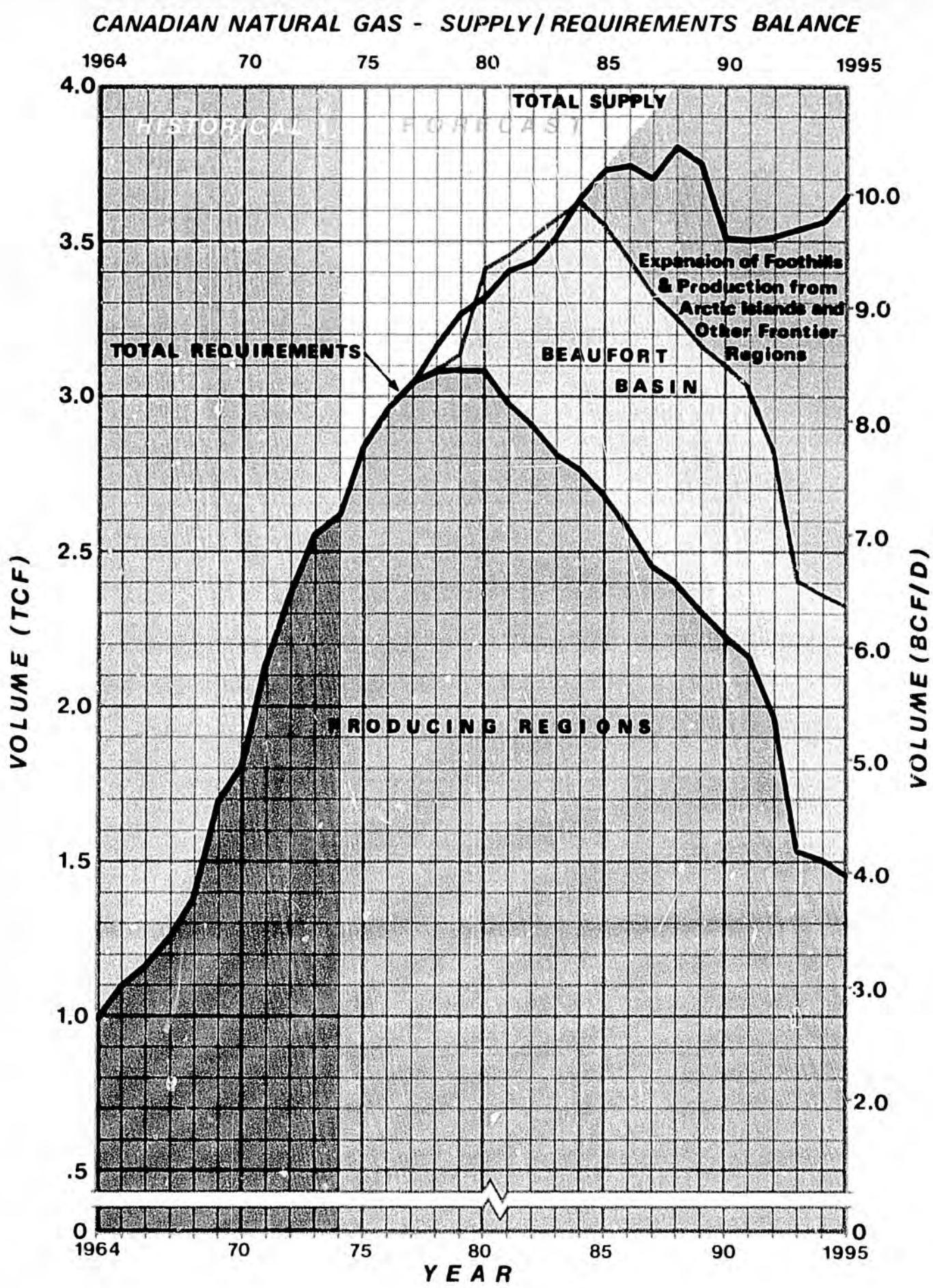
THE SUPPLY/REQUIREMENTS BALANCE

The graphical presentation on the adjoining page results from superimposing the first preceding graph, "Canadian Marketable Natural Gas Production", on the second preceding graph, "Total Requirements For Canadian Natural Gas". As shown, the black line represents requirements, the red line represents conventional production, and the blue line the production which Foothills will bring into supply from the Beaufort Basin.

It is this graph which demonstrates the extreme urgency of bringing Beaufort Basin gas into Canadian supply as soon as possible. Without it the deficiency between conventional supply and requirements, which begins to develop in 1978 and steadily increases thereafter, will assume alarming proportions as Canadian requirements continue to increase while, at the same time, conventional supply begins rapidly to decline.

In order to avoid the serious consequences which will result if Beaufort Basin production does not reach the markets in 1979 or 1980, it is imperative that wholehearted support, of every practical form, be given to that pipeline project which can meet this kind of timing. Foothills advances the Maple Leaf Project as the only existing practical plan which can meet the target dates.

As can be seen on the graph, even with the addition of gas supply made available by Foothills, further supplies will be required by 1985. It is anticipated that these will be provided by expansion of the Foothills pipeline, production from the Arctic Islands and/or production from other frontier regions.

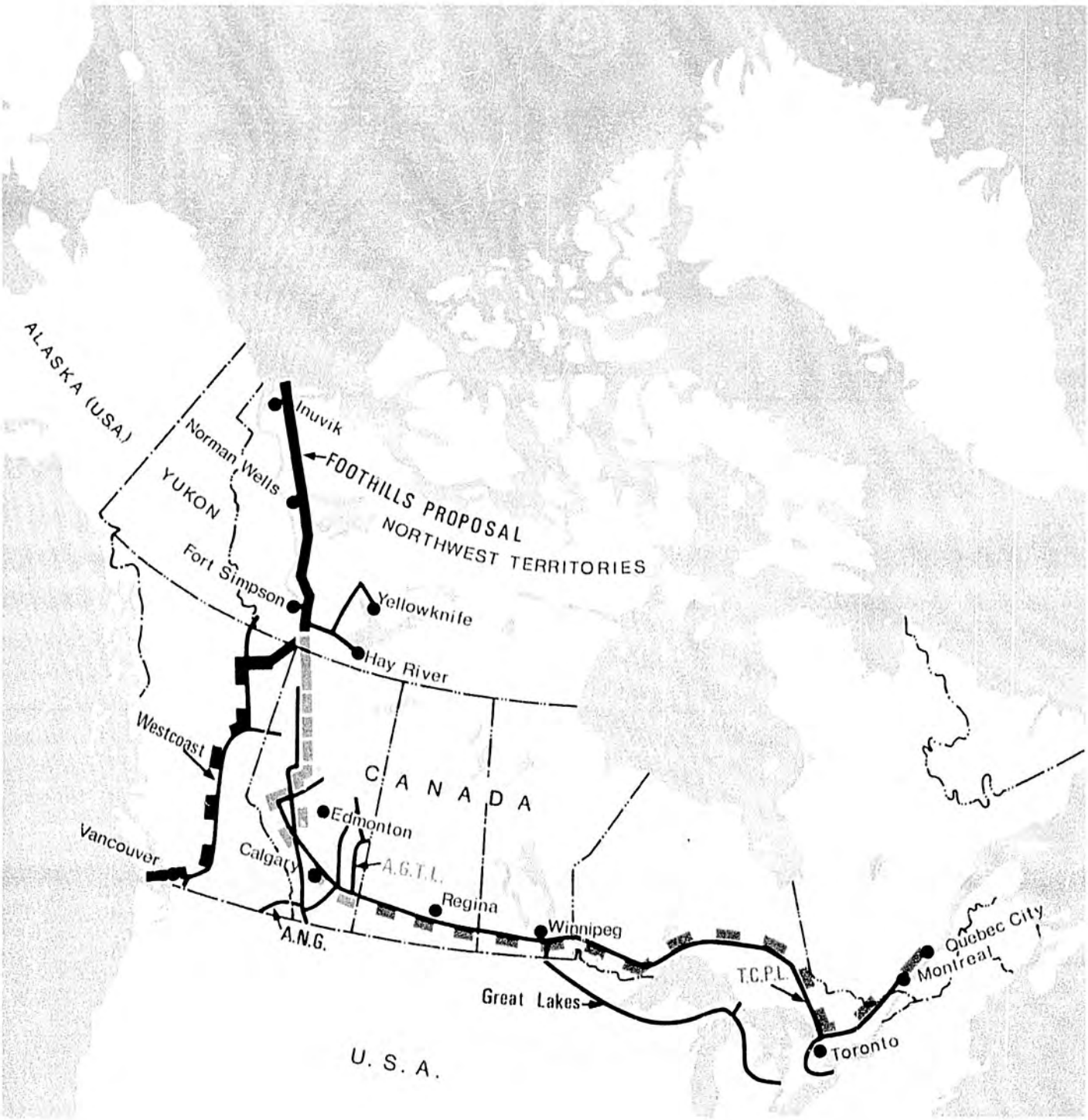

CANADIAN NATURAL GAS - SUPPLY/REQUIREMENTS BALANCE
1964
70
75
80
85
90
1995
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
0
HISTORICAL
FORECAST
TOTAL SUPPLY
TOTAL REQUIREMENTS
Expansion of Foothills & Production from Arctic Islands and Other Frontier Regions
BEAUFORT BASIN
PRODUCING REGIONS
VOLUME (TCF)
VOLUME (BCF/D)
YEAR

THE MAPLE LEAF PROJECT

The Maple Leaf Project is a plan to construct a wholly Canadian owned and operated natural gas transmission main line from the Mackenzie Delta/Beaufort Sea area, down the Mackenzie Valley to a point near the intersection of the 60th parallel (the southern boundary of the Northwest Territories) with the common boundary of Alberta and British Columbia. A main line will branch off from this point and lead generally southwesterly about 140 miles to connect with the transmission system of Westcoast in northern British Columbia. Another main line will continue southward about 75 miles into Alberta to connect with the main line system of AGTL. Lateral lines will be built to bring natural gas services to most of the communities in the Mackenzie Valley region of the Northwest Territories.

The intention behind the project is to transport gas from the Mackenzie Delta/Beaufort Sea area through the Foothills line to its points of connection with the systems of Westcoast and AGTL, thence through those systems and, on the eastward side of Alberta, through the TransCanada Pipelines Limited (TCPL) system to Canadian markets. There will be available the existing connections to the points of export from Canada to the United States so that if any of the gas from the Mackenzie Delta/Beaufort Sea is at any time surplus to Canadian requirements, the amount which is surplus can be readily exported, although the Maple Leaf Project is not in any way directed to or dependent upon export transactions.

The map on the opposite page generally sets out the route by which Beaufort Basin gas will reach Canadian markets through the Maple Leaf Project.


ALASKA (U.S.A.)
Inuvik
Norman Wells
YUKON
FOOTHILLS PROPOSAL
NORTHWEST TERRITORIES
Fort Simpson
Yellowknife
Hay River
Westcoast
CANADA
Edmonton
Vancouver
Calgary
A.G.T.L.
Regina
Winnipeg
A.N.G.
Quebec City
Montreal
T.C.P.L.
Great Lakes
Toronto
U. S. A.

THE MAPLE LEAF PROJECT AND GAS PIPELINE INVESTMENT

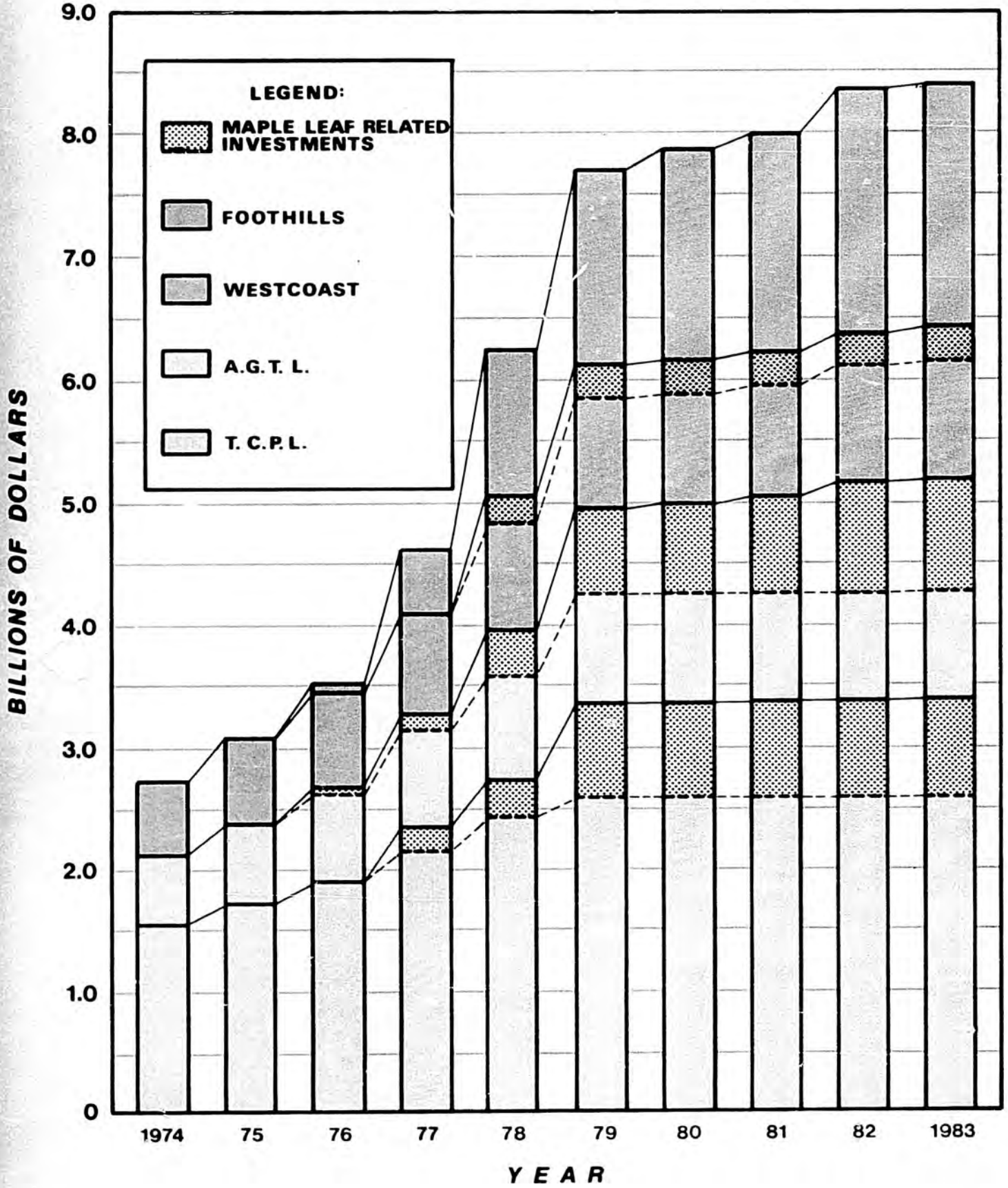
On the opposite page is a bar graph showing the expected capital costs, by year, for the Maple Leaf pipeline system accumulated with present investment and future normal growth of the AGTL, Westcoast and TCPL systems. Maple Leaf related capital costs are shown in the shaded parts of the bars.

Investments commence in 1976 and increase sharply through 1979 as a reflection of two winter construction periods. When Foothills is fully powered, gas pipeline investment in Canada will total some $8.5 billion, an increase of $5.75 billion over 1974 investment of $2.75 billion.

Based on gas reserves potential in southern Canada, existing systems are expected to increase total investment from $2.75 billion in 1974 to $4.4 billion in 1979. Thereafter, annual growth in total investment abates somewhat as a reflection of reserves maturity in southern Canada. By 1983 the total approaches $4.5 billion with no investments included for handling northern gas.

The capital requirements of each of AGTL, Westcoast and TCPL will be the respective responsibilities of those companies. Foothills will be responsible for raising the capital for the Northwest Territories portion of the line; the portion to be owned and operated by Foothills.

CUMULATIVE GROSS PIPELINE INVESTMENT BY COMPANY



THE MAPLE LEAF PROJECT
AND
SEGMENTS OF OWNERSHIP AND OPERATIONS

As well as the all new pipeline construction required for the line from the Mackenzie Delta to the connections with AGTL in Alberta and Westcoast Transmission in British Columbia, expansion of the AGTL, Westcoast and TCPL systems will be necessary. This is because of the expanding Canadian requirements which, by the time the Beaufort Basin gas is moving, will exceed the present capacity of the existing systems even though there will be some spare capacity in those systems by reason of the decline in supply from provincial sources.

The Maple Leaf Project is considered to embrace the new lines required in the Northwest Territories, British Columbia and Alberta as well as the necessary expansions of the existing systems. The ownership and operation will be comprised of five seperate segments.

First Segment – From Mackenzie Delta to a point just north of the 60th parallel (the southern boundary of the Northwest Territories); to be owned and operated by Foothills Pipe Lines Ltd.

Second Segment – The expansion into British Columbia from the point just north of the 60th parallel and the expansion required to the Westcoast systems in British Columbia; to be owned and operated by Westcoast.

Third Segment – The extension into Alberta from just north of the 60th parallel to the point of connection with the existing AGTL system at Zama; to be owned and operated by an AGTL subsidiary.

Fourth Segment – The expansion required to the AGTL system in Alberta; to be owned and operated by AGTL.

Fifth Segment – The expansion required to the TCPL system through Saskatchewan, Manitoba, Ontario and into Quebec; to be owned and operated by TCPL.

FOOTHILLS PIPE LINES LTD.

Foothills Pipe Lines Ltd. is a "special act" company, incorporated by statute of the Parliament of Canada. It has the power, within or outside of Canada, to:

> "Construct, purchase, lease or otherwise acquire and hold, develop, operate, maintain, control, lease, mortgage, hypothecate, create liens or other security upon, sell, convey, or otherwise dispose of and turn to account any and all inter-provincial, extra-provincial and/or international pipelines and all appurtenances relative thereto. . .".

Foothills is capitalized at 10 million shares, each of a par value of $5.00. At present there are 4,500 shares issued and outstanding of which 80% are held by, or for, The Alberta Gas Trunk Line Company Limited (AGTL) and 20% by, or for, Westcoast Transmission Company Limited (Westcoast). AGTL and Westcoast are generally known as "the sponsor companies". As other sponsor companies join as participants, the AGTL percentage of the issued and outstanding shares will be reduced by transfers to the new sponsor companies.

The business affairs of Foothills are directed by a Board of Directors composed of:

Kelly H. Gibson, Chairman	(Chairman of the Board of Westcoast)
S. Robert Blair	(President of AGTL)
E. C. Phillips	(President of Westcoast)
R. L. Pierce, Q.C.	(Executive Vice-President of AGTL)
R. J. Gibbs, Q.C.	(Member of the law firm of McLaws & Company in Calgary)
J. R. McCaig	(President of Trimac Limited)

and by an executive committee composed of Messrs. Gibson, Blair, Phillips and Pierce, and the normal complement of officers headed by S. R. Blair as President and Chief Executive Officer.

SIZING AND TIMING

Engineering and cost calculations have demonstrated that the appropriate pipeline size for the Foothills line is 42 inches outside diameter. The specifications of the pipe and of the compressor stations necessary throughout its length, as well as this pipe size, are standard and conventional. Proper scheduling of the construction of the new line and expansion of the existing systems will make it possible to have all of the pipe manufactured in Canadian mills and to establish complete manufacturing of compressors and all other equipment in Canada. This would not have been the case if a larger line size had been chosen. Similarly, a carefully prepared construction schedule will enable maximum employment of Canadian construction crews and organizations.

Foothills and its two corporate shareholders are satisfied that, taking into account a reasonable estimate of the time required for regulatory hearings prior to certification, construction of the pipeline could commence at the start of the winter season of 1977. This will enable the first Beaufort Basin gas to reach Canadian markets by late fall of 1979 in the time to offset the forecast deficiencies resulting from the inability of conventional sources of supply to continue to meet Canadian systems requirements and before the deficiencies reach the critical stage. The construction schedule incorporates a buildup over a five-year period so that the maximum volumes possible, without looping, will be carried in 1984. The buildup schedule is also designed to take maximum advantage of spare capacity which will develop in the existing AGTL, Westcoast and TCPL systems as the daily deliverability capacity of the conventional sources of gas declines.

COST–OF–SERVICE

Foothills will operate as a transporter for others who purchase the gas, charging for this service on a "cost-of-service" basis. "Cost-of-service" studies, based on planned throughput of the Foothills' pipeline, indicate that the Maple Leaf Project is an economically viable means of bringing Beaufort Basin gas to Canadian markets. When the line is at maximum planned capacity, transportation costs will be in the order of 50¢/mcf to the 60th parallel, 70¢/mcf to Empress and $1/mcf to $1.20/mcf to various sections of eastern Canada. Planned pipeline capacities are:

November 1, 1979 to November 1, 1980	800 mmcf/d
November 1, 1980 to November 1, 1981	1,200 mmcf/d
November 1, 1981 to November 1, 1982	1,600 mmcf/d
November 1, 1982 to November 1, 1983	2,000 mmcf/d
November 1, 1983 and thereafter	2,400 mmcf/d

FINANCING

Foothills has sought the advice of persons experienced and expert in the financing of large-scale pipeline projects, and have been advised:

> ". . . We believe Foothills will be able to secure the funds required to complete its proposed pipeline system within the time frame called for from the public sale and private placement of a wide range of conventional securities in Canadian and United States markets, from advantages under loan agreements with Canadian and U.S. banks, from drawdowns under a revolving credit arrangement which we would hope to obtain from a consortium of Canadian, U.S. and international financial institutions and under special loan arrangements which may be concluded with export credit agencies of various countries in which it may be necessary to place orders for some of the material required in the pipeline complex."

and

> "The sheer magnitude of the financial requirements of the Foothills pipeline proposal dictates that:
>
> (i) The financing program be as straight forward and conventional as possible to ensure acceptance and understanding by a broad group of investors;
>
> (ii) Individual classes of securities to be issued to investors, both public and private, be limited to the type of security readily understood and accepted by investors in North America and abroad. First mortgage bonds, debentures, preferred shares (in each case possibly carrying warrants to purchase common shares or convertible into common shares) and common shares all fulfill this requirement;

(iii) Each class of security to be sold at any given moment conform to market standards then prevailing, both as to rate and term, to ensure as broad an appeal as possible;

(iv) The credit strength of the users of the gas be mobilized in a conventional manner in support of the debt securities to be issued to assist in financing the Foothills pipeline;

(v) The financing focus firstly on the viability of the project and secondly on the credit resources of both sponsors and users of gas; and

(vi) All possible means of support of a direct or indirect nature from both federal and provincial governments be explored."

and

". . . We consider it useful to summarize some known attitudes held by institutional investors as they relate to debt securities issued by gas pipeline companies:

(i) A debt/equity ratio of up to 75%/25% is tolerable.

(ii) Total funded debt should not exceed 90% of the gross plant.

(iii) Senior debt of first mortgage bonds should not exceed 2/3 of gross plant (although bonding up to 70% of the cost of property additions is permitted in indentures securing outstanding first mortgage bonds of certain pipeline companies).

(iv) Cost of service basis for payment represents an acceptable method of imparting the credit strength of the user companies to the debt securities of the issuing pipeline."

RESERVES IN THE PIPELINE SUPPLY AREA

Since doubt has been publicly voiced as to the adequacy of Beaufort Basin gas reserves to serve as a basis for the Maple Leaf Project, the reserves estimates prepared for Foothills by its consultants are detailed on the opposite page. The first column shows presently proven reserves of 7.5 trillion cubic feet and annual additions to 1995 which will increase discovered reserves to 33 trillion cubic feet by that year. The discovered reserves up to the end of 1979, when the gas will commence to flow, will be 19.2 trillion cubic feet.

This type of threshold and annual additions pattern compares very favourably with the reserves circumstances existing at the time when other major Canadian transmission systems were financed, constructed and put into operation.

As well, the pipeline will be traversing an area of hydrocarbon potential in the mainland Northwest and Yukon Territories. Foothills' consultants advise that this area has a potential for discovery of about 5.9 trillion cubic feet of gas. Their forecast of additions in the area is not as large as the Beaufort Basin but, nonetheless, it does offer an attractive addition to potential supplies.

In total, Foothills' supply area is judged to have a potential of 45 trillion cubic feet. By commencement of pipeline operation in late 1979, consultants advise that 20.0 trillion cubic feet of gas will have been discovered in the supply area.

FORECAST ADDITIONS TO MARKETABLE NATURAL GAS
BEAUFORT BASIN & MAINLAND NORTHWEST & YUKON TERRITORIES

(BCF @ 14.73 psia & 60°F.)

	BEAUFORT BASIN	MAINLAND N.W.T. & YUKON	TOTAL
Discovered Reserves @ 12/31/74			
Appreciated/Probable	7,459		7,459
Initial Proved			
Remaining Probable	7,459		7,459
Remaining Proved			
Potential Additions	31,627	5,868	37,495
Annual Additions			
1975	2,354	164	2,518
1976	2,354	164	2,518
1977	2,354	164	2,518
1978	2,354	164	2,518
1979	2,354	164	2,518
1980	2,352	164	2,516
1981	895	154	1,049
1982	895	154	1,049
1983	895	154	1,049
1984	895	154	1,049
1985	895	154	1,049
1986	796	154	950
1987	796	154	950
1988	796	154	950
1989	796	154	950
1990	796	154	950
1991	597	147	744
1992	597	139	736
1993	597	139	736
1994	597	139	736
1995	597	139	736
TOTAL ADDITIONS	25,562	3,227	28,789
Cumulative Reserves to 1995	33,021	3,227	36,248
Remaining Undiscovered 1995	6,065	2,641	8,706
Ultimate Potential	39,086	5,868	44,954

QUALIFICATIONS OF ADDITIONAL SPONSOR COMPANIES

The two sponsor companies of Foothills (AGTL and Westcoast) expect other sponsors to join this venture in due course and have resolved that new participants must meet two prime qualifications as conditions precedent to the acquisition of shares in Foothills. Firstly, they must be able to provide substantial aid in getting the Beaufort Basin gas to Canadian markets as soon as possible and, secondly, they must be Canadian; that is to say, a majority of their issued and outstanding shares must be clearly and demonstrably in Canadian hands.

In addition, each must be of substance and have a high degree of financial integrity, for, as the Foothills financial advisors point out:

> "The overriding factor that must be evident in the financing plan, and one that cannot be stressed too strongly, is that financial support for Foothills' obligations must flow from Foothills' owners and sponsors as well as from the users of natural gas to be transported by Foothills. Such financial support must be sufficient to ensure the three principal objectives of the financial plan are met, namely that:
>
> (a) The Foothills pipeline system is completed and placed in service;
>
> (b) Foothills revenues are adequate to meet all obligations including interest and sinking fund payments on all debt instruments as well as to provide an adequate return on equity capital invested in the system; and
>
> (c) Interruptions to service, including force majeure interruptions, do not jeopardize Foothills' ability to meet its obligations."

ADVANTAGES OF THE MAPLE LEAF PROJECT

The advantages which are listed in this part are not meant to be a complete catalogue. Only the most significant are included.

(1) The Canadian gas from the Beaufort Basin area will flow the entire distance, from point of origin to burner tip, through Canadian owned and operated transmission systems.

(2) Spare capacity which develops in existing Canadian systems as provincial production declines will be utilized with consequent savings in unit costs.

(3) Implementation does not depend upon approvals by foreign agencies for the transmission of gas of foreign origin.

(4) No other announced project makes provision for Beaufort Basin gas to be supplied to British Columbia for the requirements of the Westcoast system and the systems of its British Columbia customers.

(5) The capital costs are substantially less and, so far as is known, the unit transmission costs are less than the other announced project.

(6) Because the pipe and other equipment is of conventional design and can be manufactured in Canada, there will be major orders in Canada for steel manufacturers and fabricators.

(7) All of the above factors contribute to a substantial savings in the time required to obtain approvals, construct and put the pipeline into operation.

(8) As all the companies involved in transmission and distribution are Canadian, there will be much greater sensitivity to provincial and national needs and aspirations than there would be if there was a substantial degree of foreign influence and control.

SCOMM

#21:8

Do We Really Need a Natural Gas Pipeline from Alaska?

Two of the major decisions on energy facing our country now have to do with natural gas. What are we going to do to counteract the rapid decline of gas reserves in the lower 48-states, and what are we going to do to get Prudhoe Bay gas to market? Many think that the answer to both problems is a transportation system for the latter to the former, but this is not necessarily true. Very high costs as well as the time required for construction both argue against this answer. Should we pay about the same price for a gas transportation system as for the Alyeska oil pipeline when it will carry only about one-tenth of the energy? Can we affort to wait another five years or so for governmental approval and construction of such a transportation system? For the reasons presented below, we believe the answer to both questions is a very firm no.

There is very good reason to believe that a great deal of natural gas remains to be discovered in or offshore of the lower 48-states. In recent years economics dominated by Federal price control has prevented discovery of this gas. There has simply not been the income to pay for the high costs of deeper drilling and offshore drilling. Now there are hopeful signs that Federal policy is becoming more realistic and cognizant of the basic economic fact that more income is needed to pay for higher costs to find and produce this gas.

In about a half-year we shall have a pipeline completed to carry Prudhoe Bay's crude oil to Valdez and thence to market. (Although title to this line is held by Alyeska Pipeline Service Co., it really belongs to all future consumers of this oil because they will be paying for it.) While it was designed to carry 2,000,000 bbl/day, there is serious doubt as to whether we have supplementary transportation systems and readily accessible domestic markets for even the initially planned throughput of 1,200,000 bbl/day. It will probably take several years for both of the latter to develop and even longer for the full capacity of the pipeline to be used. Considering the errors in other estimates made for this line, one might even question whether it will ever be fully used for the designed capacity. Few people remember the original cost estimate was $900,000,000 while the most recent one is $7,700,000,000.

Three proposals for transporting Prudhoe Bay natural gas have been made and are now being considered by various governmental agencies. Recently estimated costs of these range from about that of the oil pipeline to half again as much.

Final costs and completion times are anyone's guess at this point in time, but we can be assured that both will probably be greater than present estimates. We believe there is a better, less costly and more rapidly attainable way of solving this problem than constructing a new transportation system when we will soon have another completed which is likely to be underused.

It is unfortunate that natural gas cannot be transported as such in the oil pipeline. However, some petrochemicals manufactured from natural gas could be transported in the pipeline with the oil, and this is the gist of our proposal. We have considered methanol in some detail and have looked at both urea and ammonia in a preliminary way. All are currently manufactured from natural gas in the lower 48-states; we are simply proposing that the site of the conversion plants be moved from the present locations to Prudhoe Bay. This would also free a considerable amount of present natural gas production which could go into readily accessible gas transportation lines and then to gas utilities in the lower 48-states.

Because use of natural gas for household purposes seems to take priority over that for industrial ones, petrochemical plants needing it would appear to have a precarious future in the lower 48-states. Companies owning these should give serious consideration to the movement of these plants to the location of our major uncommitted source of natural gas, namely, Prudhoe Bay. By methods examined earlier, this can be done by building or relocating them on large reinforced concrete barges, transporting the barges to Prudhoe Bay and mooring or beaching them there. It should be emphasized that these barges are not simply transportation vehicles; the plants should be recontructed or constructed on the barges and fully operable there before leaving their origin. At Prudhoe Bay the plants would not be removed from the barges, which could then serve as operation pads with the former buoyancy chambers then being used for storage of products.

With the Alyeska pipeline having the status of a common carrier, other liquids than simply crude oil can be transported in it. Solids such as urea could be slurried in crude oil or some other medium. Liquids such as methanol could either be batched as in a product line or else blended in some way with the crude oil. We have investigated the dispersion of crude oil in methanol and have learned that with the use of very small amounts of chemical agents, stable dispersions of crude oil droplets in a continuum of methanol can be obtained. These would

be easily pumpable at temperatures ranging from the coldest ever found in Alaska up to the proposed operating temperatures for Alyeska's hot oil line, i.e., 145°F. Perhaps the optimum arrangement might be to have batches of such a dispersion or others in a pipeline mainly devoted to crude oil.

Even at the initial oil production rates, the anticipated production rates for natural gas at Prudhoe Bay probably exceeds what is needed to manufacture all of our methanol, urea and a number of other petrochemicals. There should be no legal restrictions on exporting these as there is for the crude oil. We will also need to develop and perfect other uses for some of these such as the methanol. It and other lower alcohols have been used before as I.C. engine fuels and octane improvement components in hydrocarbon fuels. If we are to phase out lead compounds in gasoline and still have high octane fuels for efficient, high compression ratio engines, then we need to rediscover ways of handling such alcohols in our fuel systems.

What would be the cost and time required to implement such a scheme? Only a detailed study can tell but a few comparisons can show relative orders of magnitude. As for capitol costs, there seems to be little doubt that relocating the petrochemical plants would be less expensive than building an entirely new gas transportation system. The environmental impact of petrochemical plants at Prudhoe Bay will be significant but probably less than that of an entirely new pipeline. The material required insofar as it has an impact on the environment will also be less. As for operating costs, liquid-carrying pipelines are always more efficient on a mass or energy basis than are gas-carrying ones. Because it has less environmental impact than the three gas alternatives, it should be more acceptable to environmentalists and this should lead to quicker governmental approval. Implementation time should also be a fraction of that required for the gas alternatives.

We are not suggesting that this scheme be implemented immediately, but we are proposing that a careful study be funded and started as soon as possible. Input and cost estimates should be obtained from all interested parties--the petrochemical companies, the gas pipeline companies, the gas utilities, the environmentalists, Alyeska Pipeline Service Co., the oil refining and marketing companies, the automotive industry, and possibly others. We need to have an

unbiased evaluation of this proposal to be considered along with the three being backed by the gas pipeline companies and utilities. There is no reason why natural gas consumers should pay for another grandiose, expensive slow scheme to fill their needs when a better method may well already exist.

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Stanford, CA 94305
(415) 326-1097

ESTIMATED POTENTIAL VALUE OF NATURAL GAS LIQUIDS IN 1981

TO

THE STATE OF ALASKA

(Basis: 2.4 Billion Cubic Feet Per Day of Gas)

Product	Total Liquids in Prudhoe Gas (B/D)	Alaska's Share (B/D)	Value as Liquid(1) ($/B)	Value as Gas(2) ($/B)	Value Difference ($/B)	Added Income to Alaska from Royalty Sales(3) ($/D)	Added Income to Alaska from Severance Tax(4) ($/D)	Total Income to Alaska ($/D)	Total Annual Income to Alaska ($/yr)
ethane	163,700	20,500	6.00(5)	4.00	2.00	41,000	28,600	69,600	25,400,000
propane	87,300	10,900	12.00(6)	5.70	6.30	69,000	38,500	107,500	39,200,000
butane	31,400	3,900	13.00(7)	6.20	6.80	27,000	15,000	42,000	15,300,000
pentanes Plus	6,120	800	13.00(7)	7.20	6.80	4,500	2,500	7,100	2,600,000
Total	288,500	36,100				141,600	84,600	226,200	82,500,000

This is the estimated 1981 value at Prudhoe Bay after allowing for extraction costs and shipment to California.
Based on delivered value in midwest of $3.00 per MMBTUs and transmission cost of $1.50 per MMBTUs in 1981.
Based on 12.5% Alaska royalty share.
Based on 0% severance tax.
Based on ethane being worth $6.00 per barrel at Prudhoe Bay in 1981.
Based on propane being worth $18.00 per barrel, delivered to California.
Based on butane and pentane being worth $19.00 per barrel in California.

(1937), wherein the Supreme Court of the United States upheld a Texas statute prohibiting the use of sweet gas in the production of carbon black. Although the State did not prohibit production from the wells in question, the effect was the same because there was no other market for the sweet gas at that time.

10. It is probable that the State may be able to require that a producer of natural gas extract liquid hydrocarbons from the gas before the gas enters an interstate pipeline.

No cases have dealt with the precise issue here under consideration, and accordingly an unconditional opinion cannot be given. There is, however, an abundance of authority recognizing that a State may validly regulate production of oil and gas by virtue of the police power inherently possessed by the State. Summers, The Law of Oil and Gas, § 103 (1927). These authorities are set out above in the discussion of the general power of a State to control production of oil and gas.

The cases dealing with questions most closely related to the one at hand were decided by the United States Supreme Court in 1920 and 1937. Those cases dealt with the authority of a State to regulate and/or prohibit the use of natural gas for the manufacture of carbon black.

From Moody "Legal Analysis of Issues Relating to Natural Gas Transportation"

The leading case is Walls v. Midland Carbon Company, 254 U.S. 300 (1920). Wyoming had enacted a statute which provided that:

> "The use, consumption or burning of natural gas taken or drawn from any natural gas well or wells, or borings from which natural gas is produced for the products where such natural gas is burned, consummed or otherwise wasted without the heat therein contained being fully and actually applied and utilized for other manufacturing purposes or domestic purposes is hereby declared to be a wasteful and extravagant use of natural gas and shall be unlawful when such gas well or source of supply is located within ten miles of any incorporated town or industrial plant." Walls at 309.

In addition, Section 2 of the statute prohibited "the use, sale or other distribution of natural gas, the product of any well owned, leased or managed by any person, for the purpose of manufacturing or producing carbon or other resultant products from the burning or consumption of such gas, without the heat therein being fully and actually utilized for other manufacturing purposes or domestic purposes". Walls at 310.

The statute was attacked on the grounds that (i) the statute transcended the police power of the State of Wyoming, in that its purpose and effect was not to regulate and conserve natural gas but to prohibit the use thereof; (ii) the statute made a discrimination between owners having equal rights, and thereby violated Article I, §10 of the United States Constitution and the Fourteenth Amendment thereof; (iii) the law deprived the companies of their property by the ruin of their business, and (iv) the statute impaired the obligation of pre-existing contracts.

The United States Supreme Court held that while the prohibition contained in the statute is upon the use or consumption of the natural gas, and not the production thereof, the statute was constitutional. Unfortunately, the Supreme Court's opinion is dedicated to a detailed analysis of the facts, and the opinion cites little authority and few principles of law in reaching its decision.

The Court stated that while it was clear that carbon black has many uses and great utility, this fact is of incidental importance.

> "The determining consideration is the power of the State over, and its regulation of a property in which others besides the companies may have rights in and which the State has an interest to adjust and preserve, natural gas being one of the resources of the State. And in this consideration it is more important to consider not for what a particular owner uses the gas, but the proportion of his use to that of others, or it may be, the prevention of the use by others. . . ." Walls at 319.

The Court also said that Wyoming was not "required by the Constitution of the United States to stand idly by while these resources were disproportionately used, or used in such a way that tended to their depletion, having no power of interference." Walls at 324.

The decision in Walls was re-affirmed in Henderson Company v. Thompson, 300 U.S. 258 (1937). Again, the Supreme Court's opinion cited little authority, its decision resting upon a finding that the facts demonstrated that the legislature had acted reasonably.

In Henderson, the plaintiff attacked the validity of orders entered by the Railroad Commission of the State of Texas pursuant to a statute prohibiting the use of "sweet gas" for the manufacture of carbon black. Sweet gas was defined by the statute as any natural gas containing more than one and one-half grains of hydrogen sulfide per 100 cubic feet, or more than 30 grains of total sulphur per 100 cubic feet of gas, or "gas which in its natural state is found by the Commission to be unfit for use in generating light or fuel for domestic purposes." Henderson at 260, n.1. Once again a claim was made that the statute violated the equal protection clause of the Fourteenth Amendment, as well as that the statute violated the due process and contract clauses of the United States Constitution.

The Supreme Court cited Walls for the proposition that "the needs of conservation are to be determined by the Legislature." Henderson at 264. While the plaintiff conceded this, it urged that in the absence of waste, the legislature of the State of Texas lacked the power to regulate production, since in that State the law gives the owner of land title to the gas in place and to that which may migrate to formations under his land. The Court rejected this argument, stating:

> "One principal established by the Walls case is that the Legislature may, for the purpose of conserving natural resources, regulate their production and use. The findings of the district court in this case

> support the reasonableness of the present statute on that basis. It is also urged that there is this vital difference in the facts: that in the Panhandle field [Texas] the challenged prohibition will not prevent waste, or conserve the supply of sweet gas, since the sweet gas, if not used, will drain into the sour gas area, because of the lower pressures there. Moreover, it is insisted that, unlike the Walls case, there is here in the record convincing evidence that the use of sweet gas in the manufacture of carbon black is not wasteful. Our decision in that case rested upon no particular theory of the nature of the carbon black industry. It was based simply upon the determination that the statute in question was not shown to have been an arbitrary exercise of legislative power." Henderson at 267 (emphasis added).

Thus, there is authority from the United States Supreme Court that a State may, under its police powers, regulate the use, as well as the production, of oil and gas for purposes of conservation. The State has discretion in deciding what is wasteful production and use. However, in both Walls and Henderson, the Court took great effort in discussing the facts to demonstrate that the legislature had not acted unreasonably in prohibiting the use of the gas for the manufacture of carbon black. And in each case the States of Wyoming and Texas were able to demonstrate that the statutes involved were reasonably related to conservation measures.

It is arguable that, under the authority of Walls and Henderson, a State could require that liquid hydrocarbons be removed from any natural gas produced as long as it reasonably could be demonstrated that such a requirement

would prevent waste or otherwise would be in the interest of conservation. For example, if it could be demonstrated that the dry gas (after the liquids had been removed) was of sufficient B.T.U. content to generate enough heat for its needed uses, and that the extracted liquids themselves could then be used as an energy source, or as a valuable raw material or feedstock, waste is prevented (and conservation is thereby served) - that is, more total utility is derived from the gas produced than if the liquids were not so extracted. Obviously, the questions of whether conservation will be served and waste prevented, are scientific, fact questions which will have to be answered by qualified experts, and accordingly the power to require extraction should be vested by the Legislature in the State's conservation agency where decisions may be reached with appropriate protection of the rights of all.

The Walls case has been cited many times by Courts for the proposition that a state has complete authority to regulate the use, as well as the production, of natural gas. One case cites Walls in stating that "its [the gas] extraction and use is subject to regulation, or even complete restriction or suppression, by the state." Herkness v. Irion, 11 F.2d 386, 388 (E.D. La. 1926).

One Texas case was found wherein the Supreme Court of Texas upheld the general authority of the Railroad Commission to regulate the production of oil and gas through

proration and other orders. One of the orders entered by the Railroad Commission directed "that all of the gas from the Bammel Field shall be processed for its liquid hydrocarbons and condensates therein efficiently extracted and the residue gas either returned to said sand from which it was produced or utilized for light and fuel and other lawful uses. . . ." Unfortunately, this order was not attacked in the Courts, and therefore the Texas Supreme Court never ruled on the enforceability of the order. However, the Court was aware of the order and made clear that the Railroad Commission did have the power to regulate the manner of production in the Bammel Field. Corzelius v. Harrell, 186 S.W.2d 961, 971 (Tex. 1945).

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March 12, 1977

Senate President John Rader
Alaska State Legislature
Capitol Building
Pouch V
Juneau, Alaska 99811

Dear Senator Rader:

The enclosed critique of the recently issued FPC "Initial Decision on Proposed Alaska Natural Gas Transportation System" will, we think, be of interest to you. One of the reasons we feel the State of Alaska must take the initiative in examining the "ALASKAN METHANOL WAY" is because the Federal Government staff work has been so inadequate, as the critique shows.

We hope you found the booklet sent to you on February 7th over our Arctic Enterprises letterhead to be useful and interesting. We wonder whether the State is now ready to sponsor a study on the ALASKAN METHANOL WAY in the light of the FPC Decision.

Sincerely,

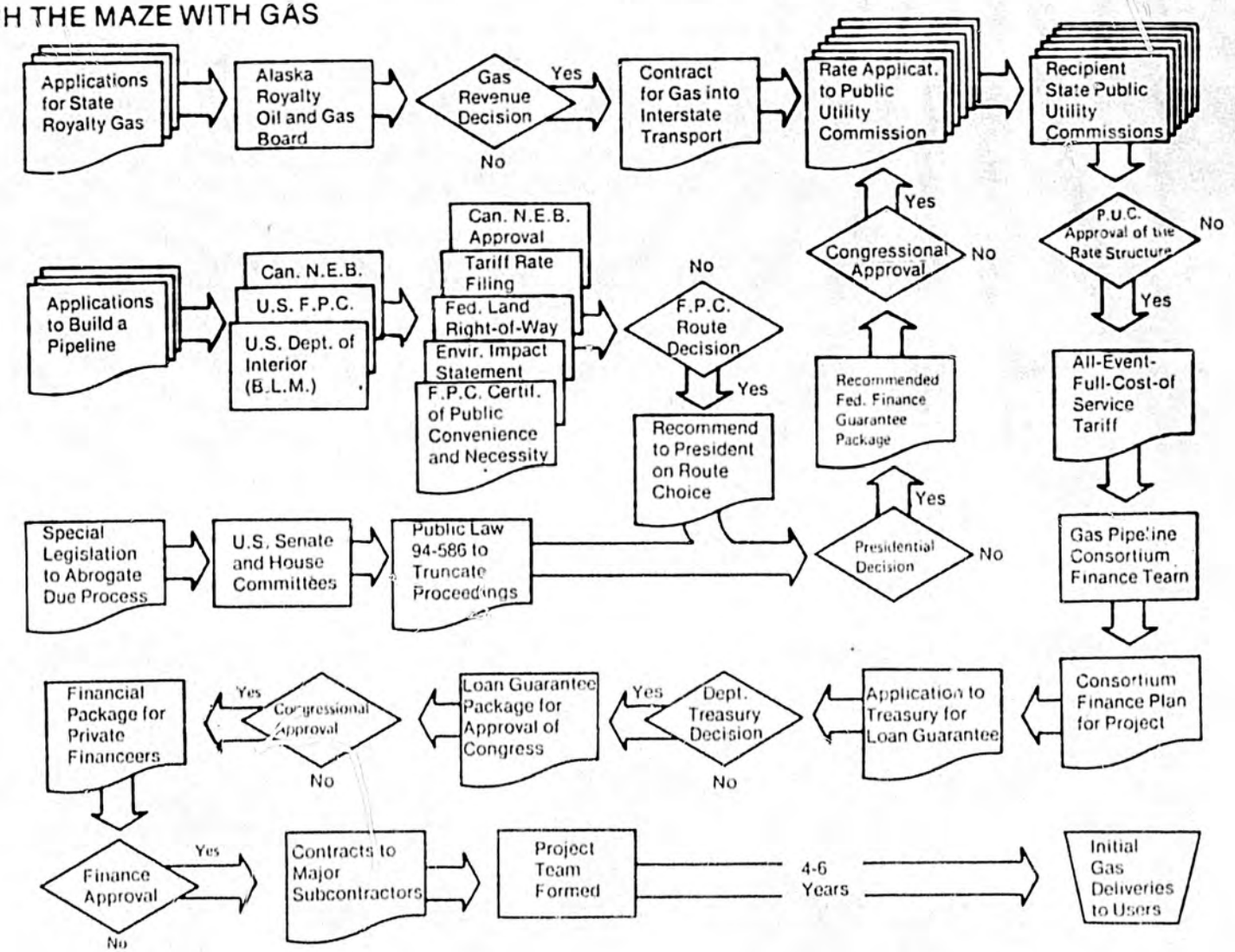
William H. Kumm

William H. Kumm
Principal, KM Associates and,
President, Arctic Enterprises Inc.

enclosure

WHK:agk

THROUGH THE MAZE WITH GAS



CRITIQUE OF THE FPC REPORT

"EL PASO ALASKA COMPANY DOCKET
CP 75-96 ET AL.
INITIAL DECISION ON PROPOSED
ALASKA NATURAL GAS
GAS TRANSPORTATION SYSTEM"
FEB. 1, 1977

K M ASSOCIATES
Consultants

February 28, 1977

CRITIQUE OF THE FPC REPORT

"EL PASO ALASKA COMPANY DOCKET CP 75-96 ET AL. INITIAL DECISION ON PROPOSED ALASKA NATURAL GAS TRANSPORTATION SYSTEM" FEB. 1, 1977

1.0 Purpose of this Critique

With reference to Public Law 94-586, Oct. 22, 1976. [1/] We are responding both in general to the report and in particular to the part of the report dealing with alternatives to the gas pipeline approaches.[2/] (We, K M ASSOCIATES *Consultants*, are not Federal officers.)

2.0 General Nature of the Comments

We have neither the expertise nor the requirement to evaluate the specifics of the decision for one or another pipeline. We can, however, comment on the decision methodology used by the Federal Power Commission within the terms given by the Commission in the report. We will also comment extensively on the one area of the report within the governmental mission, that is, "alternatives".

1/ Public Law 94-586, Oct. 22, 1976
Section 6 OTHER REPORTS
"Sec. 6(a) Not later than July 1, 1977 any Federal officer or agency may submit written comments to the President with respect to the recommendation and report of the Commission and alternative methods for transportation of Alaska natural gas for delivery to the contiguous states ..."

2/ "El Paso Alaska Company Docket CP 75-96 ..." pp. 248-9

2.1 Comments on the FPC Decision Methodology

Several sectors of the economy are supplied by regulated industries. One fundamental feature of the jurisdictional aspects of regulation is that some "public convenience and necessity" be served by the regulations. It is true that the issue of jurisdiction is usually dealt with pro forma because of judicial reluctance to interfere with the intent of legislation. It is still true, however, that the premise of public convenience and necessity must be established.

In the report of the FPC no such foundation has been established. This point is not trivial. The Commission, in its own words, finds the Alaska North Slope gas issue unusually important financially,

> "The present level of discovered gas reserves will justify only one transportation system, and the billions of dollars of capital costs for initial construction are simply so high that it would be cheaper in the foreseeable future to add to an existing line rather than to commence another.
>
> "The magnitude of the physical undertaking and cost of building a gas transportation system from Alaska apparently exceeds any prior U.S. private undertaking. The estimated $8-$11 billion costs are such that the resolve to go forward will require a financial commitment over the construction period of a substantial amount of that funding normally available to all utilities." (page 9)

and unusually difficult procedurally,

> "But these (technical) impediments pale when compared to those problems covered throughout the entire period of the hearing by the failure of those owning the reserves to enter into sales contracts ... This refusal, by itself, has prevented the expeditious and orderly examination of sizing the pipeline, financing, marketability, and a host of related matters, including disputes as to which companies would ultimately buy the gas." (page 12)

> "... (As a result) the Commission would not insist on compliance with the general Commission requirement that sales agreements be on file before this phase of the application is completed." (pages 12-13)
>
> "In addition to the lack of sales (of gas) agreements, there is still no approved production agreement for oil or gas from the Prudhoe Bay Field." (page 14)

2.2 Conclusion About the Decision Methodology

The Commission's findings in view of the factual and administrative uncertainties would seem suspect. Perhaps the Commission report itself best summarizes our misgivings -

> "The net result of the lack of sales contracts and lack of an approved field production agreement is that the record has been closed without a deliverability schedule of gas which will be sold and without knowing the purchasers of this gas. The record has been closed without knowing more than the alleged general cost of field gathering and gas conditioning facilities or who would pay for them. The record has been closed without specific estimates of reserves on the Lisbourne and Kuparuk formations which are part of the Prudhoe Bay Field. These record deficiencies in the usual case would require that the entire proceeding be held in abeyance pending their resolution. Here an overwhelming consensus on the part of the Commission, the Congress and the Executive Branch has been to go forward anyway and to pick a pipeline. It is not the best way to make rational decisions." (page 15)

We agree.

3.0 The Public Convenience and Necessity

The usual practice is that a public convenience and necessity is served when a regulatory commission asserts such a view. This particular case must be considered an exception. The report cites numerous issues which, on their face, raise questions about the premise of public convenience and necessity. Nevertheless, because of the tradition of regulatory practice, we will seek to

show that neither the public convenience nor the public necessity is automatically served by the pipeline choice.

3.1 Public Convenience

If disturbing the ordinary affairs of the public and its sub-groups can be considered as public inconvenience, then the recommendations of FPC will definitely cause "inconvenience."

The disturbances fall into three categories: physical/environmental, financial/economic and judicial/institutional.

Physical/environmental: The Commission treats the physical environmental issues with considerable thoroughness. The report shows that a considerable disturbance of the environment will occur for any pipeline, which recommends the least "impactful", i.e., the Arctic Gas proposal. The Commission is considerably less even-handed in its treatment of the sociological issues of the pipeline approaches. In particular, the Commission weighs the total Arctic Gas impact against the total El Paso or Alcan impact while quietly ignoring the ratio of intrusion to the base environment. That is to say, the El Paso and Alcan intrusions are in regions where prior intrusion, largely in the TAP's (oil) area, have occurred. The Arctic Gas intrusion is in practically virgin territory or upon very small or fragile ecologies, i.e., the North Slope. The "overwhelming consensus" seems to have overwhelmed a careful treatment of the North Slope intrusion issue.

Financial/economic: The Commission did examine economic and financing issues at considerable length in spite of having no concrete cost, price or wellhead value data. In the case of

"inconvenience" to the economy, the very substantial impact upon utility capital markets of the pipeline finance requirements were dealt with somewhat briefly.[3/] This in spite of the fact that the material in Appendix I examined the capital market impact at some length and concluded that a sizeable disturbance would develop.

Concerning the impact upon the general public, the Commission displayed the results of a gas cost model submitted by the Federal Energy Administration.[4/] The model showed relative gas costs given wellhead prices of 55¢ and $1.00 and transport tariffs of $1.29 to $1.60. Possibilities of wellhead prices of $1.42 or higher or tariffs in excess of $1.60 were ignored. Yet the economic impact of gas at $3.00 to the city gate is substantial.[5/]

Judicial/institutional: The relative disturbance recommended by the Commission with respect to federal operations, new legislation, interstate court battles, even public/private standing is staggering. In the Chapter "Potpourri" the Commission's Judge recommends:

A) Sections 13(a), 13(b) be deleted from the "Alaska Natural Gas Act of 1976".

B) Jurisdiction over rates and operations of LNG ships be conferred on the Commission.

C) The Treasury Department should develop a plan for Federal participation in the finance of the pipeline. (pages 426-7)

3/ FPC Report, page 378.

4/ Cited in the report on page 302.

5/ The FEA gas marketability model is "proof" the entire pipeline concept is a wise investment from a national point of view. We merely note that a much larger set of marginal cost/marginal benefit analyses would seem to be required given the private market reluctance to underwrite the concept.

In other places in the report the Commission advocates a legal battle with the State of Alaska over its "Hire Alaskan" statute (page 267), its royalty gas allocability (p. 18-19), and the terms of the statute (Alaska Natural Gas Act of 1976) (page 256).

There are not a few comments in the Report which suggest a sort of "Eminent Domain" attitude developing about the gas itself. For example -

> "This, while stating their (the oil producers) concern for the national interest and the requirements of this country for energy at an early date, their prime consideration for early sale turns on other more parochial interests. The only conclusion possible from their actions is that the national interest to ARCO, EXXON, SOHIO, etc., lies somewhere below their own economic interest ..." (page 13-14)

While the national security aspects of energy have extended Federal power over state's rights and private property, we do note that considerable "inconvenience" seems associated with the Commission's propositions.

3.2 Public Necessity

There is no doubt that the public can be legally and reasonably "inconvenienced" if an adequate "necessity" exists. Indeed that is very much a functional definition of most of government. The real issue turns on the question, "Is a new pipeline necessary to deal with Prudhoe Bay gas?"

The proposition that a pipeline is necessary is not established anywhere in the report. The page and one-half on alternatives is not even a legitimate Commission comment much less a proper treatment of the issue.

We believe that the legislative record supports the

point that the Commission had to make a thorough study of alternatives. This sanction is in addition to the philosophical imperative of the certification requirement. We note that our own interest is very much in possible non-pipeline methods of energy transport. This interest biases our concern but has not biased our judgement. Given the huge cost of the pipeline approaches, the complex evolution of a project, etc., the possible methods of moving the energy or rather hydrocarbons south by another means must be explored. To sum up, are there any alternatives to a new gas pipeline?

In view of the "inconveniences" to the public discussed above it is essential that the "necessity" of a new gas pipeline be thoroughly established. The only legitimate procedure is to exhaustively examine all alternative techniques of hydrocarbon transport and reject them on proven and substantive (as opposed to jurisdictional) grounds.

4.0 Alternatives

The prior discussion can be said in another context. The FPC is statutorily limited to the consideration of natural gas distributed and marketed as a fuel by jurisdictional gas utilities. On the other hand it is obvious that larger national energy policy issues are involved, indeed were so involved in several places in the report. When the level of a decision making process is elevated the criteria may change and the answer may be different. Hence the footnote on page 248 of the report - "Since the object is to bring natural gas to market, the use of methanol in the lower 48 states was not extensively investigated." - is simply presumptuous. Should not the object be, "Bring energy to market?"

4.1 The Basic Alternative

In the national energy context, the plain fact has to be admitted that of all the estimated recoverable energy in the Prudhoe field, only 22% of it is gas. Moreover, at the planned transport costs, the gas energy is costing $1.60 per million BTU's to deliver to the lower 48 while the oil energy will cost 88¢ per million BTU's. A priori it seems clear that utilization of the gas must be done with careful consideration of the oil recovery issue. This latter consideration opens up one very simple alternative. To not take any of the gas away from Prudhoe Bay.

Consider that tertiary recovery of oil in the lower 48 has been done using field gas, that local purchases of non-field gas are used and that in one case nitrogen is being manufactured at 75¢ per Mcf in order to increase recovery.

The solution gas, gas cap, oil recovery rate questions were not addressed by the FPC.

4.2 Considering the Environment

We are surprised that the Commission failed to mention in its "Alternative Transportation Methods" (about one page, total) the most prominent man-made feature in Alaska, the Trans-Alaska Pipeline. The Commission also gave little attention to the other prominent feature of Prudhoe Bay, the presence of the Arctic Ocean.

4.3 Available Capacity in the Trans-Alaska Pipeline

As has been brought out in Senate Joint Commerce and Interior Committee hearings on the disposition of Alaska North Slope Crude Oil during the Autumn of 1976, there is, and will

continue to be, excess carrying capacity in this liquids pipeline into the foreseeable future.

This is further substantiated in the FEA Nov. 30, 1976 draft document "An analysis of the alternatives available for the transportation and disposition of Alaskan North Slope Crude", FEA document no. FEA/G-76/477.

The Trans-Alaska liquids pipeline has a design throughput of 2 MMBD (Million barrels per day). It is currently built only to a throughput of 1.2 MMBD. At the lower 48 state West Coast market (the PADD V market) the following is the data from the report, page 00133.

"FEA Surplus Forecast

FEA's current estimate of the crude oil excess in PADD V is presented below: (MB/D is thousands of barrels per day)

	MB/D	
1978	1980	1985
600	900-1100	700-1300 "

Clearly the Trans-Alaska liquids pipeline will have excess capacity for many years. Some of this capacity could be used for another oil-compatible liquid on a batch basis, in the manner of pipelines in the lower 48 states.

4.4 The Asset, Its Use and The "Alternatives" Section of the Report

The existence of the surplus capacity would suggest that one alternative method of moving the gas energy would be to transform the gas into an oil-compatible liquid. Methanol is such an oil-compatible liquid. It could be made from oil-associated natural gas at Prudhoe Bay, and batch shipped in the Alyeska pipeline if

the government deemed it to be wiser than constructing new gas pipelines. It is obvious that a lesser capital cost would be involved in using an under-utilized asset than building a new gas pipeline. Only the capital cost of methanol synthesis, and the batch shipment inventory tankage would be involved. Since no new pipeline would be required the statement -

> "According to FEIS of DOI, the total common-destination capital cost would be almost 1.5 times that of the Arctic Gas proposal ..." (page 248)

- would indicate the DOI believes the methanol synthesis operation require some $12 billion, that is, the stated Arctic Gas cost of $8 billion times 1.5.

This patently absurd conclusion raises the question, where did these values come from?

4.5 The Commission's Treatment of "Alternatives"

The FPC report says, on page 248, "that ... while methanol production and transport might be technically viable, several severe drawbacks make it impractical. First, the methanol conversion is costly". The FEA report then goes on to cite the Department of Interior Final Environmental Impact Statement to the effect that "... the total common-destination capital cost would be almost 1.5 times that of the Arctic Gas proposal, and the total operating cost would be three times greater."

What is the source of the attributed DOI information? Does it represent the result of a definitive economic analysis by the government of the alternative to the proposed action?

The DOI EIS task force specifically examined the environmental aspects of the three competitive applications to build natural gas pipelines because a right-of-way would be required over federal lands for a new pipeline. The DOI EIS task force was not charged with examining the economic aspects of the issue.

The element of the DOI which was charged with the examination of the economic and technical issues of Alaska gas transportation did so under the mandate of section 302 of P.L. 92-153, the so-called "Trans-Alaska Oil Pipeline Act." This section of this act required the examination to be completed within two years of the enactment of the original law in November 1973. The DOI study was completed in November 1975. The June 1975 draft of the study report "Alaskan Natural Gas Transportation Systems. Economic and Risk Analysis Conclusions and Results" said, on pages 4 and 5: "Of all the various types of systems to transport North Slope gas that have been discussed, only two have received the support of private industry to the extent that they have been proposed in applications before U.S. and Canadian regulatory agencies." And,

"DELIVERY SYSTEM ISSUES NOT ADDRESSED BY THIS STUDY

- ENVIRONMENTAL IMPACT
- REGIONAL ECONOMIC IMPACTS AND CONCERNS
- INTERNATIONAL POLITICAL IMPLICATIONS
- U.S. AND CANADIAN GAS RATE REGULATION
    - RATE BASE
    - RATE OF RETURN ON RATE BASE
    - FAIR TRANSPORTATION CHARGES
- OTHER TRANSPORTATION SYSTEMS
    - ALTERNATIVE PIPELINE ROUTES
    - CONVERSION TO METHANOL
    - SUBMARINES, AIRCRAFT, ETC."

As the final report of the DOI section 302 study also says, on page 28 of the INTRODUCTION, the DOI did not examine the

alternatives. In fact the report even allows that it only examined systems which ..."are similar but not identical to the systems presented to the Federal Power Commission in the formal applications." (Last paragraph on page 24 of "Alaskan Natural Gas Transportation Systems. A report to the Congress, pursuant to Public Law 93-153 December 1975".)

If the DOI EIS group did not examine the economics of the alternatives and the DOI "302 study" team did not examine the economics, where does the statement about the common-destination capital cost of the (methanol) alternative come from? The answer to the question is that it comes from the application filed by the Arctic Gas Consortium!

The Federal Power Commission February 1977 document is based on the earlier FPC documents, specifically the April 1976 Final Environmental Impact Statement on Alaska Natural Gas Transportation System. Volume II, the El Paso System volume, says on page II-376 in Section II ALTERNATIVES TO THE PROPOSED ACTION, as follows:

> "This section discusses the alternatives to implementing the proposed project. These alternatives include:
>
> 1) Alternative Pipeline Routes
> 2) Alternative Sites for LNG Facilities
> 3) The Alternative of No Action
> 4) The Alternative Modes and Systems
> 5) Alternative Sources of Energy
> 6) Energy Conservation
>
> "Alternatives 1, 2 and 3 are covered on the following pages. The discussion of alternatives 4, 5, and 6 are adopted by reference from the U.S. Department of Interior's Final Environmental Impact Statement issues in March 1976 for the Alaskan Natural Gas Transmission System."

The March 1976 DOI Final EIS makes certain admissions in the section 8-F on alternative transportation systems, starting on page 116. Specifically, on page 124 in the fourth paragraph, the following is stated:

> "According to the Canadian Arctic proposal (CAG P.L. 1974), the total common destination capital cost of a methanol pipeline would be almost 1.5 times that of the Alaska Natural Gas Transportation System and the total operating cost, 3 times greater."

In short, the entire FPC treatment of alternatives to gas pipelines is lifted almost virgo intacto from the pipeline applicant's original filing.

But the Arctic Gas Consortium did not examine the methanol alternative. This is acknowledged in the Hearing Report of the Joint Hearings before the Committees on Interior and Insular Affairs and the Commerce, U.S. Senate of February and March 1976, pursuant to S. Res. 45, the National Fuels and Energy Policy Study. The committee report on the transportation of Alaskan Natural Gas, in Part 2 of Serial No. 94-29 (92-119) gives the following answers to the Questionnaire "Issues concerning the Transportation of Alaskan Natural Gas". The questionnaire was prepared by the committee staff to invite answers from hearing witnesses and interested parties. On page 1025 of the Hearing Record the following is stated:

> "The following responses are submitted by the Alaskan Gas Pipeline Company to the questionnaire..."

On page 1134 and 1135 of the Committee Hearing report, in answer to the following question, Arctic Gas says:

> "Question III STATUS OF REGULATORY APPROVALS
> D. Alternatives
> Please provide estimates of the costs environmental impacts, construction lead times and other relevant facts concerning:
> (1) An alternative pipeline route from the North

> Slope to Fairbanks and then paralleling the Alcan Highway:
> (2) Conversion of the natural gas to methanol and shipment by the Trans-Alaskan oil pipeline or tanker or submarine; and
> (3) Other possible alternatives.
>
> Response:
> ... Arctic Gas has not studied the possibility of shipment of methanol in the Trans-Alaska oil pipeline nor by tanker or submarine..."

If the Arctic Gas did not examine the batch basis methanol concept, where do all the FPC judgements, "... extremely energy-inefficient", "...requires large amounts of fresh water", "...the total operating cost would be three times greater", come from?

- "Energy Inefficiency"

Referring to page VI-328 of the June 1975 DOI draft, Environmental/impact Statement, Part VI Alternatives, Volume 1 of 2, the following is stated:

> "One of the main drawbacks of the (methanol) method is its lower overall efficiency to a common destination, which is only 48.2% with a low of 2,546 BBTUD in contrast to the natural gas pipeline system, which has a 90% efficiency and only 489 BBTUD loss. The total common destination capital cost was calculated to be almost 1.5 times that of the natural gas pipeline and the total operating cost to be 3 times greater".

These are the same words as before, only the order in the sentence has been reversed. The DOI draft EIS goes on:

> "Environmental Impact
>
> "Because the methanol pipeline system at present appears to be economically unfeasible although technically viable when compared with the natural gas pipeline and because the energy loss in conversion to methanol, not all of its potential environmental effects are considered in detail".

What the February 1977 report of the FPC is in fact citing at the bottom of page 248, is a sentence out of the Arctic Gas Consortium application with respect to a comparison between

the proposed natural gas pipeline and hypothetical methanol pipeline over the same route. Aside from the technical and economic questionableness of simply quoting of the applicant's data, the FPC has slightly oversimplified the issue.

Figure 1 titled PRINCIPAL PROCESS STEPS IN DELIVERING ENERGY TO MARKET BY VARIOUS TRANSPORTATION SYSTEMS, of subsection 2.1 of Chapter V-B of the Arctic Gas applicant's filing is attached as an exhibit. As can be seen, the applicant's treatment of the alternative methanol pipeline includes a gas processing plant which is common to both the gas pipeline proposed approach and the methanol alternative. In fact, the methanol alternative would not use a gas processing plant. Thus some 7% of the BTU's of the Natural Gas Liquids (NGL) are used by the methanol approach, but they are sacrificed by any gas pipeline approach. Second, the figure shows that the applicant's treatment of the methanol pipeline alternative shows a block labeled "SNG Plant" and another block labeled "Gas Pipeline" before the "common destination" is reached at the bottom of the illustration page. It need only be pointed out that it is not necessary to take methanol, an unregulated chemical and fuel, and put it through the last two blocks of the sequence in order to serve the regulated natural gas market place. Methanol would be sold, as now, outside of FPC regulated channels and therefore does not require the further BTU losses that would occur with the last two blocks to the "common destination". Once the methanol pipeline alternative is relieved of the losses attendant to the three unnecessary blocks, the BTU loss for the methanol pipeline alternative, and

the capital cost of these three blocks are not present.

- Fresh Water Issue

The FPC report makes another statement about the "Alternative Transportation Methods" in regard to methanol as the only alternative commodity discussed. The following sentence is from the top of page 249 of the FPC February 1, 1977 report:

> "Second, methanol conversion requires large amounts of fresh water. Estimates range from 125 gallons to 300 gallons of water required for every ton of methanol produced."

Using the same procedure as that used above of tracing back through the existing FPC, DOI and FEA documentation on the subject, we find, in the March 1976 DOI FEIS, at the top of page 128:

> "Because the North Slope fresh water is frozen most of the year, the processing water probably would also have to be taken from the Beaufort Sea and then subjected to desalination before it could be used in the methanol plant. Desalination facilities could add considerably to the plant cost. The Maritime Administration report (1975, already cited earlier) suggests that, after the submarines (submarine tankers capable of carrying crude oil or methanol from the North Slope to the East Coast via the Arctic Ocean) were in operation, their methanol-ballast water could be converted for use in the methanol process and thus eliminate the need for taking water from the North Slope (i.e. the Beaufort Sea)."

It need hardly be added that potable water is not required from the desalination facility, that such plants are in use today, and their cost and reliability is reasonable, not prohibitive. This does not appear to be an overwhelming reason for dismissing this alternative transportation method.

- Energy Efficiency/Inefficiency

The FPC February 1977 report says as follows on page 249, in the first paragraph:

> "Third, the methanol scheme is extremely energy-inefficient. The chemical conversion of natural gas to methanol and the possible reconversion to synthetic natural gas requires large amounts of energy."

This assertion requires a little analysis. First, the same sentence could have been written about naptha, a similar clean storable liquid fuel to methanol. Naptha is an oil refinery product, produced through a process involving a chemical conversion energy loss. The FPC and FEA, however, currently permit various municipal gas utilities to use naptha as a synthetic natural gas (SNG) feedstock. This SNG conversion consumes energy too. Should not the FPC be required to show the BTU losses for this SNG energy source process, as the basis of comparison for the methanol commodity fuel transport alternative to natural gas pipelines, with and without SNG produced from the methanol? Methanol does not have to be reconverted back to SNG to have many market uses, as has already been mentioned.

Second, as was previously mentioned, the natural gas liquids can go to market along with the methanol as a "carrying fluid". 7 percent more energy can thus be marketed, compared with the "dry pipeline quality natural gas" which must be prepared for the gas pipeline transportation approach.

Third, the chemical synthesis of methanol (CH_3OH) from natural gas or methane, (CH_4) requires more carbon than is available from the gas, for maximum conversion efficiency, or minimum BTU loss. The addition of carbon from a local source on the North Slope of Alaska could be very useful. There are abundant coal reserves on the North Slope. The conversion of the coal to methanol is conversely, rich in carbon and shy in hydrogen. Thus, a synergistic process is

possible which would reduce the methanol synthesis BTU shrinkage substantially, in both instances.

Fourth, the new natural gas pipeline, if approved and built is many years from completion. For the duration of the time that a natural gas energy utilization or transportation system is delayed, once the oil production begins in 1977, there will be a gas energy BTU shrinkage caused by the pumping power of the reinjection of the gas into the formation. This represents some 10% loss in gas BTU's until the day that a gas pipeline is completely finished. A methanol transportation system, on the other hand, based on modular plants and the use of the existing trans-Alaska pipeline on a batch basis can be built up incrementally and eliminate the 10% reinjection energy cost much earlier than any gas pipeline system. This is not a trivial point but the FPC appears to have chosen to ignore it.

Fifth, the gas pipeline applicants have based their discussion of the throughput required to make a new gas pipeline economic on the use of the gas cap as well as the solution gas. The use of this gas will have a shrinkage effect on the oil production BTU's or the gas cap contribution to the pressure must be substituted by another form of active pressure maintenance, again at a BTU loss. Because a methanol delivery system can be implemented on only the solution gas, there is a BTU shrinkage tradeoff in this aspect also.

The FPC analysis of gas distribution considers the "displacement" of lower 48 gas supplies at some length. Geographic displacement is considered a legitimate method of "substitution".

There is an analogous market "displacement" phenomenon between one and another uses of gas, coal and oil - even between various supplies of gas.

The principle of substitution in the energy marketplace can be applied to methanol, for example, in the automotive fuel sector of the national economy. Natural gas would not be readily used in the automotive fuel sector. When a barrel, or gallon, of methanol is substituted for a barrel, or gallon, respectively, of gasoline in a 1-in-10 mixture ratio, the internal combustion engine used in the automotive sector will operate as well on 10 units of mixture as on 10 units of gasoline. Gasoline has double the BTU heating value by volume of methanol. Therefore, substituting natural gas derived methanol for foreign oil derived gasoline in the automotive fuel sector more than makes up for the methanol synthesis loss in BTU's, and provides a source of domestic fuel in a market place with a very high social utility. This aspect of the methanol is totally ignored in the FPC documentation, but it is mentioned in the DOI March 1976 FEIS in the ALTERNATIVES volume on page 126, as follows:

> "Methanol has many uses as a well-known petrochemical feedstock, a solvent, or a fuel, alone or mixed with gasoline for internal combustion engines. Less well known uses might, with proper development, provide a methanol market for applications in turbogenerators, peak load shaving for limited periods, fuel cells for running motors, and production of single-cell protein... While these uses might make major contributions to other energy and food problems, they would not solve the dilemma of natural gas distribution companies, who want and need gas for their customers. If methanol were produced from Arctic gas, only incentives for further drilling in the continental United States, namely higher field prices, could provide this gas supply. Still, paying high transportation costs for remote Arctic gas would add unnecessarily to the country's energy bills."

4.6 A Broader Consideration of Alternatives

The foregoing is not meant to break a butterfly on a wheel. The analysis of the sources is done to prove that the FPC treatment of alternatives is not only inadequate but intellectually dishonest.

The broadest look at alternatives requires consideration of several categories. First, there is the alternative of doing nothing, that is, leave the cap gas untouched and reinject the solution gas. This has some probable value in its effect on ultimate oil recovery.

A second category is beneficiation of the product into a more tractable product to ship. Within this category is the alternative of low value beneficiation - say, for example, ammonium nitrate, which would allow for annual shipment to the lower 48 during the summer retreat of the pack ice. Or, on the other hand, much more extensive processing in situ could yield a product for the TAP's line or even air freight.

Perhaps none of these alternatives are sound and economic uses for the gas. Perhaps they are. We shall never know from the FPC treatment.

5.0 To Sum Up

The FPC report can be seriously faulted because its conclusions on the Alternatives are neither supported by the documents cited in the report, nor by any independent federal analysis of the technical and economic aspects of several alternatives. Only the methanol approach was even mentioned in the FPC report. That much, much more could be learned about that particular activity is

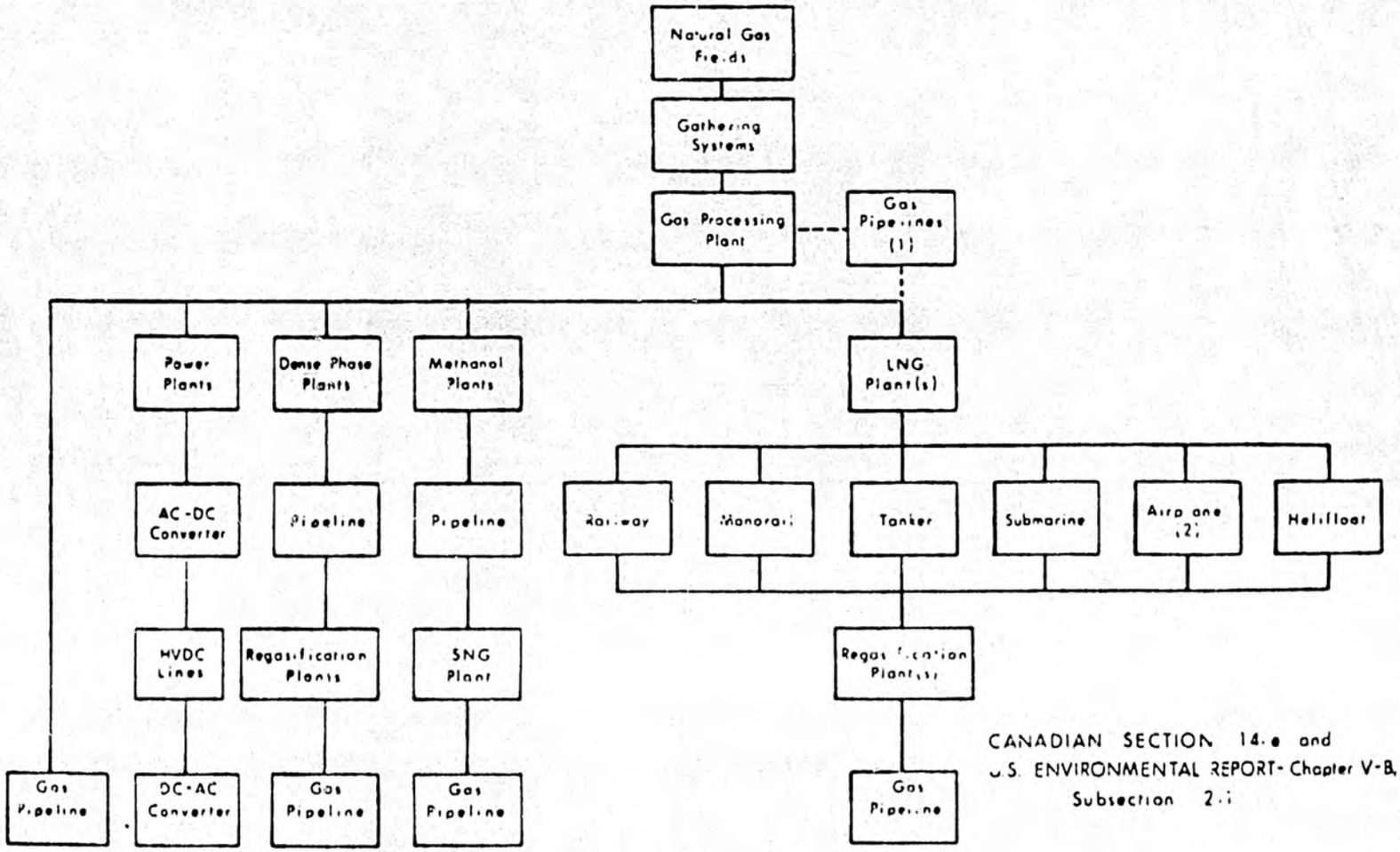
suggested from Congressional testimony. In 1975 a study was performed by the Associated Universities of Oak Ridge for the FEA. It showed that the methanol approach using the Trans-Alaska liquids pipeline on a batch basis should be examined in detail. The principal investigator reported, in testimony before the previously cited joint hearings before the Senate Committees on Interior and Insular Affairs and Commerce, as follows, from pages 1770 and 1771 of Part 3, Serial No. 92-72 (Commerce):

> "SENATOR STEVENS. In your opinion is there enough merit in this strategy to warrant an extensive study of it at this point and if so, how long would you guess such a study would take?
> "DR. THOMAS. To your first question, I think yes; there is enough merit to warrant a comprehensive study. I think such a study could be conducted, if it were undertaken promptly within a 6 month time frame. I suspect the cost would be trivial compared to the investment at stake here."

and on page 1772:

> "SENATOR STEVENS. What would be the cost of the independent study for 6 months?
> " DR. THOMAS. I think one could do this within 6 months on the order of $200,000 - $400,000 ..."

PRINCIPAL PROCESS STEPS IN DELIVERING ENERGY TO MARKET BY VARIOUS TRANSPORTATION SYSTEMS



CANADIAN SECTION 14.e and
U.S. ENVIRONMENTAL REPORT- Chapter V-B,
Subsection 2.i

EXHIBIT

(1) For the tanker or submarine system, pipelines are required to move the natural gas to a central LNG Plant

(2) Short range and Long range alternatives were estimated.

Block Diagram From Arctic Gas
Consortium Application Filed With Department of Interior

SCOMM

#21:9

Federal-State
Land Use Planning Commission
For Alaska

May 9, 1977

Honorable John L. Rader
President of the Senate
Alaska Senate
Pouch V
Juneau, Alaska 99811

Dear Senator Rader:

At its budget hearings before the House Appropriations Committee and during its report to the Alaska State Legislature Joint Resources Committee, the Federal-State Land Use Planning Commission was requested to develop a briefing document on the Canadian land claims situation and the effect the claims settlement would have upon possible pipelines for the transportation of natural gas from Alaska to the contiguous United States. In the process of developing this briefing paper, there have been several discussions with Canadian officials in Ottawa and Anchorage. The following perceptions are a result of those discussions.

There are two major thrusts in Canadian land claims that affect the construction of a natural gas pipeline. One of these is the negotiations being conducted with the Council of Yukon Indians in the Yukon Territory, and the other is the discussions being conducted with various groups in the Northwest Territories. The background to these discussions is covered at length in our briefing memo which will be forthcoming within two weeks.

In Yukon Territory, a formal negotiating structure has been instituted and discussions are well underway. With some luck, the Council of Yukon Indians and the government negotiators could reach agreement in the fall of 1977. This agreement would then have to be considered by the Canadian Cabinet and then passed as legislation by Parliament. Thus, the critical factor is whether the initial agreement between the Council and the government would be sufficient to allow pipeline construction to go forward or whether Parliamentary action would be required. The latter case would probably lengthen the time of decision from one to two years.

There are still three groups with which to negotiate in the Mackenzie Valley. The Committee for Original People's Entitlement (COPE) representing the Inuit peoples in the Mackenzie Delta is expected to submit

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ANCHORAGE, ALASKA 99501

a proposed negotiating arrangement at any time, the METIS organization is planning to come in with such an arrangement around July 1, 1977, and Indian Brotherhood of Northwest Peoples brought an arrangement to the government in October of 1976. Thus, three arrangements at this time must be negotiated in the Mackenzie Valley.

A strong feeling was gained from several discussions that Canadian polar gas either from the Arctic Islands or the Beaufort Sea would not be available for export. The published oil and natural gas resources of Canada for 1976 reveal the following possibilities. The reserves run from a high 90 percent probability of 229 trillion cubic feet to a low 10 percent probability of 378 TCF. The 50 percent probability figure of 277 TCF would take Canada to the year 2055 if one expands present natural gas utilization at a rate of two percent per annum. This growth rate is probably somewhat conservative and is based upon some major shifts in energy sources during the next half century.

Some energy planners in Canada are advancing proposals to transport the gas from the Sverdrup Basin and the Arctic Fold Belt region via LNG tankers in the early years of production. A pipeline could then be constructed at a later date when sufficient financial reserves had been accumulated. Thus, the discovered natural gas reserves could be utilized to serve Eastern Canada fairly soon. With the Western Canadian reserves taking care of the rest of the country's needs, it would not be necessary to begin construction on a Mackenzie pipeline until the first quarter of the next century.

The three major options for relating Canadian Beaufort Sea and Mackenzie Delta natural gas development to Prudhoe Bay development are, as identified thus far:

- The Arctic Gas proposal
- A pipeline from the Mackenzie Delta westward to Prudhoe Bay
- A pipeline from the Mackenzie Delta southward to join the Alcan route in the vicinity of Whitehorse

All three of the above options are impacted heavily by both Yukon and Mackenzie Valley Native claims. The Council of Yukon Indians has said consistently that no pipeline across northern Yukon is acceptable to them at this time. Both COPE and the two Indian groups in the Mackenzie Valley are making similar statements regarding pipeline construction in their areas. Thus, at this time, it would appear that intensive negotiations would be necessary in order to make any of the three options acceptable to the Native groups involved. The first option involves all the Native groups. The second and third would involve COPE and the Council of Yukon Indians.

In summary, it appears that strategies are possible for developing Arctic natural gas provinces in Canada over the long term without export of natural gas being necessary to amortize those projects. Polar gas development is not dependent upon Native claims settlement if the LNG option is utilized but it is virtually impossible for any Beaufort/ Mackenzie Delta development to avoid some resolution of the claims settlement. The impetus to a quick claims settlement in Canada is dependent upon support for a policy based upon future export of natural gas. There are also the strong desires of many Canadians to resolve the issue quickly on its own merits.

The above observations are my best personal perceptions at this time. They have no particular foundation in any offical statements.

Sincerely,

Walter B. Parker

Walter B. Parker
State Co-Chairman

WBP:go

SCOMM

#21:10

Berger 'Buries' Arctic Gas

OTTAWA (AP) — The Berger Commission recommends that no pipeline be built along the Mackenzie River valley for 10 years and that there should be a permanent ban on any pipeline from Alaska crossing the environmentally sensitive Northern Yukon.

The commission said in a report presented to Parliament today that they feel it will take 10 years to settle and implement Native land claims in the North.

More time also is needed to solve technical and environmental problems involved in building the line, the report said.

If accepted by the Canadian government, the recommendations would spell the end of the Canadian Arctic Pipeline Ltd. proposal to build one pipeline to serve both Alaska and the Mackenzie Delta.

Bob Ward, president of Arctic, said in Anchorage that it remains to be seen what impact the report will have on the Canadian government.

A spokesman for El Paso Alaska, one of Arctic's two competitors, said the report's conclusion should come as no surprise. He said El Paso hopes a similiar study of a proposed southern Yukon route — the Alaska highway route proposed by Northwest Pipeline Corp.—will reach the same conclusions.

El Paso proposes a trans-Alaska line to Prince William Sound where the gas would be liquified and put on tankers for the trip south to the lower 48.

There was no immediate comment from Northwest.

The government sources said that if a pipeline is to be built now the commission leans toward an Alaskan Highway route through the Yukon with a route along the Dempster Highway to move the Mackenzie Delta gas to market.

But the report adds that those routes were not included in the commission's study and need more study before any decision can be made.

Native groups have pressed Justice Thomas Berger of the British Columbia Supreme Court — who heads the commission — to put a moratorium on pipeline construction for 10 to 15 years after settlement of land claims to give them time to adjust.

Environmental groups hotly oppose any pipeline across the northern coastline, saying it could destroy the Porcupine caribou herd and disrupt important nesting areas for birds and the calving waters of the Beluga whale.

NORTHERN FRONTIER NORTHERN HOMELAND





THE REPORT OF THE MACKENZIE VALLEY PIPELINE INQUIRY : VOLUME ONE



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Table of Contents

This is Volume One of a two-volume report. It deals with the broad social, economic and environmental impacts that a gas pipeline and an energy corridor would have in the Mackenzie Valley and the Western Arctic. In it certain basic recommendations are made. Volume Two will set out the terms and conditions that should be imposed if a pipeline is built.

LETTER TO THE MINISTER vii

1 THE NORTH 1
1 Northern Frontier, Northern Homeland
2 The Northern Biome
5 Northern Peoples

2 THE CORRIDOR CONCEPT 9
9 The Corridor Concept and Cumulative Impact
10 The Northern Yukon Corridor and the Mackenzie Valley Corridor
10 The United States' Interest in the Corridor

3 ENGINEERING AND CONSTRUCTION 13
15 The Project: Its Scope and Scale
18 Buried Refrigerated Pipeline: Frost Heave
22 The Construction Plan and Schedule

4 THE NORTHERN ENVIRONMENT 29
29 Environmental Attitudes and Environmental Values
30 Wilderness
31 Wilderness and Northern Land Use

5 THE NORTHERN YUKON 33
33 A Unique Heritage
35 The Pipeline and the Corridor
36 Man and the Land: Old Crow
38 Porcupine Caribou Herd
43 Other Environmental Concerns
46 A National Wilderness Park for the Northern Yukon
49 An Alternative Route Across the Yukon

6 THE MACKENZIE DELTA–BEAUFORT SEA REGION 51
51 Man and the Land
54 Region and Environment
58 Industry's Plans
61 Delta Region Impacts
64 Whales and a Whale Sanctuary
66 Offshore Concerns
70 Spill Clean-up
75 Summary

7 THE MACKENZIE VALLEY 77
77 The Region
77 The People and the Land
78 Environmental Concerns
81 Corridor Development
82 Balancing Development with the Environment

8 CULTURAL IMPACT 85
85 Cultural Impact: A Retrospect
90 Schools and Native Culture
93 The Persistence of Native Values
100 The Native Economy
109 Native Preferences and Aspirations

9 ECONOMIC IMPACT 115
116 The Development of the Northern Economy
119 Objectives of Economic Development
121 The Mixed Economy
123 The Local Experience of Economic Development
125 Impacts and Returns
134 Employment on the Pipeline
139 If the Pipeline is Not Built Now

10 SOCIAL IMPACT 143
143 The Northern Population
148 Social Impact and Industrial Development
150 Specific Impacts
160 The Limits to Planning

11 NATIVE CLAIMS 163
163 History of Native Claims
172 Self-Determination and Confederation
176 Native Claims: Their Nature and Extent
180 Native Claims: A Closer Examination
181 The Claim to Native Control of Education
185 The Claim to Renewable Resources
191 Native Claims and the Pipeline

12 EPILOGUE: THEMES FOR THE NATIONAL INTEREST 197

APPENDICES 201
203 The Inquiry and Participants
209 Bibliographic Note and Terminology
211 Photographs and Diagrams
213 Acknowledgements

MACKENZIE VALLEY PIPELINE INQUIRY

COMMISSIONER
Mr. Justice Thomas R. Berger

10th Floor
One Nicholas Street
Ottawa, Ontario K1N 7B7

April 15, 1977

The Honourable Warren Allmand
Minister of Indian Affairs and Northern Development
House of Commons
Ottawa, Ontario

Dear Mr. Allmand:

We are now at our last frontier. It is a frontier that all of us have r about, but few of us have seen. Profound issues, touching our d concerns as a nation, await us there.

The North is a frontier, but it is a homeland too, the homeland of Dene, Inuit and Metis, as it is also the home of the white people wh live there. And it is a heritage, a unique environment that we a called upon to preserve for all Canadians.

The decisions we have to make are not, therefore, simply abou northern pipelines. They are decisions about the protection of th northern environment and the future of northern peoples.

At the formal hearings of the Inquiry in Yellowknife, I heard th evidence of 300 experts on northern conditions, northern environmen and northern peoples. But, sitting in a hearing room in Yellowknife, i is easy to forget the real extent of the North. The Mackenzie Valley and the Western Arctic is a vast land where people of four races live, speaking seven different languages. To hear what they had to say, I took the Inquiry to 35 communities – from Sachs Harbour to Fort Smith, from Old Crow to Fort Franklin – to every city and town, village and settlement in the Mackenzie Valley and the Western Arctic. I listened to the evidence of almost one thousand northerners.

I discovered that people in the North have strong feelings about the pipeline and large-scale frontier development. I listened to a brief by northern businessmen in Yellowknife who favour a pipeline through the North. Later, in a native village far away, I heard virtually the whole community express vehement opposition to such a pipeline. Both were talking about the same pipeline; both were talking about the same region – but for one group it is a frontier, for the other a homeland.

All those who had something to say – white or native – were given an opportunity to speak. The native organizations claim to speak for the native people. They oppose the pipeline without a settlement of native claims. The Territorial Council claims to speak for all



northerners. It supports the pipeline. Wally Firth, Member of Parliament for the Northwest Territories, opposes the pipeline. I decided that I should give northerners an opportunity to speak for themselves. That is why I held hearings in all northern communities, where the people could speak directly to the Inquiry. I held hearings in the white centres of population, and in the native villages. I heard from municipal councillors, from band chiefs and band councils and from the people themselves. This report reflects what they told me.

The North is a region of conflicting goals, preferences and aspirations. The conflict focuses on the pipeline. The pipeline represents the advance of the industrial system to the Arctic. The impact of the industrial system upon the native people has been the special concern of the Inquiry, for one thing is certain: the impact of a pipeline will bear especially upon the native people. That is why I have been concerned that the native people should have an opportunity to speak to the Inquiry in their own villages, in their own languages, and in their own way.

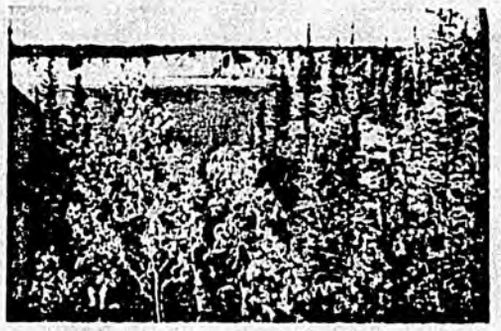
I have proceeded on the assumption that, in due course, the industrial system will require the gas and oil of the Western Arctic, and that they will have to be transported along the Mackenzie Valley to markets in the South. I have also proceeded on the assumption that we intend to protect and preserve Canada's northern environment, and that, above all else, we intend to honour the legitimate claims and aspirations of the native people. All of these assumptions are embedded in the federal government's expressed northern policy for the 1970s.

The Corridor Concept and Cumulative Impact

The proposed natural gas pipeline is not to be considered in isolation. The Expanded Guidelines for Northern Pipelines, tabled in the House of Commons on June 28, 1972, assume that, if a gas pipeline is built, an oil pipeline will follow, and they call for examination of the proposed gas pipeline from the point of view of cumulative impact. We must







Spring on the Yukon Coastal Plain. (ISL–G. Calef)

Pingos near Tuktoyaktuk. (GNWT)

Old Crow River. (ISL–G. Calef)

Autumn on Mackenzie River. (R. Fumoleau)

consider, then, the impact of a transportation corridor for two energy systems, a corridor that may eventually include roads and other transportation systems.

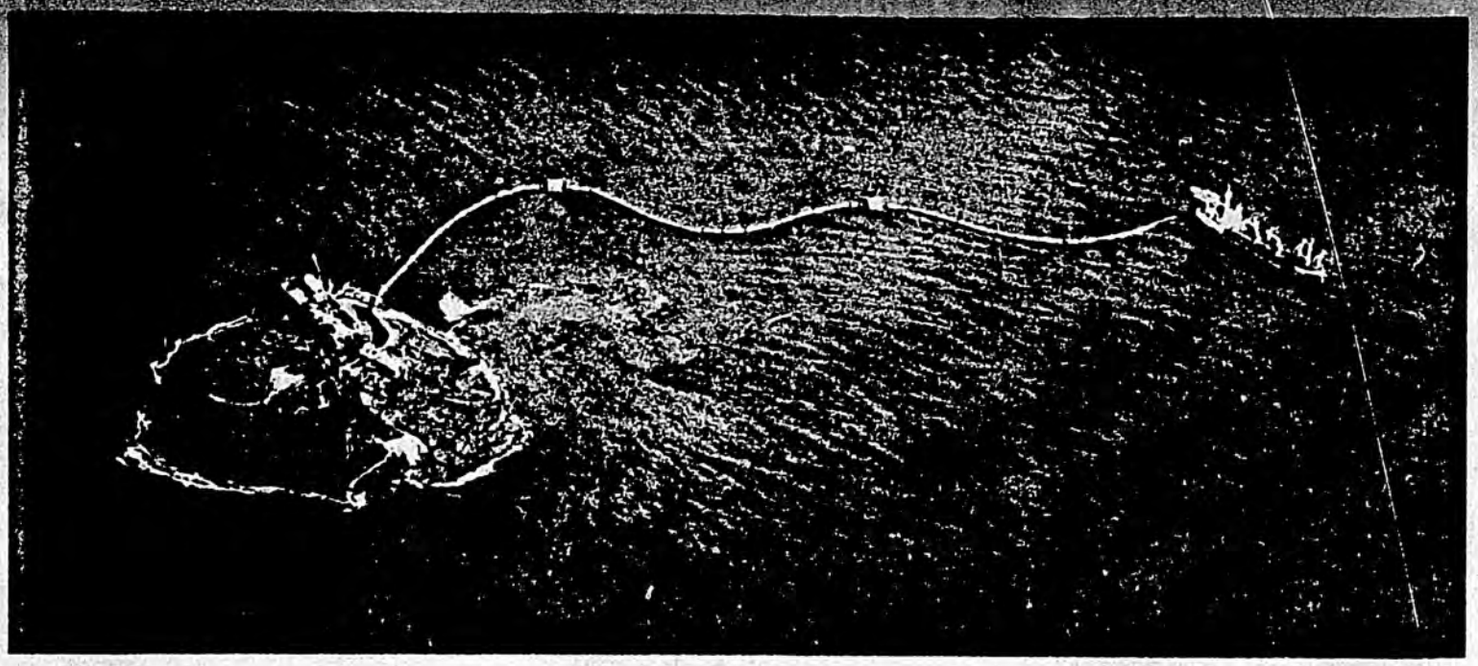
The construction of a gas pipeline and the establishment of an energy corridor will intensify oil and gas exploration activity all along the corridor. The cumulative impact of all these developments will bring immense and irreversible changes to the Mackenzie Valley and the Western Arctic. And we must bear in mind that we have two corridors under consideration: a corridor from Alaska across the Northern Yukon to the Mackenzie Delta, and a corridor along the Mackenzie Valley from the Delta to the Alberta border.

The Project: Its Scope and Scale

A gas pipeline will entail much more than a right-of-way. It will be a major construction project across our northern territories, across a land that is cold and dark in winter, a land largely inaccessible by rail or road, where it will be necessary to construct wharves, warehouses, storage sites, airstrips – a huge infrastructure – just to build the pipeline. There will be a network of hundreds of miles of roads built over the snow and ice. Take the Arctic Gas project: the capacity of the fleet of tugs and barges on the Mackenzie River will have to be doubled. There will be 6,000 construction workers required North of 60 to build the pipeline, and 1,200 more to build gas plants and gathering systems in the Mackenzie Delta. There will be about 130 gravel mining operations. There will be 600 river and stream crossings. There will be innumerable aircraft, tractors, earth-movers, trucks and trailers. Indeed, the Arctic Gas project has been described as the greatest construction project, in terms of capital expenditure, ever contemplated by private enterprise.

Engineering and Construction

The gas pipeline across the North from Prudhoe Bay and from the Mackenzie Delta will confront designers and builders with major challenges of engineering and logistics. These relate not only to the

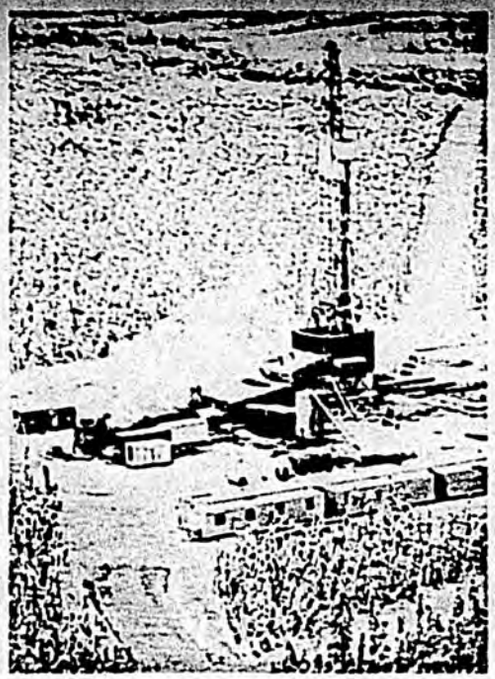


size and complexity of the project but also to its remote setting, the arctic climate and terrain, and those components of the project and its design that are innovative or lack precedent.

The question of frost heave is basic to the engineering design of the gas pipeline. Both Arctic Gas and Foothills propose to bury their pipe throughout its length, and to refrigerate the gas to avoid the engineering and environmental problems resulting from thawing permafrost. But where unfrozen ground is encountered, in the zone of discontinuous permafrost or at river crossings, the chilled gas will freeze the ground around the pipe, and may produce frost heave and potential damage to the pipe.

The pipeline companies are obviously having trouble in designing their proposal to deal with frost heave. They are making fundamental changes in the methods proposed for heave control; the methods seem to be getting more complex, and the conditions for success more restrictive. It is likely that the companies will make yet further changes in their proposals, changes that are likely to increase costs and to alter substantially the environmental impact of the project.

Another issue is construction scheduling. The pipeline companies propose to construct the pipeline in winter. But we have limited experience of pipelining in far northern latitudes and in permafrost. There are uncertainties about scheduling, so far as logistics, the construction of snow roads, and productivity are concerned. In this respect, the greatest challenges will be encountered in the Northern Yukon, which is also the most environmentally sensitive area along the route. I am not persuaded that Arctic Gas can meet its construction schedule across the Northern Yukon. Should this occur, there is a likelihood of cost overruns, of construction being extended into the summer, or even of a permanent road being built to permit summer construction. The environmental impact of a change to summer construction would be very severe. The project would then have to be completely reassessed.

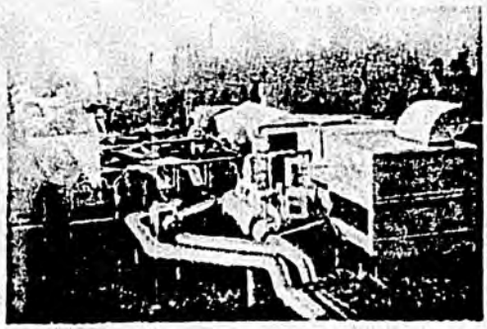


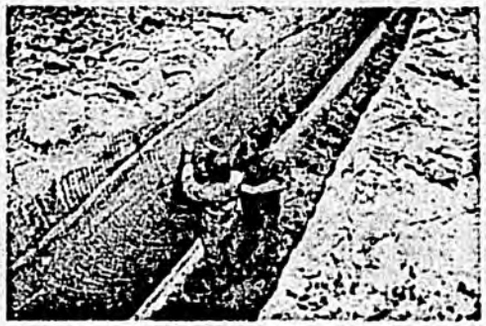
Construction of artificial island in the Beaufort Sea. (J. Inglis)

Compressor unit, Sans Sault Test Site. (Arctic Gas)

Drill site on the Eagle Plain, southeast of Old Crow. (ISL–G. Calef)

Permafrost test at Sans Sault Test Site. (Arctic Gas)





I recognize, of course, that the proposals of the pipeline companies are in a preliminary, conceptual stage, not in their final design stage. I recognize, too, that improvements will appear in the final design. But my responsibility is to assess the project proposals as they now stand.

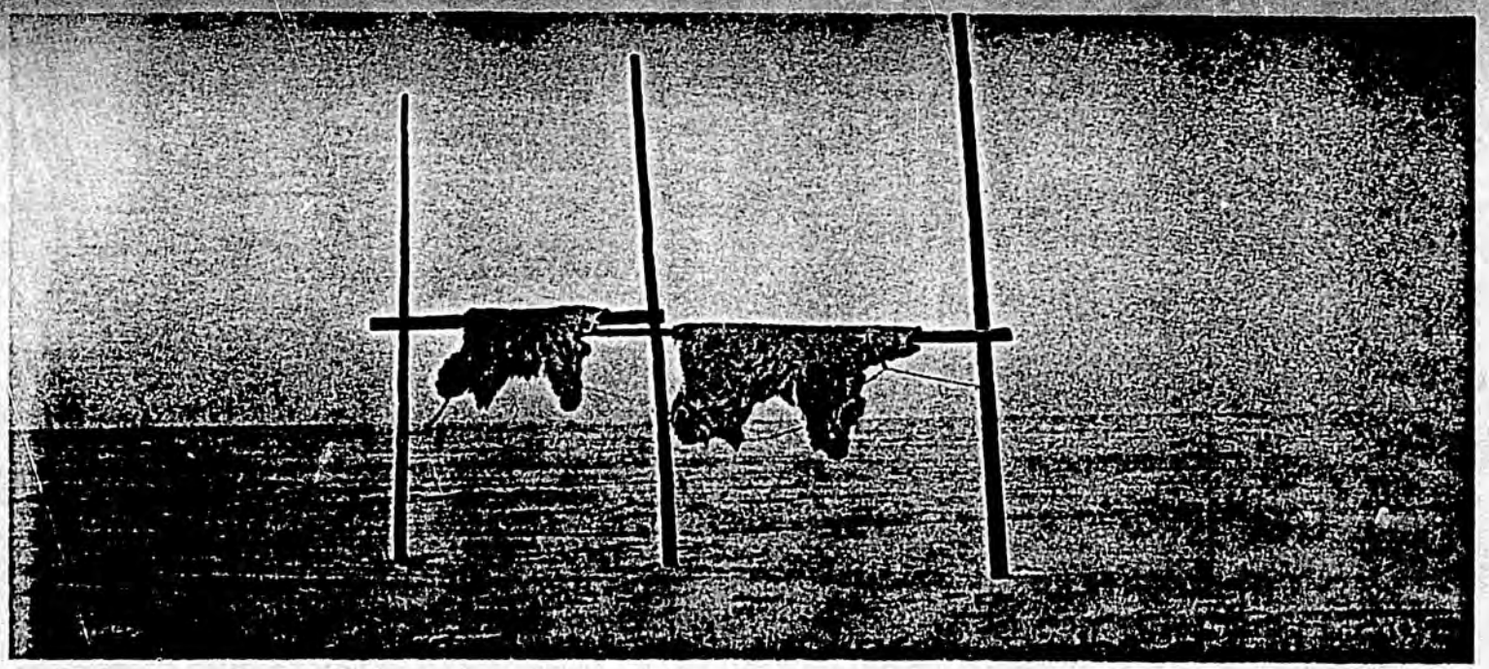
Given the uncertainties relating to design and construction, illustrated by the foregoing comments on frost heave and scheduling, and given the bearing they have on environmental impact and the enforcement of environmental standards, it seems to me unreasonable that the Government of Canada should give unqualified approval to a right-of-way or provide financial guarantees to the project without a convincing resolution of these concerns.

The Northern Environment

There is a myth that terms and conditions that will protect the environment can be imposed, no matter how large a project is proposed. There is a feeling that, with enough studies and reports, and once enough evidence is accumulated, somehow all will be well. It is an assumption that implies the choice we intend to make. It is an assumption that does not hold in the North.

It is often thought that, because of the immense geographic area of the North, construction of a gas pipeline or establishment of a corridor could not cause major damage to the land, the water or the wildlife. But within this vast area are tracts of land and water of limited size that are vital to the survival of whole populations of certain species of mammals, birds and fish at certain times of the year. Disturbance of such areas by industrial activities can have adverse biological effects that go far beyond the areas of impact. This concern with critical habitat and with critical life stages lies at the heart of my consideration of environmental issues.

We should recognize that in the North, land use regulations, based on the concept of multiple use, will not always protect environmental



values, and they will never fully protect wilderness values. Withdrawal of land from any industrial use will be necessary in some instances to preserve wilderness, wildlife species and critical habitat.

The Northern Yukon

The Northern Yukon is an arctic and sub-arctic wilderness of incredible beauty, a rich and varied ecosystem inhabited by thriving populations of wildlife. The Porcupine caribou herd, comprising 110,000 animals or more, ranges throughout the Northern Yukon and into Alaska. It is one of the last great caribou herds in North America. The Yukon Coastal Plain and the Old Crow Flats provide essential habitat for hundreds of thousands of migratory waterfowl each summer and fall. This unique ecosystem – the caribou, the birds, other wildlife, and the wilderness itself – has survived until now because of the inaccessibility of the area. But it is vulnerable to the kind of disturbance that industrial development would bring.

The Arctic Gas pipeline, to carry gas from Prudhoe Bay, Alaska, to markets in the Lower 48, would cross this region, either along the Coastal Route or, as a second choice, along the Interior Route. Once a gas pipeline is approved along either route, exploration and development in the promising oil and gas areas of Northern Alaska will accelerate, and it is inevitable that the gas pipeline will be looped and that an oil pipeline, a road and other developments will follow.

Gas pipeline and corridor development along the Coastal Route, passing through the restricted calving range of the Porcupine caribou herd, would have highly adverse effects on the animals during the critical calving and post-calving phases of their life cycle. The preservation of the herd is incompatible with the building of a gas pipeline and the establishment of an energy corridor through its calving grounds. If a pipeline is built along the Coastal Plain, there will be serious losses to the herd. With the establishment of the corridor I foresee that, within our lifetime, this herd will be reduced to a remnant. Similarly, some of the large populations of migratory

Polar bear skins, Sachs Harbour. (M. Jackson)

Inuit women cutting up whale, Tuktoyaktuk. (D. Campbell)

Scraping a caribou hide. (A. Steen)

Arctic fox pelts, Sachs Harbour. (M. Jackson)







waterfowl and sea birds along the Coastal Route, particularly the fall staging snow geese, would likely decline in the face of pipeline and corridor development.

Gas pipeline and corridor development along the Interior Route would open up the winter range of the caribou herd. The impact of this development combined with that of the Dempster Highway could substantially reduce the herd's numbers and undermine the caribou-based economy of the Old Crow people.

Thus, I have concluded that there are sound environmental reasons for not building a pipeline or establishing an energy corridor along the Coastal Route. There are also sound environmental reasons for not building a pipeline or establishing an energy corridor along the Interior Route, although they are not as compelling as for the Coastal Route. A pipeline and corridor along the Interior Route would have a devastating impact on Old Crow, the only community in the Northern Yukon. All the people in the village told me they are opposed to the pipeline. They fear it will destroy their village, their way of life, and their land.

I recommend that no pipeline be built and no energy corridor be established across the Northern Yukon, along either route. Moreover, if we are to protect the wilderness, the caribou, birds and other wildlife, we must designate the Northern Yukon, north of the Porcupine River, as a National Wilderness Park. Oil and gas exploration, pipeline construction and industrial activity must be prohibited within the Park. The native people must continue to have the right to hunt, fish and trap within the Park. The Park must indeed be the means for protecting their renewable resource base.

You and your colleagues will have to consider whether Canada ought to provide a corridor across the Yukon for the delivery of Alaskan gas and oil to the Lower 48. I recommend that no such route be approved across the Northern Yukon. An alternate route has been proposed across the Southern Yukon, along the Alaska Highway.



Some of the concerns about wildlife, wilderness, and engineering and construction that led me to reject the corridor across the Northern Yukon do not appear to apply in the case of the Alaska Highway Route. It is a route with an established infrastructure. In my view, the construction of a pipeline along this route would not threaten any substantial populations of any species in the Yukon or in Alaska. But I am in no position to endorse such a route: an assessment of social and economic impact must still be made, and native claims have not been settled.

The Mackenzie Delta and the Beaufort Sea

The Mackenzie Delta and Beaufort Sea region supports a unique and vulnerable arctic ecosystem. Its wildlife has been a mainstay of the native people of the region for a long time, and still is today.

In my opinion, unlike the Northern Yukon, oil and gas development in the Mackenzie Delta-Beaufort Sea region is inevitable. Notwithstanding the disappointing level of discoveries so far, the Delta-Beaufort region has been rated by the Department of Energy, Mines and Resources as one of three frontier areas in Canada that potentially contain major undeveloped reserves of oil and gas.

A decision to build the pipeline now would act as a spur to oil and gas exploration and development in the Mackenzie Delta and the Beaufort Sea. Future discoveries will probably lead to offshore production. It is the impact of this whole range of oil and gas exploration and development activity that must concern us.

In order to protect the Delta ecosystem, the birds and the whales, I recommend that no corridor should cross the outer Delta. This means that the Arctic Gas Cross-Delta Route must not be permitted. Also, strict limitations will have to be placed on other oil and gas facilities on the Delta, particularly the outer Delta. Special measures will be needed to avoid disturbance to fish populations within the Delta. I also propose that a bird sanctuary should extend across the outer part of the Delta to protect migratory waterfowl, giving the Canadian



Caribou fording Porcupine River. (ISL.–G. Calef)

Caribou with newborn calves migrating. (ISL.–G. Calef)

Foraging caribou in the Northern Yukon. (ISL.–G. Calef)

Bull caribou. (C. Dauphiné Jr.)





Wildlife Service jurisdiction to regulate industrial activity in the sanctuary.

The white whales of the Beaufort Sea – 5,000 in number – come to the warm waters bordering the Mackenzie Delta each summer to have their young. To preserve this population from declining in the face of pipeline construction and the cumulative stresses imposed by ongoing oil and gas exploration, production and transportation, I recommend that a whale sanctuary be established in west Mackenzie Bay covering the principal calving area. If the herd is driven from its calving area, it will die out. Unlike the bird sanctuary, the whale sanctuary will be an area in which oil and gas exploration and development would be forbidden at any time of the year.

Much of the oil and gas potential of the region is believed to lie offshore beneath the Beaufort Sea. You and your colleagues have decided that the risk entailed in the Dome exploratory drilling program in the Beaufort Sea is acceptable, on the ground that it is in the national interest to begin delineating the extent of these reserves. I am not offering any opinion on that decision. I am, however, urging that, once the Dome program is completed, careful consideration be given to the timing and extent of the drilling and development that may take place thereafter. A proliferation of oil and gas exploration and development wells in the Beaufort Sea will pose an environmental risk of a different order of magnitude than the risk entailed in drilling 16 exploration wells to see if oil and gas are to be found there.

The matter is not, however, simply one of Canadian drilling activity in arctic waters. We have preceded all of the other circumpolar countries – the United States, the Soviet Union, Denmark and Norway – across this geographic and technological frontier. We are pioneering on this frontier and establishing the standards that may well guide other circumpolar countries in future arctic drilling and production programs.

The greatest concern in the Beaufort Sea is the threat of oil spills. In

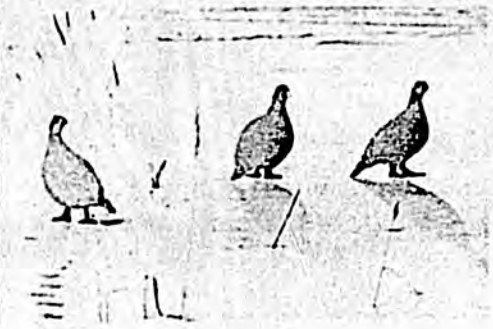


my opinion, the techniques presently available will not be successful in controlling or cleaning up a major spill in this remote area, particularly under conditions involving floating ice or rough water. Therefore, I urge the Government of Canada to ensure that improvements in technology for prevention of spills and development of effective technology for containment and clean-up of spills precede further advance of industry in the Beaufort Sea. I further urge that advances in knowledge of the environmental consequences of oil spills should likewise keep ahead of offshore development. Here I am referring not only to impacts on mammals, birds and fish in the Beaufort Sea area but also to the possibility that accumulation of oil in the Arctic Ocean could affect climate. In this I am referring to the possibility that oil spills from offshore petroleum development by all the circumpolar powers could diminish the albedo (the reflective capacity of ice), causing a decrease in the sea ice cover and hence changes in climate. Canada should propose that research be undertaken jointly by the circumpolar powers into the risks and consequences of oil and gas exploration, development and transportation activities around the Arctic Ocean.

The Mackenzie Valley

The Mackenzie Valley is a natural transportation route that has already seen several decades of industrial development. It is the longest river system in Canada, one of the ten longest rivers in the world, and one of the last great rivers that is not polluted.

I have concluded that it is feasible, from an environmental point of view, to build a pipeline and to establish an energy corridor along the Mackenzie Valley, running south from the Mackenzie Delta to the Alberta border. Unlike the Northern Yukon, no major wildlife populations would be threatened and no wilderness areas would be violated. I believe that we can devise terms and conditions that will allow a pipeline to be built and an energy corridor established along the Mackenzie Valley without significant losses to the populations of



Snow geese feeding. (Arctic Gas)

Willow ptarmigan. (A. Steen)

Peregrine falcon. (R. Fyfe)

Gyrfalcon. (R. Fyfe)





birds, furbearers, large mammals and fish. A pipeline along the Mackenzie Valley would impinge on the outer limits of the winter ranges of the Bluenose and the Bathurst caribou herds, but would not cross their calving grounds or disturb their main migration routes. These herds are not threatened.

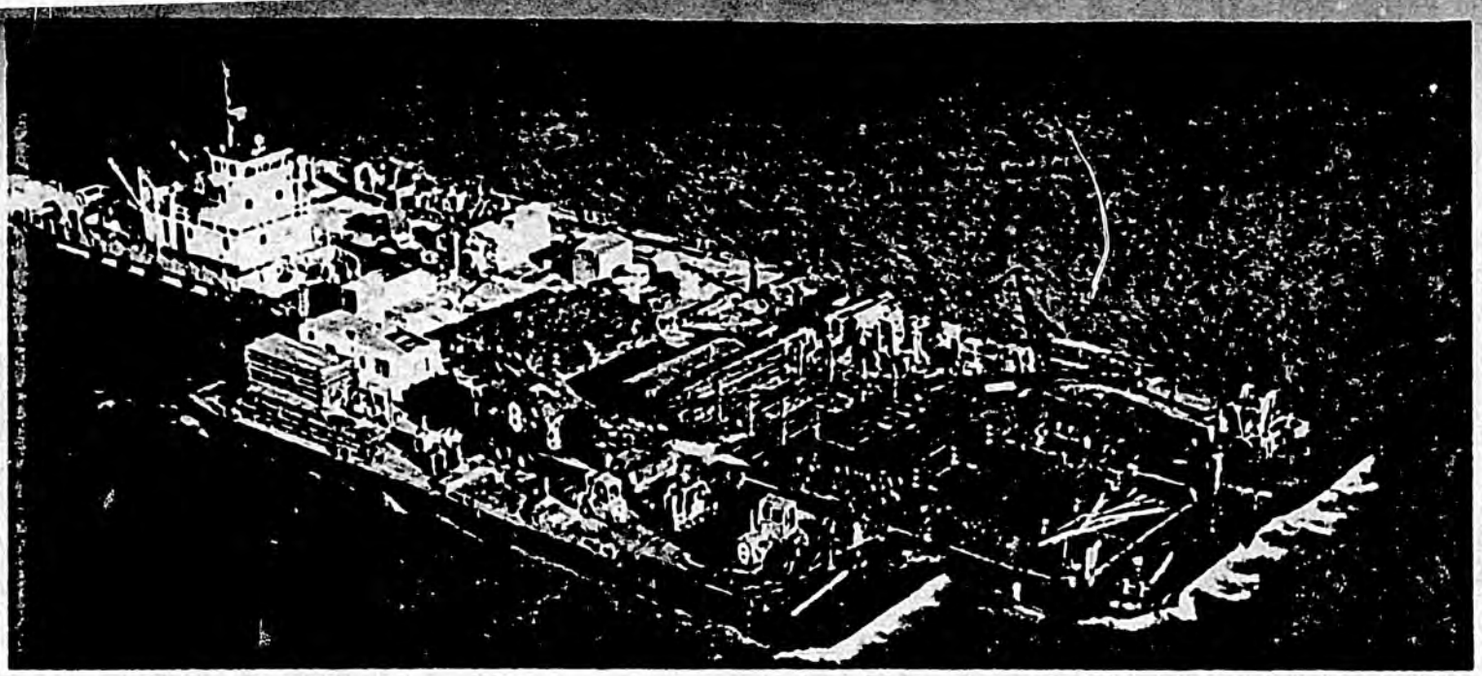
However, to keep the environmental impacts of a pipeline to an acceptable level, its construction and operation should proceed only under careful planning and strict regulation. The corridor should be based on a comprehensive plan that takes into account the many land use conflicts apparent in the region even today.

Comprehensive land use planning in the Mackenzie Valley can emerge only from a settlement of native claims, but, on purely environmental grounds, there are several areas of land that warrant immediate protection. I recommend sanctuaries to protect migratory waterfowl and the already endangered falcons. These sites have been identified under the International Biological Programme, namely: the Campbell Hills-Dolomite Lake site, which is important to nesting falcons, and the Willow Lake and Mills Lake sites, which are of importance to migratory waterfowl.

Northern Science and Research

Throughout the Inquiry, we found that there are critical gaps in the information available about the northern environment, about environmental impact, and about engineering design and construction on permafrost terrain and under arctic conditions. I have already referred to the inadequate state of knowledge about frost heave. This is a very practical question. Others, such as the albedo question, that seem to be less definite or to lie far in the future also demand our attention now. There is a whole range of issues that fall between, many of which are discussed in this report.

We are entering an era in the North when the government, its departments and agencies, will have to be in a position to assess – and to judge – the feasibility, desirability and impact of a whole series of



proposals for northern oil and gas exploration and development. Industry proposes: government disposes. But for government to make an intelligent disposition of industry's proposals – whether they be for pipelining in permafrost, for drilling in the Beaufort Sea, for under the sea transporation systems, or for tankering in arctic waters – it must have an independent body of knowledge. A continuing and comprehensive program of northern science and research is called for.

Cultural Impact

It is, however, the people who live in the North that we ought to be most concerned about, especially the native people. Euro-Canadian society has refused to take native culture seriously. European institutions, values and use of land were seen as the basis of culture. Native institutions, values and language were rejected, ignored or misunderstood and – given the native people's use of land – the Europeans had no difficulty in supposing that native people possessed no real culture at all. Education was perceived as the most effective instrument of cultural change: so, educational systems were introduced that were intended to provide the native people with a useful and meaningful cultural inheritance, since their own ancestors had left them none.

The culture, values and traditions of the native people amount to a great deal more than crafts and carvings. Their respect for the wisdom of the elders, their concept of family responsibilities, their willingness to share, their special relationship with the land – all of these values persist today, although native people have been under almost unremitting pressure to abandon them.

Native society is not static. The things the native people have said to this Inquiry should not be regarded as a lament for a lost way of life, but as a plea for an opportunity to shape their own future, out of their own past. They are not seeking to entrench the past, but to build on it.

Today white and native populations in the Mackenzie Valley and Western Arctic are about equal in number. But it is the native people

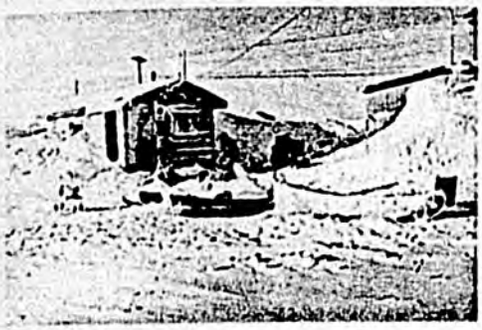


Barge on Mackenzie River. (Arctic Gas)

Snowmobiles and sleigh, Tuktoyaktuk. (H. Lloyd)

Northern bush aircraft. (DIAND Yellowknife)

Boats used to hunt whale, Kugmallit Bay. (W. Hoek)





who constitute the permanent population of the North. There they were born, and there they will die. A large part of the white population consists of public servants, employees of the mining industry and of the oil and gas industry and their families. Most of them do not regard the North as their permanent home, and usually return to the South. There are, of course, white people in the North who have lived there all their lives, and some others who intend to make the North their permanent home, but their numbers are small in comparison to the native population.

So the future of the North ought not to be determined only by our own southern ideas of frontier development. It should also reflect the ideas of the people who call it their homeland.

Economic Impact

The pipeline companies see the pipeline as an unqualified gain to the North; northern businessmen perceive it as the impetus for growth and expansion. But all along, the construction of the pipeline has been justified mainly on the ground that it would provide jobs for thousands of native people.

We have been committed to the view that the economic future of the North lay in large-scale industrial development. We have generated, especially in northern business, an atmosphere of expectancy about industrial development. Although there has always been a native economy in the North, based on the bush and the barrens, we have for a decade or more followed policies by which it could only be weakened and depreciated. We have assumed that the native economy is moribund and that the native people should therefore be induced to enter industrial wage employment. But I have found that income in kind from hunting, fishing and trapping is a far more important element in the northern economy than we had thought.

The fact is that large-scale projects based on non-renewable resources have rarely provided permanent employment for any significant number of native people. There is abundant reason to

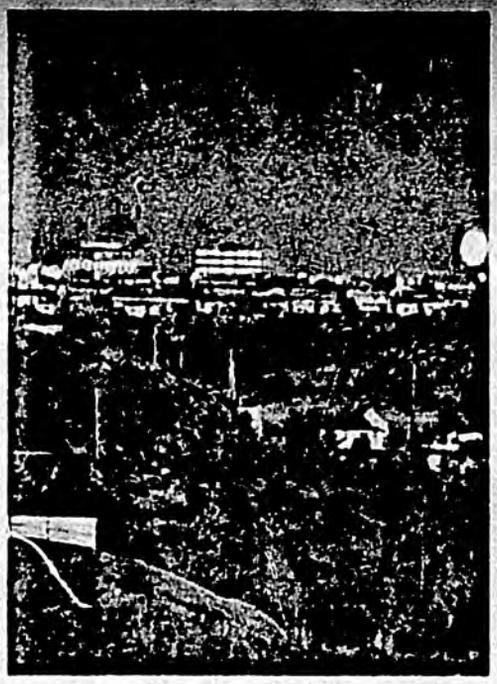


doubt that a pipeline would provide meaningful and ongoing employment to many native people. The pipeline contractors and unions have made it plain that native northerners are not qualified to hold down skilled positions in pipeline construction, and that they will be employed largely in unskilled and semi-skilled jobs. Once the pipeline is built, only about 250 people will be needed to operate it. Most of these jobs are of a technical nature and will have to be filled by qualified personnel from the South.

I have no doubt that terms and conditions could be imposed that would enable northern businesses to expand during the construction of the pipeline. But there are hazards for northern businessmen. Construction of the Mackenzie Valley pipeline could produce a serious distortion of the small business sector of the Northwest Territories. This would raise problems for the orderly development of regional economic and commercial activity in the long run.

If communities in the Mackenzie Valley and Western Arctic are made to depend exclusively on industrial wage employment and if the production of country food for local consumption ceases to be an important component in the economy, then the self-employed will certainly become the unemployed. The point is simple enough: the extension of the industrial system creates unemployment as well as employment. In an industrial economy there is virtually no alternative to a livelihood based on wage employment. Those who are unable or unprepared to work for wages become unemployed and then dependent on welfare. To the extent that the development of the northern frontier undermines the possibilities of self-employment provided by hunting, fishing and trapping, employment and unemployment will go hand-in-hand.

I do not mean to suggest that native people will not want to participate in the opportunities for employment that industrial development will create. Some native people already work alongside workers from the South. Many native people have taken advantage of



Delah Indian village. (R. Fumoleau)

Inuit housing. (GNWT)

Yellowknife. (A. Steen)

Fort Franklin. (R. Fumoleau)





opportunities for wage employment – particularly in the Delta – on a seasonal basis to obtain the cash they need to equip or re-equip themselves for traditional pursuits. But when the native people are made to feel they have no choice other than the industrial system, when they have no control over entering it or leaving it, when wage labour becomes the strongest, the most compelling and finally the only option, then the disruptive effects of large-scale, rapid development can only proliferate.

It is an illusion to believe that the pipeline will solve the economic problems of the North. Its whole purpose is to deliver northern gas to homes and industries in the South. Indeed, rather than solving the North's economic problems, it may accentuate them.

The native people, both young and old, see clearly the short-term character of pipeline construction. They see the need to build an economic future for themselves on a surer foundation. The real economic problems in the North will be solved only when we accept the view the native people themselves expressed so often to the Inquiry: that is, the strengthening of the native economy. We must look at forms of economic development that really do accord with native values and preferences. If the kinds of things that native people now want are taken seriously, we must cease to regard large-scale industrial development as a panacea for the economic ills of the North.

Social Impact

I am convinced that the native people of the North told the Inquiry of their innermost concerns and their deepest fears. Although they had been told – and some indeed had agreed – that the proposed pipeline would offer them unprecedented opportunities for wage employment, the great majority of them expressed their fears of what a pipeline would bring: an influx of construction workers, more alcoholism, tearing of the social fabric, injury to the land, and the loss of their identity as a people. They said that wage employment on the pipeline



would count for little or nothing when set against the social costs. I am persuaded that these fears are well-founded.

The alarming rise in the incidence of alcoholism, crime, violence and welfare dependence in the North in the last decade is closely bound up with the rapid expansion of the industrial system and with its intrusion into every part of the native people's lives. The process affects the close link between native people and their past, their own economy, their values and self-respect. The evidence is clear: the more the industrial frontier displaces the homeland in the North, the greater the incidence of social pathology will be. Superimposed on problems that already exist in the Mackenzie Valley and the Western Arctic, the social consequences of the pipeline will not only be serious – they will be devastating.

The social costs of building a pipeline now will be enormous, and no remedial programs are likely to ameliorate them. The expenditure of money, the hiring of social workers, doctors, nurses, even police – these things will not begin to solve the problem. This will mean an advance of the industrial system to the frontier that will not be orderly and beneficial, but sudden, massive and overwhelming.

Native Claims

Native people desire a settlement of native claims before a pipeline is built. They do not want a settlement – in the tradition of the treaties – that will extinguish their rights to the land. They want a settlement that will entrench their rights to the land and that will lay the foundations of native self-determination under the Constitution of Canada.

The native people of the North now insist that the settlement of native claims must be seen as a fundamental re-ordering of their relationship with the rest of us. Their claims must be seen as the means to establishing a social contract based on a clear understanding that they are distinct peoples in history. They insist upon the right to

Inuit at Northern Games, Coppermine, 1976. (GNWT–R. Wilson)



Reindeer round-up, Atkinson Point. (J. Inglis)

Holman youngster. (P. Scott)

Children playing in Holman, 1959. (J. Fyles)





determine their own future, to ensure their place, but not their assimilation, in Canadian life.

The federal government is now prepared to negotiate with the native people on a comprehensive basis, and the native people of the North are prepared to articulate their interests over a broad range of concerns. These concerns begin with the land, but are not limited to it: they include land and land use, renewable and non-renewable resources, schools, health and social services, public order and, overarching all of these, the future shape and composition of political institutions in the North.

The concept of native self-determination must be understood in the context of native claims. When the Dene refer to themselves as a nation, as many of them have, they are not renouncing Canada or Confederation. Rather, they are proclaiming that they are a distinct people, who share a common historical experience, a common set of values, and a common world view. They want their children and their children's children to be secure in that same knowledge of who they are and where they came from. They want their own experience, traditions and values to occupy an honourable place in the contemporary life of our country. Seen in this light, they say their claims will lead to the enhancement of Confederation — not to its renunciation.

It will be for you and your colleagues, in negotiations with the native people, to determine the extent to which native claims can be acceded to, and to work out the way in which self-determination might be effected in the North, whether by the establishment of native institutions on a geographical basis or by the transfer of certain functions of the Government of Canada and the Government of the Northwest Territories to native institutions.

The idea of new institutions that give meaning to native self-determination should not frighten us. Special status for native people is an element of our constitutional tradition, one that is recognized by the British North America Act, by the treaties, by the Indian Act, and



by the statement of policy approved by Cabinet in July 1976. It is an ethnic thread in our constitutional fabric. In the past, special status has meant Indian reserves. Now the native people wish to substitute self-determination for enforced dependency.

The attainment of native goals implies one thing: the native people must be allowed a choice about their own future. If the pipeline is approved before a settlement of claims takes place, the future of the North – and the place of the native people in the North – will, in effect, have been decided for them.

The construction of the pipeline now will entail a commitment by the Government of Canada and the Government of the Northwest Territories to a program of large-scale frontier development, which, once begun, cannot be diverted from its course. Once construction begins, the concentration on the non-renewable resource sector and the movement away from the renewable resource sector will become inexorable. The goal of strengthening the native economy will be frustrated.

An increase in the white population in the wake of pipeline construction will entrench southern patterns of political, social and industrial development, will reduce the native people to a minority position, and will undermine their claim to self-determination.

The settlement of native claims is not a mere transaction. Intrinsic to settlement is the establishment of new institutions and programs that will form the basis for native self-determination. It would be wrong, therefore, to think that signing a piece of paper would put the whole question behind us, as if all that were involved was the removal of a legal impediment to industrial development. The native people insist that the settlement of native claims should be a beginning rather than an end of the recognition of native rights and native aspirations. In my opinion, a period of ten years will be required in the Mackenzie Valley and Western Arctic to settle native claims, and to establish the



Snowdrift children. (R. Fumoleau)

Johnny Crapeau of Detah. (R. Fumoleau)

Maggie Fisher of Fort Good Hope. (R. Fumoleau)

François Paulette of Fort Smith. (M. Jackson)





new institutions and new programs that a settlement will entail. No pipeline should be built until these things have been achieved.

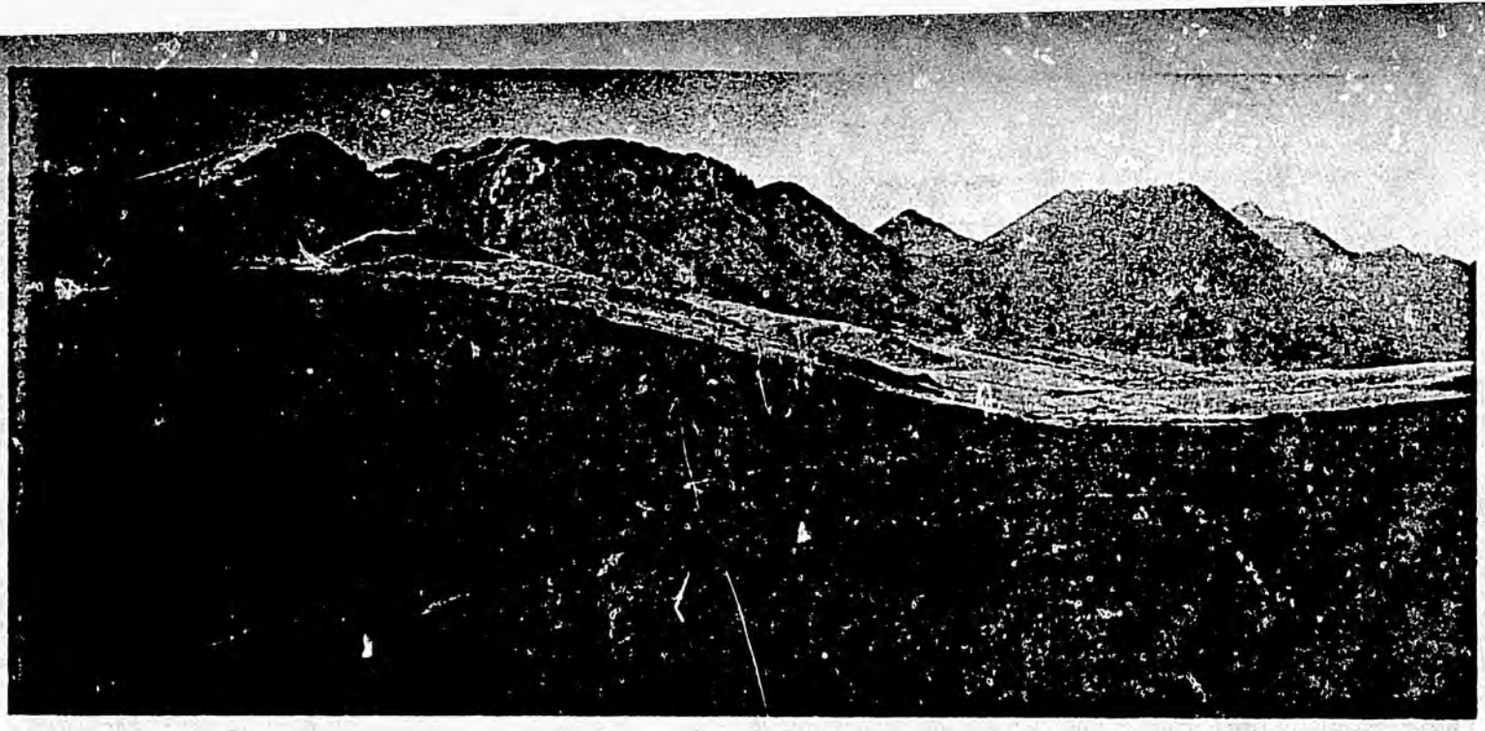
It would therefore be dishonest to try to impose an immediate settlement that we know now – and that the native people will know before the ink is dry – will not achieve their goals. They will soon realize – just as the native people on the prairies realized a century ago as the settlers poured in – that the actual course of events on the ground will deny the promises that appear on paper. The advance of the industrial system would determine the course of events, no matter what Parliament, the courts, this Inquiry or anyone else may say.

In recent years in the North we have witnessed a growing sense of native awareness and native identity. The same phenomenon can be observed throughout the country. It is not going to go away. To establish political institutions in the North that ignore this fact of life would be unwise and unjust. Special status can be – and ought to be – a constructive and creative means by which native people, through the development of institutions of their own, can thrive in a new partnership of interests.

If There is no Pipeline Now

If the native people are to achieve their goals, no pipeline can be built now. Some will say this decision must mean that there will be no economic development in the North. If a pipeline is not built now, so the argument goes, the northern economy will come to a halt. But this view misconstrues the nature of the northern economy and northern development.

If there is no pipeline, the native economy based on hunting, fishing and trapping will scarcely be affected. The mining industry, which is the largest component of the private sector of the economy of both the Yukon Territory and the Northwest Territories, will not be greatly affected. Government, the largest employer and the main source of income for white northerners, and the federal and territorial



bureaucracies are not likely to decrease in size simply because a pipeline is not built now.

A decision not to build a pipeline now would not necessarily bring an end to oil and gas exploration. There will be a setback to Inuvik and, to a lesser extent, to other Delta communities. If exploratory drilling in the Delta and the Beaufort Sea ought to continue in the national interest, the Government of Canada has the means to see that it does.

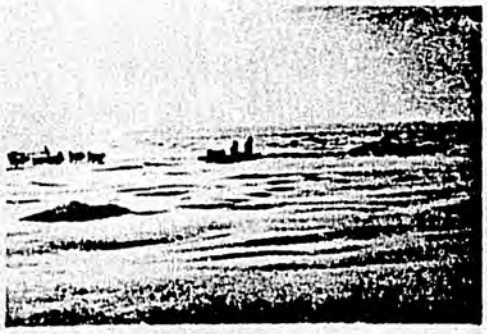
I am convinced that non-renewable resources need not necessarily be the sole basis of the northern economy in the future. We should not place absolute faith in any model of development requiring large-scale technology. The development of the whole renewable resource sector – including the strengthening of the native economy – would enable native people to enter the industrial system without becoming completely dependent on it.

An economy based on modernization of hunting, fishing and trapping, on efficient game and fisheries management, on small-scale enterprise, and on the orderly development of gas and oil resources over a period of years – this is no retreat into the past; rather, it is a rational program for northern development based on the ideals and aspirations of northern native peoples.

To develop a diversified economy will take time. It will be tedious, not glamorous, work. No quick and easy fortunes will be made. There will be failures. The economy will not necessarily attract the interest of the multinational corporations. It will be regarded by many as a step backward. But the evidence I have heard has led me to the conclusion that such a program is the only one that makes sense.

Implications

There should be no pipeline across the Northern Yukon. It would entail irreparable environmental losses of national and international importance. And a Mackenzie Valley pipeline should be postponed for ten years. If it were built now, it would bring limited economic







Northern Yukon. (E. Peterson)

Dogteams trek across sea ice. (GNWT)

Little Bell River. (ISL–G. Calef)

Winter – Yukon North Slope. (Arctic Gas)

benefits, its social impact would be devastating, and it would frustrate the goals of native claims. Postponement will allow sufficient time for native claims to be settled, and for new programs and new institutions to be established. This does not mean that we must renounce our northern gas and oil. But it does mean that we must allow sufficient time for an orderly, not hasty, program of exploration to determine the full extent of our oil and gas reserves in the Mackenzie Delta and the Beaufort Sea. Postponement will offer time for you and your colleagues to make a rational determination regarding the priorities to be adopted in relation to the exploitation of all our frontier oil and gas resources, at a time when the full extent of our frontier reserves has been ascertained.

I believe that, if you and your colleagues accept the recommendations I am making, we can build a Mackenzie Valley pipeline at a time of our own choosing, along a route of our own choice. With time, it may, after all, be possible to reconcile the urgent claims of northern native people with the future requirements of all Canadians for gas and oil.

Yours truly,

Thos R. Berger

Epilogue: Themes for the National Interest

Prime Minister Trudeau has said that Canada is a product of the providential encounter between the French and the English on this continent. Canada takes its identity from the evolution of that encounter. The contours of that meeting between the French and the English in North America define the political institutions of the nation, and constitute Canada's unique contribution to the search by man for a rational polity.

But there was an earlier encounter on this continent that made possible the very existence of the nation – between the Europeans and the indigenous peoples of the Americas. Here, in what is now Canada, it was an encounter first between the French and the native people, then between the English and the native people. It was an encounter which has ramified throughout our history, and the consequences of which are with us today. This encounter may be as important to us all, in the long sweep of history, as any other on this continent. And it is taking place in its most intense and contemporary form on our northern frontier.

It is for this reason that so many eyes are drawn to the North. As André Siegfried, the de Tocqueville of Canada, said:

> Many countries – and they are to be envied – possess in one direction or another a window which opens out on to the infinite – on to the potential future.... The North is always there like a presence, it is the background of the picture, without which Canada would not be Canadian. [*Canada* p. 28-29]

It may be that, through this window, we shall discover something of the shape that our future relations with the native people of our country must assume.

The English and French are the inheritors of two great streams of western civilization. They hold far more in common than divides them: they have similar linguistic and literary traditions and rivalry and commonality of interests that have caused their histories repeatedly to overlap. What is more, the industrial system is the foundation for the material well-being they both enjoy.

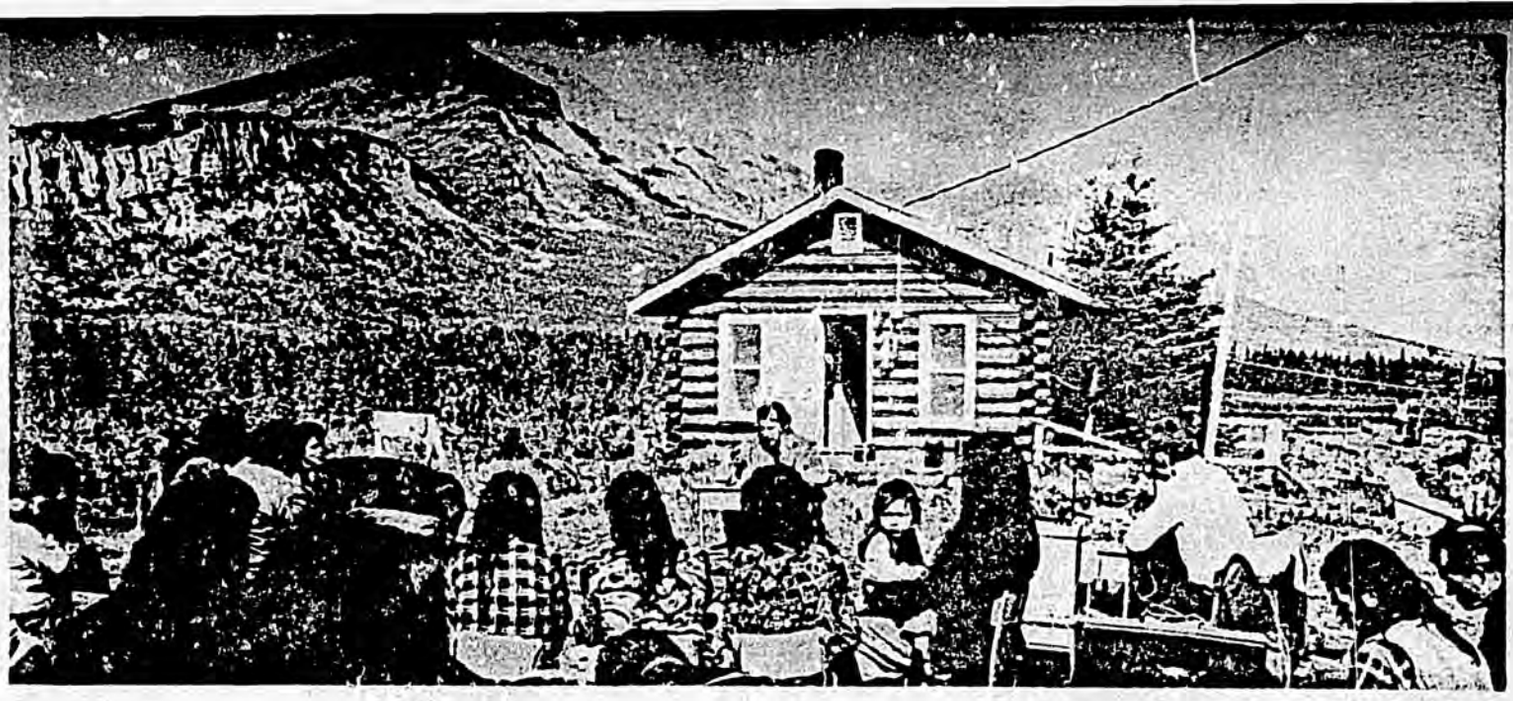
Now the industrial system beckons to the native people. But it does not merely beckon: it has intruded into their culture, economy and society, now pulling, now pushing them towards another, and in many ways an alien, way of life. In the North today, the native people are being urged to give up their life on the land; they are being told that their days and their lives should become partitioned like our own. We have often urged that their commitment to the industrial system be entire and complete. Native people have even been told that they cannot compromise: they must become industrial workers, or go naked back to the bush.

Yet many of them refuse. They say they have a past of their own; they see that complete dependence on the industrial system entails a future that has no place for the values they cherish. Their refusal to make the commitment asked of them is one of the points of recurring tension in the North today. They acknowledge the benefits we have brought to them. They say that they are, in some respects, more comfortable now than they were in the old days. The industrial system has provided many things that they value, such as rifles, radios, outboard motors and snowmobiles. But they know that, in the old days, the land was their own. Even in the days of the fur trade, they and the land were essential to it. Now they recognize they are not essential. If it is in the national interest, a pipeline can and will be built across their land. They fear that they will become strangers in their own land. The native people know that somehow they must gain a measure of control over their lives and over the political institutions that shape their lives, and that they must do this before the industrial system overtakes and, it may be, overwhelms them. This is what their claims are about, and this is why they say their claims must be settled before a pipeline is built.

The native people know their land is important to us as a source of oil and gas and mineral wealth, but that its preservation is not essential to us. They know that above all else we have wanted to subdue the land and extract its resources. They recognize that we do not regard their hunting, trapping and fishing as essential, that it is something we often regard in a patronizing way. They say that we reject the things that are valuable to them in life: that we do so explicitly and implicitly.

We have sought to make over these people in our own image, but this pronounced, consistent and well-intentioned effort at assimilation has failed. The use of the bush and the barrens, and the values associated with them, have persisted. The native economy refuses to die. The Dene, Inuit and Metis survive, determined to be themselves. In the past their refusal to be assimilated has usually been passive, even covert. Today it is plain and unmistakable, a fact of northern life that must be understood.

The native people have had some hard things to say about the government, about the oil and gas industry and about the white man and his institutions. The allegation has been made that what the leaders of native organizations in Northern Canada are saying is not representative of the attitudes and thinking of northern native peoples. But this Inquiry not only has sought the views of the native organizations, but has obtained the views of the native people who live in every



settlement and village of the Mackenzie Valley and the Western Arctic. There the native people, speaking in their own villages, in their own languages and in their own way, expressed their real views. About that I am in no doubt.

It would be a mistake to think that the native people are being manipulated by sinister forces, unseen by them, yet discernible to us. It is demeaning and degrading to tell someone that he does not mean or does not know what he is saying, that someone has told him to say it. It would be wrong to dismiss what they have said because we would rather believe that they are not capable of expressing their own opinions.

It may be uncomfortable to have to listen, when we have never listened in the past. But we must listen now. If we do not understand what is in the minds of the native people, what their attitudes really are toward industrial development, we shall have no way of knowing what impact a pipeline and an energy corridor will have on the people of the North.

We all have different ideas of progress and our own definitions of the national interest. It is commonplace for people in Southern Canada to dismiss the notion that a few thousand native people have a right to stand in the way of industrial imperatives. But many of the Dene intend to do just that. Philip Blake told the Inquiry at Fort McPherson:

> If your nation chooses ... to continue to try and destroy our nation, then I hope you will understand why we are willing to fight so that our nation can survive. It is our world.
>
> We do not wish to push our world onto you. But we are willing to defend it for ourselves, our children, and our grandchildren. If your nation becomes so violent that it would tear up our land, destroy our society and our future, and occupy our homeland, by trying to impose this pipeline against our will, then of course we will have no choice but to react with violence.
>
> I hope we do not have to do that. For it is not the way we would choose. However, if we are forced to blow up the pipeline ... I hope you will not only look on the violence of Indian action, but also on the violence of your own nation which would force us to take such a course.
>
> We will never initiate violence. But if your nation threatens by its own violent action to destroy our nation, you will have given us no choice. Please do not force us into this position. For we would all lose too much. [C1085ff.]

Chief Fred Greenland said to the Inquiry at Aklavik:

> It's clear to me what the native people are saying today. They're discussing not their future but the future of their children and grandchildren, and if the government continues to refuse or neglect [us] ... I think the natives would just stop their effort and discussions and the opportunities for a peaceful settlement would be lost. We must choose wisely and carefully because there will be a future generation of Canadians who will live with the results. [C3863]

Frank T'Seleie, then Chief at Fort Good Hope, also spoke of the future generations, of the children yet unborn. He told the Inquiry:

> It is for this unborn child, Mr. Berger, that my nation will stop the pipeline. It is so that this unborn child can know the freedom of this land that I am willing to lay down my life. [C1778ff.]

Chief Jim Antoine of Fort Simpson:

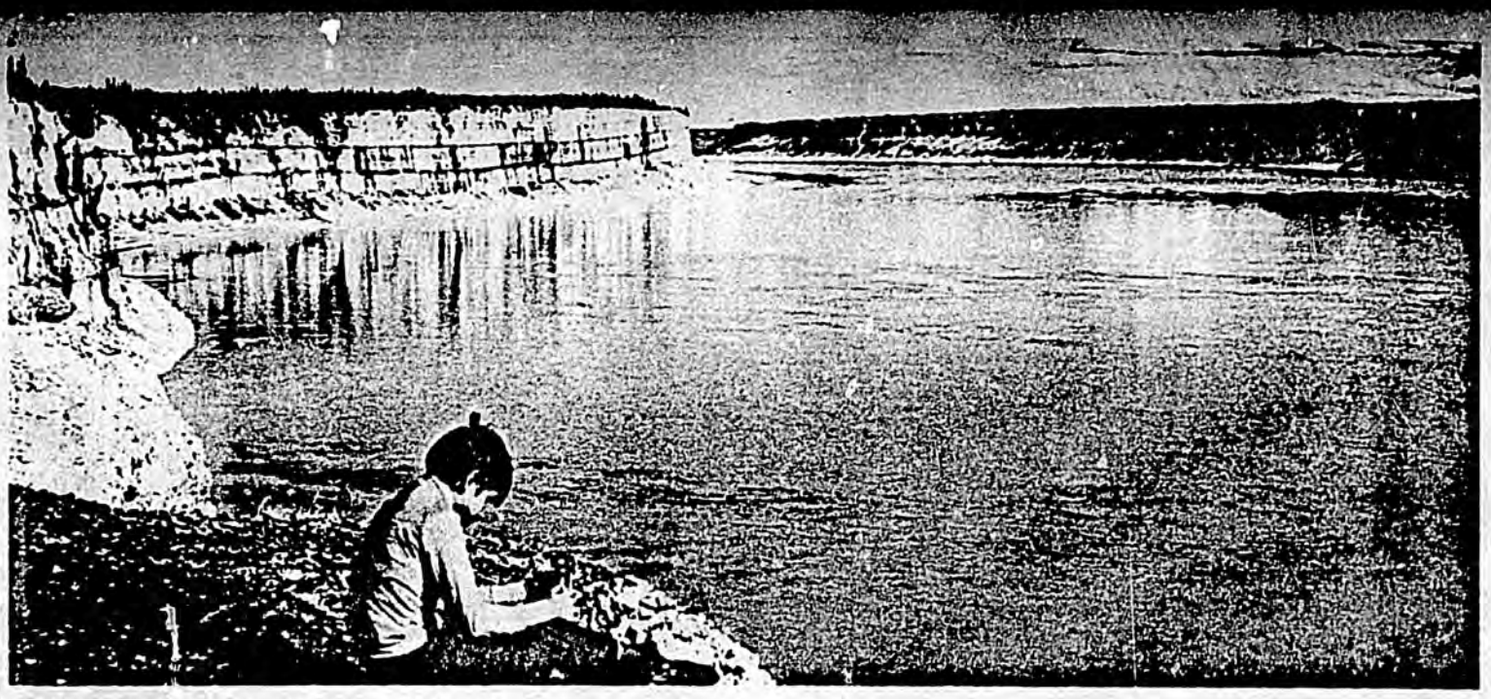
> ... every time we try to do something, within the system ... it doesn't seem to work for us, as Indian people. We tried it, we tried to use it, it doesn't work for us.... We're going to keep on trying to use the system until we get frustrated enough that we're going to try changing it. I think that's where it's directed, that's where it's going. I would stand with my brother from Good Hope that he would lay down his life for what he believes in, and I feel the same way. There's a lot of us young people who feel the same way. [C2625]

Raymond Yakaleya, speaking at Norman Wells:

> Our backs are turned to the corners. This is our last stand.
>
> I ask each and every one of you in this room what would you do if you were in our shoes? How would you feel if you had these conditions on you? I ask you one more time, let us negotiate, there's still time, but don't force us, because this time we have nothing to lose. When I ask for the lives of my people, am I asking you for too much? [C2177]

I have given the most anxious consideration to whether or not I should make any reference in this report to these statements. It may be said that merely reciting them would be to invite a violent reaction to the pipeline, if it were built without a just settlement of native claims. Yet these statements were not lightly made. No one who heard them could doubt that they were said in earnest. So I have concluded that they cannot be ignored. They illustrate the depth of feeling among the native people.

I want to emphasize that my recommendation that the construction of a Mackenzie Valley pipeline should be postponed until native claims are settled is not dependent upon this evidence. That recommendation is based upon the social and economic impact of a pipeline, and upon the impact it would have on native claims. I would be remiss in my duty, however, if I did not remind the Government of Canada that these things were said. I do not want anyone to think I am predicting an insurrection. But I am saying there is a real possibility of civil disobedience and civil disorder that – if they did occur – might well render orderly political evolution of the North impossible, and could poison relations between the Government of



The Ramparts along the Mackenzie River. (R. Fumoleau)

and economic advancement of the native people are concerned. Those social and economic gains will follow from the achievement of a sense of collective pride and initiative by the Dene, Inuit and Metis, and not simply from a clearing away of legal complications to enable industrial development to proceed.

If the pipeline is not built now, an orderly program of exploration can still proceed in the Mackenzie Delta and the Beaufort Sea. And, even if the oil and gas industry withdraws from its exploration activities because of a decision to postpone the pipeline, the Government of Canada has the means to ensure the continuation of exploratory drilling if it were held to be in the national interest. Postponement of the pipeline would mean that, if continued drilling in the Mackenzie Delta and the Beaufort Sea reveals sufficient reserves, Canada can proceed to build a pipeline at a time of its own choosing, along a route of its own choice, by means it has decided upon, and with the cooperation of the native people of the North.

Let me make it clear that if we decide to postpone the pipeline, we shall not be renouncing our northern energy supplies. They will still be there. No one is going to take them away. In years to come, it will still be available as fuel or as industrial feedstocks.

We have never had to determine what is the most intelligent use to make of our resources. We have never had to consider restraint. Will we continue, driven by technology and egregious patterns of consumption, to deplete our energy resources wherever and whenever we find them? Upon this question depends the future of northern native people and their environment.

Maurice Strong, Chairman of Petro Canada, has written:

> Man's very skills, the very technical success with which he overspreads the earth, makes him the most dangerous of all creatures.
>
> One critical aspect of man's use of planetary resources is the way in which he is burning up more and more of the world's energy....
>
> We can no longer afford to plan on the basis of past and current trends in consumption. If we assume that a decent standard of life for the world's peoples inevitably requires increasing per capita use of energy, we shall be planning for an energy starved world, or an ecological disaster, or both. Rather than searching endlessly for new energy sources, we must contribute to its wiser use....
>
> At present, we are far from this ideal. We have recklessly assumed that no matter how wasteful our lifestyle, we shall somehow find the energy to support it....
>
> In the last 15 years, world use of energy has doubled. North America now uses about five times as much energy as is consumed in the whole of Asia, and per capita consumption is about 24 times higher. The United States each year wastes more fossil fuel than is used by two-thirds of the world's population. [*Edmonton Journal*, September 22, 1976]

If we build the pipeline, it will seem strange, years from now, that we refused to do justice to the native people merely to continue to provide ourselves with a range of consumer goods and comforts without even asking Canadians to consider an alternative. Such a course is not necessary, nor is it acceptable.

I have said that, under the present conditions, the pipeline, if it were built now, would do enormous damage to the social fabric in the North, would bring only limited economic benefits, and would stand in the way of a just settlement of native claims. It would exacerbate tension. It would leave a legacy of bitterness throughout a region in which the native people have protested, with virtual unanimity, against the pipeline. For a time, some of them may be co-opted. But in the end, the Dene, Inuit and Metis will follow those of their leaders who refuse to turn their backs on their own history, who insist that they must be true to themselves, and who articulate the values that lie at the heart of the native identity.

No pipeline should be built now. Time is needed to settle native claims, set up new institutions and establish a truly diversified economy in the North. This, I suggest, is the course northern development should take.

We have the opportunity to make a new departure, to open a new chapter in the history of the indigenous peoples of the Americas. We must not reject the opportunity that is now before us.

The Corridor Concept

The Corridor Concept and Cumulative Impact

The concept of a pipeline corridor from the North was first enunciated by the Government of Canada in the 1970 Pipeline Guidelines. In 1972, these Guidelines were expanded. The Expanded Guidelines for Northern Pipelines (to which I shall refer as the "Pipeline Guidelines") were tabled in the House of Commons in June 1972, and they form the cornerstone of Canadian policy with regard to the construction of northern pipelines. The Inquiry is bound by Order-in-Council, P.C. 1974-641 March 21, 1974, under which it was established, to consider the proposals made by the pipeline companies to meet the specific environmental and social concerns set out in the Pipeline Guidelines.

The significance of the corridor concept to this Inquiry relates to the consideration of impact and cumulative impact. The Pipeline Guidelines assume that, if a gas pipeline is built, an oil pipeline will probably follow it, and they call for examination of the proposed gas pipeline from the point of view of cumulative impact. We must consider then, not only the impact of a gas pipeline, but also the impact of an oil pipeline — in sum, the impact of a transportation corridor for two energy systems.

The government's corridor policy is plainly spelled out in the Pipeline Guidelines:

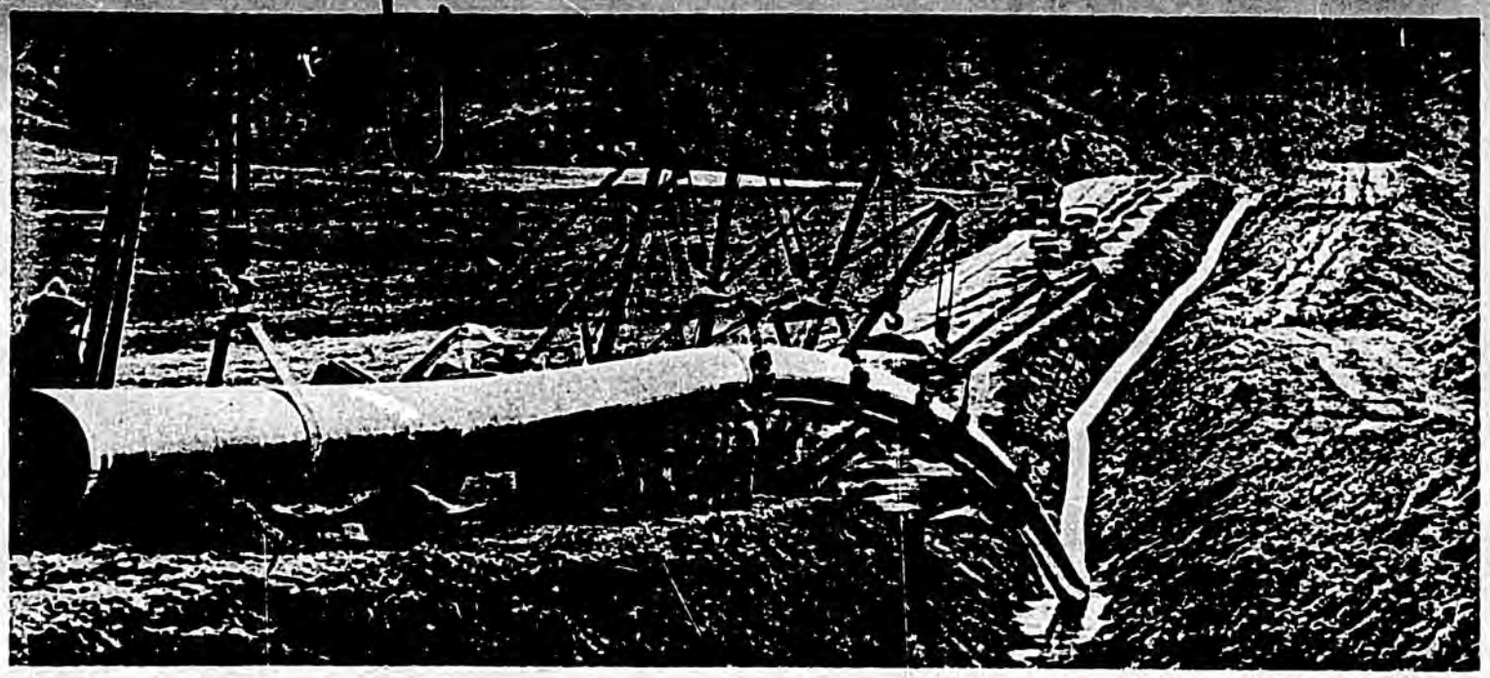
> In view of the influence of the *first* trunk pipeline in shaping the transportation corridor system and in moulding the environmental and social future of the region, any applicant to build a first trunk pipeline within any segment of the corridor system outlined in 1. above must provide with [its] application:
>
> i) assessment of the suitability of the applicant's route for nearby routing of the other pipeline, in terms of the environmental-social and terrain-engineering consequences of the other pipeline and the combined effect of the two pipelines;...
>
> ii) assessment of the environmental-social impact of both pipelines on nearby settlements or nearby existing or proposed transportation systems....[p. 10]

The assumption in 1970 was that an oil pipeline would be built first, and a gas pipeline would be likely to follow it; ever since the Pipeline Guidelines were issued in 1972, the assumption has been that a gas pipeline would come first and that an oil pipeline would be likely to follow it. Now we have before us proposals by Arctic Gas and Foothills to build a gas pipeline. The influence of a gas pipeline on the development of an energy corridor and in moulding the social, economic and environmental future of the North will be enormous. The Pipeline Guidelines call for a consideration of the environmental and social impact of a gas pipeline and an oil pipeline, as well as of the combined impact of the construction of both pipelines along the corridor. That policy ramifies throughout the Inquiry's consideration of the environmental and social issues that arise along the whole route. However, the corridor will not be simply a corridor for gas and oil pipelines. The Pipeline Guidelines envisage that the corridor may eventually include roads, a railroad, hydro-electric transmission lines and telecommunications facilities.

There are real limits to our capacity to forecast the impact of such a corridor. The Pipeline Guidelines are principally concerned with the impact that gas and oil pipelines will have in the North. The Inquiry has, therefore, largely limited itself to a consideration of the impact of these energy transportation systems. But sometimes it has been necessary to consider the impact of pipelines in relation to other transportation systems. For instance, what if a haul road had to be built along the Arctic Coastal Plain of the Northern Yukon? Or to what extent will the capacity of the existing fleet of tugs and barges on the Mackenzie River have to be augmented? Or to what extent will hunting from the Dempster Highway have to be restricted to enable the recommendations of this Inquiry to be carried out? We cannot make an intelligent assessment of the impact of a gas pipeline unless we do so in the light of the cumulative impact of the corridor.

Of course, the gas pipeline itself will be a multi-stage project involving considerations of cumulative impact. The gas pipelines proposed by Arctic Gas and by Foothills can be expected to be looped. Looping is the process of progressively increasing the amount of gas that can be transported by the pipeline system; a second (or third) pipeline is built beside the first in sections or loops from one compressor station to the next. This means that construction along the gas pipeline right-of-way can be an ongoing or repetitive process and can involve cumulative impacts over and above those resulting from the project that was originally proposed.

The importance of considering the impact of a gas pipeline in the light of cumulative impact along the corridor is obvious. This importance can be illustrated by reference to gravel, which is in short supply in the North. Arctic Gas estimate that the gas pipeline will require 30 million cubic yards of gravel and other borrow materials within Canada and North of 60. Mackenzie Valley Pipeline Research Limited estimated the gravel requirements for an oil pipeline at 42 million



cubic yards. It would be foolish to consider the impact of the borrow requirements of a gas pipeline without taking into account the gravel requirements of an oil pipeline, as well as those of other regional and local projects. Substantial amounts of borrow materials will be required for gas plants and gas-gathering systems in the Mackenzie Delta, for the completion of the Mackenzie Highway and the Dempster Highway, and for airports, not to mention the needs of communities along the route. Gravel provides a quite straightforward example of cumulative impact. There are many other examples, some of them by no means as straightforward, that I shall be dealing with in this report.

The Northern Yukon Corridor and the Mackenzie Valley Corridor

It should be borne in mind that there are two proposed corridors: one across the Northern Yukon and another along the Mackenzie Valley. The following passage from the Pipeline Guidelines makes this plain:

> The Government of Canada is prepared to receive and review applications to construct one trunk oil pipeline and/or one trunk gas pipeline within the following broad "corridors":
>
> i) Along the Mackenzie Valley region (in a broad sense) from the Arctic coast to the provincial [Alberta] boundary;
>
> ii) Across the northern part of the Yukon Territory either adjacent to the Arctic coast or through the northern interior region from the boundary of Alaska to the general vicinity of Fort McPherson, and thus to join the Mackenzie "corridor": ... [p. 9]

Arctic Gas propose to build a pipeline from Alaska that would use the corridor across the Northern Yukon as well as the corridor along the Mackenzie Valley. Foothills propose to build a pipeline that would use only the corridor along the Mackenzie Valley.

Arctic Gas propose to transport only Alaskan gas in the corridor across the Northern Yukon, and to transport both Alaskan and Canadian gas in the Mackenzie Valley corridor. Under the Foothills proposal, the Mackenzie Valley corridor would be used to carry only Canadian gas.

Since 1972, as mentioned above, the Government of Canada has assumed that a gas pipeline along either of these corridors would probably be followed by an oil pipeline. That assumption is a sound one: once a gas pipeline is built across the Northern Yukon, there will be every reason for an oil pipeline carrying American oil to follow the same route. You may ask, is not the trans-Alaska pipeline to carry American oil to the Lower 48? The Alyeska pipeline was built to deliver oil to the western states, but the United States still has severe shortages of oil in the midwest and the east. And there are great petroleum reserves in northern Alaska, especially in Naval Petroleum Reserve No. 4 lying to the west of Prudhoe Bay. The urgency of bringing oil from northern Alaska to the markets in the Lower 48 that need it most is obvious. If a gas pipeline and energy corridor were already in place across the Northern Yukon and along the Mackenzie Valley, it is quite likely this corridor would be the route of choice.

Once a gas pipeline is built along the Mackenzie Valley, it is likely that in the future an oil pipeline will follow. Oil has in fact been found in the Mackenzie Delta region. It is said that discoveries of oil in the Mackenzie Delta and the Beaufort Sea do not justify an oil pipeline today. Nonetheless, while the proven reserves of oil in the Mackenzie Delta region have not yet reached threshold levels, they may do so in time. In any event, it is obvious that if present or future exploration programs reveal large reserves of oil under the Beaufort Sea, the call for an oil pipeline from the Delta to the mid-continent will be made once again.

I think all of this demonstrates the wisdom of the Pipeline Guidelines, which insist that there should be an examination of the impact of an oil pipeline along with the gas pipeline. Any attempt to dismember the policy and to assess the impacts piecemeal, along either the Northern Yukon corridor or the Mackenzie Valley corridor, should be resisted.

The United States' Interest in the Corridor

The Arctic Gas pipeline, if it is built, would provide a land bridge for the delivery of Alaskan gas across Canada to the Lower 48. The implications of this prospect, from the point of view of Canadian policy in the North, should be borne in mind.

The corridor across the Northern Yukon will be an exclusively American energy corridor. The Mackenzie Valley corridor, under the Arctic Gas proposal, will be an American energy corridor as much as it is a Canadian energy corridor. The United States will have an interest in the scheduling of pipeline construction in Canada and, when the pipeline is built, in seeing that it remains safe and secure, because it will be carrying Alaskan gas in bond to the Lower 48. It will be an energy lifeline for the United States,







Trans-Alaska pipeline and gravel haul road. Sideboom tractors lower pipe into ditch. (Alyeska)

Stockpile of drill pipe. (NFB–McNeill)

Drill rig in the Delta. (Arctic Gas)

Mackenzie Highway right-of-way beside Mackenzie River. (J. Inglis)

extending across the Northern Yukon, across the Mackenzie Delta, along the Mackenzie Valley, and then through Alberta, Saskatchewan and British Columbia to the Lower 48. It will supply gas to a complex of industries and urban centres in the United States. The Americans will be dependent on the continuous supply of gas, and the gas being transported from Alaska will be their own gas. Moreover, the United States wants the pipeline to begin to deliver that gas as soon as possible.

There are, of course, pipelines that cross United States territory and carry oil and gas to Canadian markets: the Interprovincial pipeline, which delivers western oil to Ontario; the Portland-Montreal pipeline, which delivers offshore oil to Quebec; and the Great Lakes Transmission Company pipeline, which delivers gas to Ontario. All of them pass through the United States. But these connections cannot be compared in magnitude or impact to the Arctic Gas proposal. They are not pipelines reaching some 2,000 miles from a distant frontier.

The consequences of such American interest in the pipeline are of special concern to the Inquiry. The impact of the pipeline, so far as northern peoples and the northern environment is concerned, will be largely within Canada (the line from Prudhoe Bay to the Alaska-Yukon border is only 200 miles long, whereas the line from the Alaska-Yukon boundary to the Northwest Territories-Alberta border is 1,000 miles long). The native people's concern over when a pipeline is built, the environmental concern over where it should be built, and the stipulations for protecting the people and the environment apply largely in Canada. The United States cannot be expected to be as concerned as Canada with the seriousness of the social and environmental impact of the pipeline along its route. This difference, coupled with the Americans' rather more urgent need of gas, might result in pressure to complete the pipeline without due regard to the social and environmental concerns in Canada. The risk is in Canada. The urgency is in the United States.

A pipeline 2,200 miles long (in Canada) is a highly vulnerable artery. What measures might have to be taken to forestall an interruption of delivery – an interruption that would affect vital Canadian interests, but even more tellingly, vital American interests? There may be real possibilities for misunderstanding and tension between our two countries, notwithstanding our long history of good relations. These considerations deserve the attention of the Government of the United States as well as of the Government of Canada. It may be that they are not at all daunting. But they should still not be overlooked.

A treaty between Canada and the United States will not cover all possibilities. It will, of course, define the rights of our two governments with regard to the pipeline and to the gas being transported in that pipeline. And it will establish the ground rules for the transportation of Alaskan gas across Canada to the United States. It cannot do more. I say this because a treaty, although it will regulate the conduct of our two governments, will not necessarily regulate the conduct of the two countries' citizens.

The implications for our relations with the United States of the building and maintenance of the proposed gas transmission system deserve careful consideration by all Canadians. We are not simply considering a proposal to build a pipeline on an isolated frontier. We are considering, in the Arctic Gas proposal, the establishment of an international energy corridor that will cross some 2,200 miles of Canadian territory, opening up wilderness areas that are among the most important wildlife habitat in North America. It will cross lands that are claimed by Canada's native people, a region where the struggle for a new social and economic order and political responsibility is taking place.

It seems to me the question of whether or not there should be a corridor to carry vital energy supplies from Alaska through the heartland of Canada to the Lower 48, is at the threshold of the decision-making process. If Canadians decide that there is to be such a corridor, then we must also consider when it should be established and what route it should follow. These are questions Canadians must decide for themselves.



Hunting camp near Fort Resolution. (R. Fumoleau)

Postponement of the Pipeline

In my judgment, we must settle native claims before we build a Mackenzie Valley pipeline. Such a settlement will not be simply the signing of an agreement, after which pipeline construction can then immediately proceed. Intrinsic to the settlement of native land claims is the establishment of new institutions and programs that will form the basis for native self-determination.

The native people of the North reject the model of the James Bay Agreement. They seek new institutions of local, regional and indeed territorial government. John Ciaccia, speaking to the Parliamentary Committee convened to examine the James Bay Agreement, said that the Government of Quebec was "taking the opportunity to extend its administration, its laws, its services, its governmental structures through the entirety of Québec." [*The James Bay and Northern Québec Agreement*, p. xvi] The Dene and the Inuit seek a very different kind of settlement.

They also reject the Alaskan model. The Alaskan settlement was designed to provide the native people with land, capital and corporate structures to enable them to participate in what has become the dominant mode of economic development in Alaska, the non-renewable resource sector. This model is only relevant if we decide against the strengthening of the renewable resource sector in the Canadian North.

The Alaskan settlement also rejects the idea that there should be any special status for native people. That is a policy quite different from the policy formulated by the Government of Canada. In Alaska the settlement was designed to do away with special status by 1991 and to assimilate Alaskan natives. The Government of Canada faced that issue between 1969 and 1976 and decided against it.

The issue comes down to this: will native claims be rendered more difficult or even impossible of achievement if we build a pipeline without first settling those claims? Must we establish the political, social and economic institutions and programs embodied in the settlement before building a pipeline? Unless we do, will the progress of the native people toward realization of their goals be irremedially retarded? I think the answer clearly is yes. The progress of events, once a pipeline is under construction, will place the native people at a grave disadvantage, and will place the government itself in an increasingly difficult position.

In my opinion a period of ten years will be required in the Mackenzie Valley and Western Arctic to settle native claims, and to establish the new institutions and new programs that a settlement will entail. No pipeline should be built until these things have been achieved.

It might be possible to make a settlement within the year with the Metis, and perhaps to force a settlement upon the Inuit. It would, however, be impossible, I think, to coerce the Dene to agree to such a settlement. It would have to be an imposed settlement.

You can sign an agreement or you can impose one; you can proceed with land selection; you can promise the native people that no encroachments will be made upon their lands. Yet you will discover before long that such encroachments are necessary. You can, in an agreement, promise the native people the right to rebuild the native economy. The influx of whites, the divisions created among the native people, the preoccupations of the federal and territorial governments, faced with the problems of pipeline construction and the development of the corridor, would make fulfilment of such a promise impossible. That is why the pipeline should be postponed for 10 years.

A decision to build the pipeline now would imply a decision to bring to production now the gas and oil resources of the Mackenzie Delta and the Beaufort Sea. The industrial activity that would follow this decision would be on a scale such as to require the full attention of the government, and entrench its commitment to non-renewable resource development in the North. The drive to bring the native people into the industrial system would intensify, and there would be little likelihood of the native people receiving any support in their desire to expand the renewable resource sector.

If we believe that the industrial system must advance now into the Mackenzie Valley and the Western Arctic, then we must not delude ourselves or the native people about what a settlement of their claims will mean in such circumstances.

It would be dishonest to impose a settlement that we know now – and that the native people will know before the ink is dry on it – will not achieve their goals. They will soon realize – just as the native people on the prairies realized a century ago as the settlers poured in – that the actual course of events on the ground will deny the promises that appear on paper. The advance of the industrial system would determine the course of events, no matter what Parliament, the courts, this Inquiry or anyone else may say.

If we think back to the days when the treaties were signed on the prairies, we can predict what will happen in the North if a settlement is forced upon the native people. We shall soon see that we cannot keep the promises we have made.







Phillips Bay, Yukon coast; breeding and staging area for waterfowl. (I. MacNeil)

Porcupine River. (ISL–G. Calef)

Alaska North Slope. (ISL–G. Calef)

and the Northern Yukon biota, can be consistent with and complementary to these principles.

We have already some experience in the establishment and management of parks (although not wilderness parks) in the North and have seen their effects on the interests of the native people. At Nahanni Butte the Inquiry was told that the Dene play no part in the management of the South Nahanni National Park. This experience must not be repeated in the wilderness park for the Northern Yukon that I am urging upon the Government of Canada. The conditions I have outlined will, in my judgment, avoid such a repetition and will avoid prejudice to native claims.

In *Runes of the North*, Sigurd Olson, an American naturalist, wrote:

> It may well be that with [the help of the native people] the Canadian north, with its vast expanses of primeval country, can restore to modern man a semblance of balance and completeness. In the long run, these last wild regions of the continent might be worth far more to North Americans from a recreational and spiritual standpoint than through industrial exploitation. [p. 156]

It may be said that no one will visit the park because it is too remote. Only the wealthy, it may be argued, will have the opportunity to see the caribou and to enjoy the solitude and the scenery. But Canadians of ordinary means and less are there now, enjoying these wonders of nature. I speak, of course, of the native people. Is that not enough? Canadians from the provinces do not have to visit the wilderness or see the herd of caribou to confirm its existence or to justify its retention. The point I am making here is that the preservation of the wilderness and its wildlife can be justified on the grounds of its importance to the native people. But the preservation of wilderness can also be justified because it is there, an Arctic ecosystem, in which life forms are limited in number, and where, if we exterminate them, we impoverish the frontier, our knowledge of the frontier, and the variety and beauty of the earth's creatures.

An Alternative Route Across the Yukon

I have recommended that no pipeline be built and no energy corridor be established across the Northern Yukon along either of the routes proposed by Arctic Gas. This means that, if gas from Prudhoe Bay and, subsequently, gas and oil from other sources in Alaska must pass overland to the Lower 48, the pipeline will have to be routed through the southern part of the Yukon Territory. The only overland route that has been seriously advanced as an alternative to the routes proposed by Arctic Gas is the Alaska Highway Route (also known as the Fairbanks Route) which is the route proposed for the Alcan Pipeline. This route would follow the trans-Alaska pipeline from Prudhoe Bay to Fairbanks, the Alaska Highway to the eastern border of Alaska and then cross the Southern Yukon into British Columbia and Alberta.

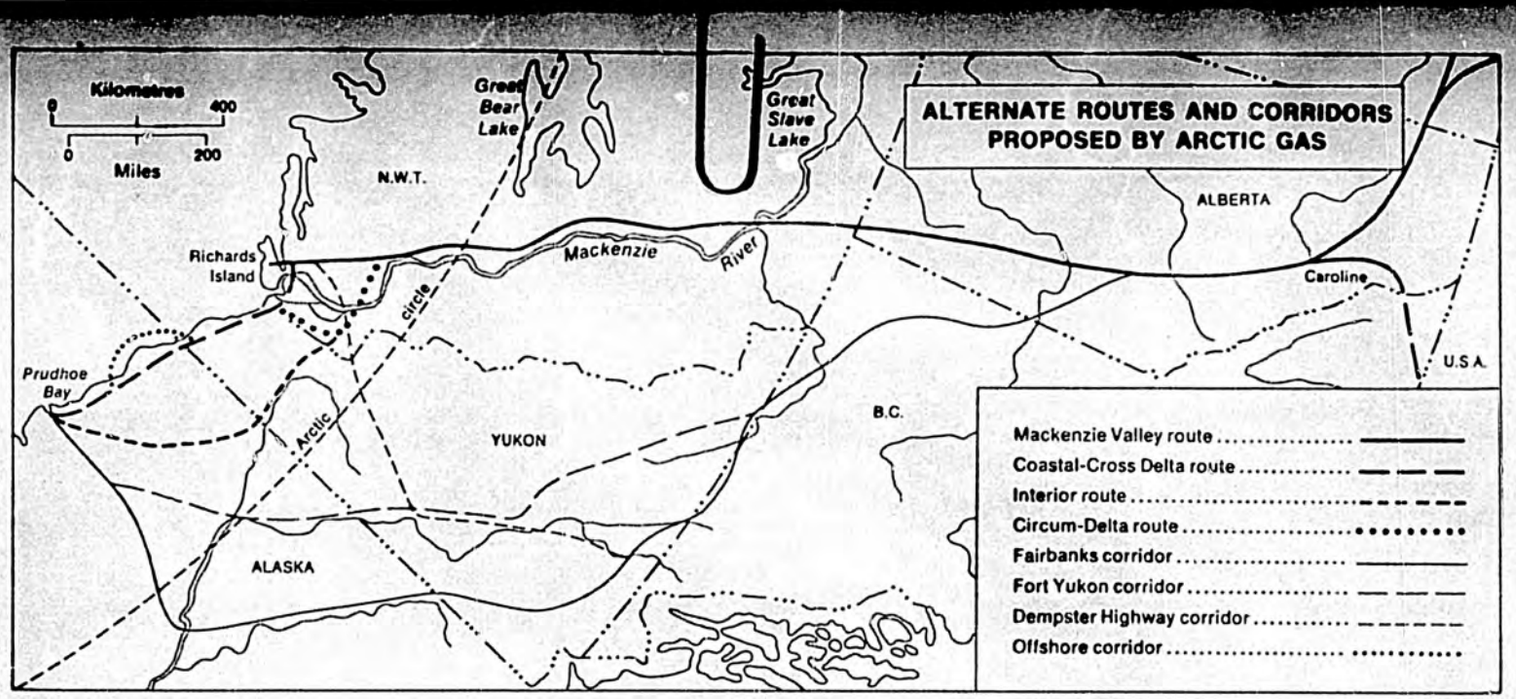
At Whitehorse, I heard evidence from Arctic Gas and from other participants in the Inquiry, comparing this route with the Coastal and Interior Routes. On the basis of that evidence, many of the concerns that led me to reject the pipeline routes across the Northern Yukon do not appear to apply to the Alaska Highway Route.

No major populations of any wildlife species appear to be threatened by the construction of a pipeline paralleling the Alaska Highway, either in the Yukon or in Alaska. The route follows an existing corridor along the trans-Alaska pipeline north of Fairbanks and along the Alaska Highway south and east of Fairbanks. Like the trans-Alaska pipeline, this route would come into contact with only small numbers of caribou south of Prudhoe Bay. Elsewhere, although there are important wildlife populations in the area traversed by the proposed route, they apparently would not have major contact with the corridor.

The concerns that I have expressed about the scheduling and logistics of building a pipeline across the Northern Yukon would not apply (or would be much less important) if a pipeline were built along the Alaska Highway Route. The Arctic Gas pipeline would have to be built in the cold and darkness of winter north of the Arctic Circle, from a snow working surface. It would depend upon a limited shipping season, and a whole infrastructure would have to be established to bring in material, equipment and supplies. In contrast, a pipeline following the Alaska Highway Route in Canada could probably be built in either winter or summer, and it would cross an area with less extreme winter weather, and follow a main highway that has a short connection to the Pacific coast.

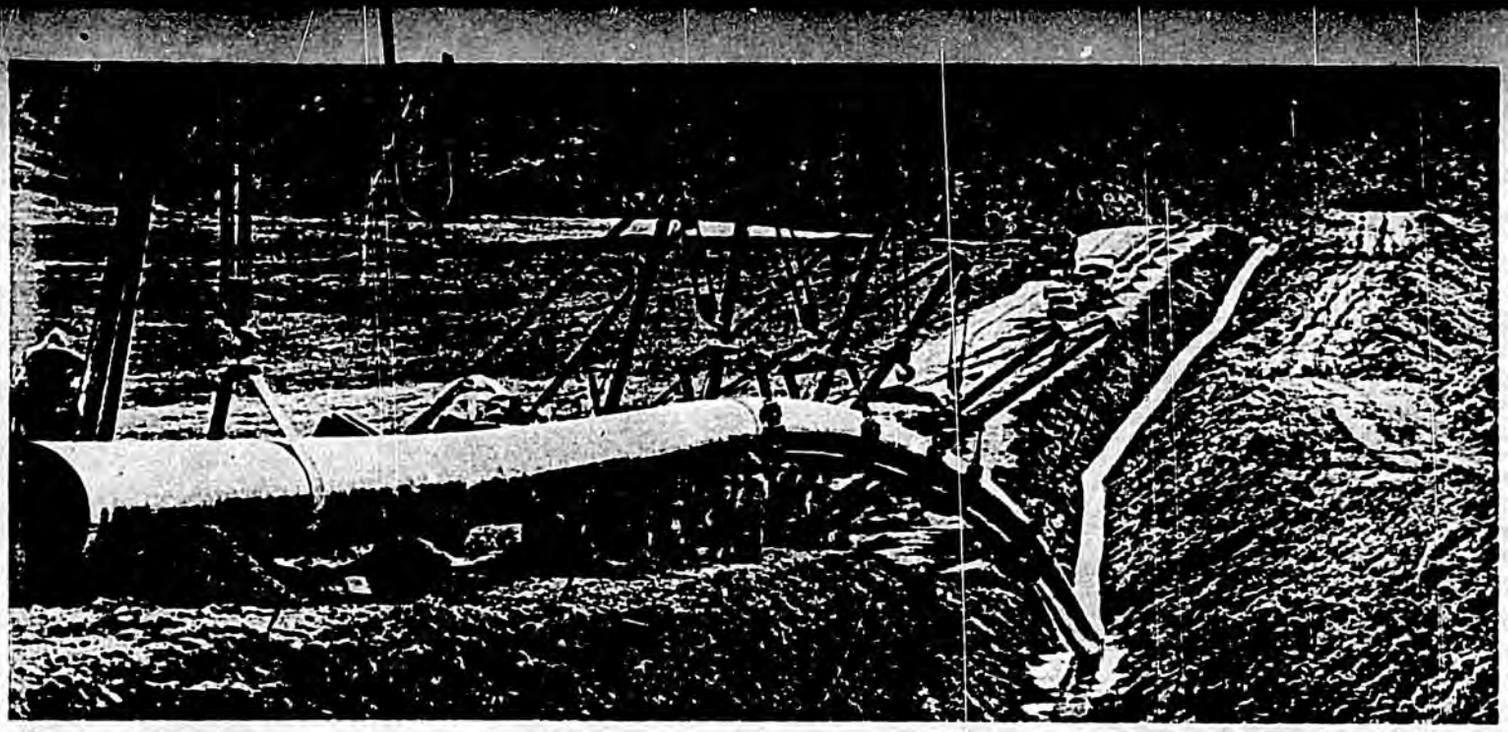
Within Canada, only short sections of the Alaska Highway Route would encounter permafrost, and the problems of pipeline construction and operation across permafrost and of controlling frost heave would be of little concern. Of course, permafrost does exist throughout most of the Alaska portion of this proposed route.

I have not examined the social and economic impact of a pipeline along the Alaska Highway Route. Neither have I considered the question of native claims in the Southern



Yukon. The Council of Yukon Indians have advised that native claims must be settled in the Southern Yukon before any pipeline is built. These matters would be of fundamental importance in any decision to build a pipeline across the Southern Yukon and they must be assessed carefully before any recommendation is made for a pipeline along the Alaska Highway. Certainly, I am in no position to make such a recommendation.

If a decision should be made in favour of a pipeline along the Alaska Highway Route, or over any other southerly route across the Yukon Territory, I recommend that any agreement in this regard between Canada and the United States should include provisions to protect the Porcupine caribou herd and the wilderness of the Northern Yukon and Northeastern Alaska. By this agreement, Canada should undertake to establish a wilderness park in the Northern Yukon and the United States should agree to accord wilderness status to its Arctic National Wildlife Range, thus creating a unique international wilderness park in the Arctic. It would be an important symbol of the dedication of our two countries to environmental as well as industrial goals.



cubic yards. It would be foolish to consider the impact of the borrow requirements of a gas pipeline without taking into account the gravel requirements of an oil pipeline, as well as those of other regional and local projects. Substantial amounts of borrow materials will be required for gas plants and gas-gathering systems in the Mackenzie Delta, for the completion of the Mackenzie Highway and the Dempster Highway, and for airports, not to mention the needs of communities along the route. Gravel provides a quite straightforward example of cumulative impact. There are many other examples, some of them by no means as straightforward, that I shall be dealing with in this report.

The Northern Yukon Corridor and the Mackenzie Valley Corridor

It should be borne in mind that there are two proposed corridors: one across the Northern Yukon and another along the Mackenzie Valley. The following passage from the Pipeline Guidelines makes this plain:

> The Government of Canada is prepared to receive and review applications to construct one trunk oil pipeline and/or one trunk gas pipeline within the following broad "corridors":
>
> i) Along the Mackenzie Valley region (in a broad sense) from the Arctic coast to the provincial [Alberta] boundary;
>
> ii) Across the northern part of the Yukon Territory either adjacent to the Arctic coast or through the northern interior region from the boundary of Alaska to the general vicinity of Fort McPherson, and thus to join the Mackenzie "corridor"; ... [p. 9]

Arctic Gas propose to build a pipeline from Alaska that would use the corridor across the Northern Yukon as well as the corridor along the Mackenzie Valley. Foothills propose to build a pipeline that would use only the corridor along the Mackenzie Valley.

Arctic Gas propose to transport only Alaskan gas in the corridor across the Northern Yukon, and to transport both Alaskan and Canadian gas in the Mackenzie Valley corridor. Under the Foothills proposal, the Mackenzie Valley corridor would be used to carry only Canadian gas.

Since 1972, as mentioned above, the Government of Canada has assumed that a gas pipeline along either of these corridors would probably be followed by an oil pipeline. That assumption is a sound one: once a gas pipeline is built across the Northern Yukon, there will be every reason for an oil pipeline carrying American oil to follow the same route. You may ask, is not the trans-Alaska pipeline to carry American oil to the Lower 48? The Alyeska pipeline was built to deliver oil to the western states, but the United States still has severe shortages of oil in the midwest and the east. And there are great petroleum reserves in northern Alaska, especially in Naval Petroleum Reserve No. 4 lying to the west of Prudhoe Bay. The urgency of bringing oil from northern Alaska to the markets in the Lower 48 that need it most is obvious. If a gas pipeline and energy corridor were already in place across the Northern Yukon and along the Mackenzie Valley, it is quite likely this corridor would be the route of choice.

Once a gas pipeline is built along the Mackenzie Valley, it is likely that in the future an oil pipeline will follow. Oil has in fact been found in the Mackenzie Delta region. It is said that discoveries of oil in the Mackenzie Delta and the Beaufort Sea do not justify an oil pipeline today. Nonetheless, while the proven reserves of oil in the Mackenzie Delta region have not yet reached threshold levels, they may do so in time. In any event, it is obvious that if present or future exploration programs reveal large reserves of oil under the Beaufort Sea, the call for an oil pipeline from the Delta to the mid-continent will be made once again.

I think all of this demonstrates the wisdom of the Pipeline Guidelines, which insist that there should be an examination of the impact of an oil pipeline along with the gas pipeline. Any attempt to dismember the policy and to assess the impacts piecemeal, along either the Northern Yukon corridor or the Mackenzie Valley corridor, should be resisted.

The United States' Interest in the Corridor

The Arctic Gas pipeline, if it is built, would provide a land bridge for the delivery of Alaskan gas across Canada to the Lower 48. The implications of this prospect, from the point of view of Canadian policy in the North, should be borne in mind.

The corridor across the Northern Yukon will be an exclusively American energy corridor. The Mackenzie Valley corridor, under the Arctic Gas proposal, will be an American energy corridor as much as it is a Canadian energy corridor. The United States will have an interest in the scheduling of pipeline construction in Canada and, when the pipeline is built, in seeing that it remains safe and secure, because it will be carrying Alaskan gas in bond to the Lower 48. It will be an energy lifeline for the United States,



Trans-Alaska pipeline and gravel haul road. Sideboom tractors lower pipe into ditch. (Alyeska)



Stockpile of drill pipe. (NFB–McNeill)

Drill rig in the Delta. (Arctic Gas)



Mackenzie Highway right-of-way beside Mackenzie River. (J. Inglis)

extending across the Northern Yukon, across the Mackenzie Delta, along the Mackenzie Valley, and then through Alberta, Saskatchewan and British Columbia to the Lower 48. It will supply gas to a complex of industries and urban centres in the United States. The Americans will be dependent on the continuous supply of gas, and the gas being transported from Alaska will be their own gas. Moreover, the United States wants the pipeline to begin to deliver that gas as soon as possible.

There are, of course, pipelines that cross United States territory and carry oil and gas to Canadian markets: the Interprovincial pipeline, which delivers western oil to Ontario; the Portland-Montreal pipeline, which delivers offshore oil to Quebec; and the Great Lakes Transmission Company pipeline, which delivers gas to Ontario. All of them pass through the United States. But these connections cannot be compared in magnitude or impact to the Arctic Gas proposal. They are not pipelines reaching some 2,000 miles from a distant frontier.

The consequences of such American interest in the pipeline are of special concern to the Inquiry. The impact of the pipeline, so far as northern peoples and the northern environment is concerned, will be largely within Canada (the line from Prudhoe Bay to the Alaska-Yukon border is only 200 miles long, whereas the line from the Alaska-Yukon boundary to the Northwest Territories-Alberta border is 1,000 miles long). The native people's concern over when a pipeline is built, the environmental concern over where it should be built, and the stipulations for protecting the people and the environment apply largely in Canada. The United States cannot be expected to be as concerned as Canada with the seriousness of the social and environmental impact of the pipeline along its route. This difference, coupled with the Americans' rather more urgent need of gas, might result in pressure to complete the pipeline without due regard to the social and environmental concerns in Canada. The risk is in Canada. The urgency is in the United States.

A pipeline 2,200 miles long (in Canada) is a highly vulnerable artery. What measures might have to be taken to forestall an interruption of delivery – an interruption that would affect vital Canadian interests, but even more tellingly, vital American interests? There may be real possibilities for misunderstanding and tension between our two countries, notwithstanding our long history of good relations. These considerations deserve the attention of the Government of the United States as well as of the Government of Canada. It may be that they are not at all daunting. But they should still not be overlooked.

A treaty between Canada and the United States will not cover all possibilities. It will, of course, define the rights of our two governments with regard to the pipeline and to the gas being transported in that pipeline. And it will establish the ground rules for the transportation of Alaskan gas across Canada to the United States. It cannot do more. I say this because a treaty, although it will regulate the conduct of our two governments, will not necessarily regulate the conduct of the two countries' citizens.

The implications for our relations with the United States of the building and maintenance of the proposed gas transmission system deserve careful consideration by all Canadians. We are not simply considering a proposal to build a pipeline on an isolated frontier. We are considering, in the Arctic Gas proposal, the establishment of an international energy corridor that will cross some 2,200 miles of Canadian territory, opening up wilderness areas that are among the most important wildlife habitat in North America. It will cross lands that are claimed by Canada's native people, a region where the struggle for a new social and economic order and political responsibility is taking place.

It seems to me the question of whether or not there should be a corridor to carry vital energy supplies from Alaska through the heartland of Canada to the Lower 48, is at the threshold of the decision-making process. If Canadians decide that there is to be such a corridor, then we must also consider when it should be established and what route it should follow. These are questions Canadians must decide for themselves.



the sense of medication. So at least in its initial stages, southern psychiatry is appropriate. However, many of the problems seen are so closely interwoven with the life-style of the native people in the North, which in turn is closely bound to such problems as economics, housing, self-esteem and cultural identity, that to label them as psychiatric disorders is frankly fraudulent and of no value whatsoever, as the treatment must eventually be the treatment of the whole community rather than [of] the individual. [F28437]

Social Impact and the Pipeline

Some advocates of the pipeline say that the wage employment it would provide, even though temporary, would ameliorate the social problems that underlie the psychological symptoms that Kehoe, Abbott and others have described. In the light of all of the evidence and our experience, this attitude must be regarded as wrong. We cannot ignore the truly frightening increases in crime, abuse of alcohol, diet-related illness, venereal disease rates and mental illness that have occurred during the past ten years in the North.

At the same time, we should acknowledge some encouraging trends: violent deaths of native people in the Northwest Territories fell from 28.4 percent of all deaths in 1974 to 22.5 percent in 1975. There was a reduction in the number of cases of venereal disease reported in 1976. I have described some local reactions against alcohol abuse that have led to measures of local prohibition. Why have these indicators of crime and social disease, which for years have gone from bad to worse, broken their upward trend? Perhaps it has been a result of heightened native consciousness, the determination of the native people to be true to themselves, that is responsible. But let us make no mistake: these improvements, although welcome, are small, and they may prove to be merely an interruption of longer-term trends. In communities into which the industrial economy has only recently penetrated, the situation is deeply alarming.

The question we face is, will construction of the pipeline hamper social improvements? The answer must be yes. If pipeline construction goes ahead now, can we ensure that its effects will not halt these social improvements? The answer must be no. Although some ameliorative measures can be taken to lessen the social impact of pipeline construction and related activity on the northern people, no one should think that these measures will prevent the further and serious deterioration of social and personal well-being in the native communities.

The process of rebuilding a strong, self-confident society in the Mackenzie Valley has begun. Major industrial development now may well have a disastrous effect on that process. With the pipeline, I should expect the high rate of alcohol consumption to persist and worsen. I should expect further erosion of native culture, further demoralization of the native people, and degradation and violence beyond anything previously seen in the Mackenzie Valley and the Western Arctic.

The presence of a huge migrant labour force and the impact of construction over the years will mean that alcohol and drugs will become more serious problems. It is fanciful to think that greater opportunities for wage employment on a pipeline will stop or reverse the effects of past economic development.

Let me cite what Dr. Wheeler said of the Dene, because this statement applies to all the native peoples of the Mackenzie Valley and the Western Arctic. His views ex plify those of every doctor and nurse spoke to the Inquiry.

> The Dene have great strength as a people. Pa of this strength lies in their extended fami ties which they have been able to maintain close-knit communities. We white peop know the value of these kinds of ties, as w are now feeling the loss of them in terms the depersonalization and dehumanization southern urban living. How long will t Dene family survive the loss of its young me and the degradation of its women?
>
> We want to hear what plans the territori and federal governments have or are develo ing for these kinds of social problems. H perhaps the answer lies not with increasi government bureaucracy, with all its contro The solution to these problems, and with it th survival of the Dene, lies within the Den They must be allowed to develop these solu tions within a time frame of their ow choosing before we get stampeded into social disaster from which the North ma never recover. The people need time an freedom in order to survive. [C3402]

The Limits to Planning

I have been asked to predict the impact of t pipeline and energy corridor and to reco mend terms and conditions that mig mitigate their impact. Some impacts a easier to predict than others: there is a v difference between the effects that are like to occur in the first year and those that w be important in ten years. And there a difficulties in prediction that involve mo than time or scale, for even short-term caus chains can be intricately connected. Mor over, some consequences of the pipeline w be controllable, but others will not. Just there are limits to predicting, so also a there limits to planning.

Arctic Red River. (M. Jackson)

Café and bar in Fort Providence. (Native Press)

Elizabeth Mackenzie, activist against liquor abuse, being sworn in as a Justice of the Peace, Rae-Edzo. (Native Press)

People visiting outside the Bay, Fort Norman. (N. Cooper)







I can recommend terms and conditions that will to some extent mitigate the social impact of the pipeline and energy corridor, but some of the consequences I have predicted will occur no matter what controls we impose. Other consequences can be predicted only in a vague and general way: we can anticipate their scale, but cannot adequately plan for them. There is a gulf, therefore, between the nature of the predictions and the nature of the terms and conditions I am asked to propose. The one is imprecise and often speculative; the other, if the terms and conditions are to be effective, must be very precise. We must never forget their limitations; it is all too easy to be overconfident of our ability to act as social engineers and to suppose – quite wrongly – that all problems can be foreseen and resolved. The nature of human affairs often defies the planners. In the case of a vast undertaking like the Mackenzie Valley pipeline, overconfidence in our ability to anticipate and to manage social problems would be foolish and dangerous.

I am prepared to accept that the oil and gas industry, the pipeline company, and the contractors will be able to exercise a measure of control over the movement and behaviour of their personnel. I am prepared to accept that government will expand its services and infrastructure in major communities to serve the requirements of pipeline construction in the Mackenzie Valley and of gas plant development in the Delta. Where actual numbers of people can be predicted, planning is possible and orderly procedures and cost-sharing arrangements can be worked out. However, there are obvious limitations to planning of this sort. The cost of the project or the number of workers required may be so far in excess of the figures we have now that it will seem as though we had planned one project but had built another. There is the question of how many people will be involved in secondary employment: their number will be large, no matter what measures are taken to discourage them, and the costs associated with their presence in the North will be very high.

There are also political limits to planning. The impacts that lead to social costs vary in the degree to which they can be treated. There are matters over which government and industry can exercise some control; there are other matters over which control would not be in keeping with the principles of a democratic society. And there are social impacts over which no control could be exercised even under the most authoritarian regime.

Finally, I am not prepared to accept that, in the case of an enormous project like the pipeline, there can be any real control over how much people will drink and over what the abuse of alcohol will do to their lives. There can be no control over how many families will break up, how many children will become delinquent and have criminal records, how many communities will see their young people drifting towards the larger urban centres, and how many people may be driven from a way of life they know to one they do not understand and in which they have no real place. Such problems are beyond anyone's power to control, but they will generate enormous social costs. Because these costs are, by and large, neither measurable nor assignable, we tend to forget them or to pretend they do not exist. But with construction of a pipeline, they would occur, and the native people of the North would then have to pay the price.

SCOMM

#21:11



The ORGANIZATION for the MANAGEMENT of ALASKA'S RESOURCES, INC.

Beverly Isenson
Executive Director

Paula Pence Easley
Community Relations Director

Olga DeMay
Special Events Director

August 20 1976

Dear John,

Attached is the opinion on Canadian provincial powers of Gerald Levey, a Canadian constitutional lawyer. His opinion was sought by our supporters in Seattle. Mr. Levey came to their attention because he was an advisor to a British Columbia interest involving Ross Dam, in which provincial powers were a question.

While Mr. Levey disagrees with Mr. Williston on some points, he agrees on others, and recommends that the proposed hydrocarbon treaty between the U. S. and Canada be amended significantly to protect our interests.

If you have any comments on this, please let me know.

Cordially,

Bev

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REPLY ATTENTION OF MR. Levey

OUR FILE NO. A-1967

May 20, 1976

Mr. William D. Lawrence
Manager, Pacific Coast Office
Transporation Institute
801 Second Avenue, Room 1502
Seattle, Washington 98104
U.S.A.

Dear Mr. Lawrence:

Re: Natural Gas Pipelines

I have now had an opportunity to read and consider the legal opinions given by J.J. Robinette, QC; W.B. Williston, QC, and Campbell, Godfrey, and Lewtas, Barristers and Solicitors, setting forth their views as to the applicable Canadian Constitutional Law relating to the scope of legislative power to enact laws in relation to the control of, and taxation of interprovincial and international gas pipelines.

At the outset, I specifically state that there is no distinction in law between the Canadian Artic proposal and the North-West proposal, the same legal considerations apply. Essentially, the Foothills proposal also encompasses the same considerations of law save and except that the Treaty implications are not involved as the Foothills proposal does not cross international boundaries. It may subsequently link up with the presently existing pipeline systems, this fact could make the Foothills proposal analogous to the others.

In accordance with your instructions, I have not prepared a further definitive and exhaustive legal brief, but rather I have endeavoured to digest and comment upon the aforesaid legal opinions. I have endeavoured to clarify the issues, and, since nearly a year has passed since the aforesaid legal opinions have been rendered,to advise on and bring you up to date on any Constitutional Law decisions rendered by Canadian Courts which has a bearing on the questions posed. I have read and considered all the cases cited by legal counsel. The conclusions I express represent my considered opinion on which of the three opinions you have are the most valid.

...2

Essentially, there are three prime questions that must be considered.

1) How are Treaty obligations implemented in Canada?

2) May the Government of Canada take action detrimental to the operation of a pipeline notwithstanding international Treaty obligations governing an international pipeline and its contents?

3) May a Province affect, regulate or interfere with the operation of an international pipeline or its contents?

I answer these questions.

1) It is important for Americans to understand that there is a substantial difference between the United States law and Canadian law insofar as how the implementation of international Treaty obligations are brought about. In contrast to the United States provision that a Treaty is part of the "supreme law of the land"; there is an absence in Canada of a similar provision making a Treaty obligation part of Canadian Domestic law. Accordingly, there is an inability on the part of the Federal Government of Canada, as an international person, to completely follow through on Treaty obligations and implement them when the subject matter of the Treaty or International Agreement falls outside of the existing jurisdiction of the Parliament of Canada, as declared by the British North America Act and interpreted by the Courts. In effect, it is doubtful that there is complete authority in the Parliament of Canada to implement international Treaty and Convention obligations unless the subject matter, in its entirety, already comes within the Constitutional competence of Parliament. Otherwise the implementation of part or all of a Treaty obligation may vest with the Provinces.

The views expressed by Mr. Williston on page 35 of his opinion are in my view, correct where he states, "A Treaty under Canadian law is not the supreme law of the land." In all cases, a Treaty must be implemented by the appropriate level of Government of Canada, either Federal or Provincial, in order that it have lawful force at law and be binding on Canadians. The Treaty document itself is only a piece of paper until implemented by the appropriate legislation. The Campbell opinion does, of course, reinforce the statements made by Mr. Williston. A practical implication of this, is that the Provinces could enact legislation respecting, for example, direct taxing powers on a pipeline right of way.

....3

The Government of Canada could not interfere and exclude this Provincial taxing power unless it was prepared to exercise the extreme Constitutional power of "reservation and disallowance"of Provincial legislation under Section 90 of the British North America Act, which is a valid and subsisting power. See Reference re power of Governor General in Council to disallow Provincial Legislation (1938) S.C.R.-71. It should be pointed out that the "reservation and disallowance" power has not been used in Canada for some 30 years. It would, in the writer's opinion, cause a major political upheaval if the Government of Canada attempted to exercise it by instructions to the Governor General.

Accordingly, I am of the view and opinion that the implementation of any Treaty respecting pipelines would have to be implemented both Federally and Provincially. I agree with the views expressed by Mr. Williston and the Campbell opinion.

2) American governmental authorities, in dealing with Canada, must bear in mind the fundamental difference in our respective Constitutional Organic Laws. While I am not competent to concisely state the rights of individuals under the American Constitution, I do point out, the essence of the Canadian legal system is that "Parliament is supreme." The only limitations on the Parliament of Canada are those legislative powers which have been given to the Provinces by the British North America Act. I raise this because of the enactment of the "Canadian Bill of Rights Act" in 1960. This Statute (enacted by Parliment) contains the following phrases, inter alia,

> a) The right of the individual to life, liberty, security of the person and enjoyment of property, and the right not to be deprived thereof, except by due process of law.
>
> b) The right of the individual to equality before the law and the protection of the law.

These phrases are analogous to those contained in the United States Constitution. The legal effect in Canada is not the same as it is in the United States, and I deliver to you a caveat not to confuse them. The Supremacy of Parliament, through its enactments, is subject to judicial review as to whether its legislation is "in relation to its powers given under Section 91 of the British North American Act," and also to subsequent Parliamentary action, either amending or repealing previous legislation. While the Supreme Court of Canada is able to declare legislation ultra vires or inapplicable, Parliament is quite capable of overriding or amending the Canadian Bill of Rights Act, both insofar as administrative acts are concerned, and also legislatively. Parliamentary sovereignity is the cornerstone of our legal system.

...4

Mr. Williston, at page 36 of his opinion, referred to the enactment of the Emergency Energies Supplies Act in 1974. That Act gives to the Canadian Cabinet, the power to declare a national emergency in respect of energy supplies, and clearly is lawful, notwithstanding the Canadian Bill of Rights Act. Any pre-emption of gas from a pipeline would not be a violation of Canadian Domestic law. I specifically agree with Mr. Williston's opinion on page 36, line 24, to page 38, line 15. Mr. Robinette did not deal or comment on that particular aspect. The Campbell opinion, paragraph 7, referred to and disagreed with Mr. Williston's statements regarding shortages of energies within a Province. The comments of Mr. Williston insofar as a Province pre-empting gas from an international pipeline, are in my view incorrect. On that particular point, I am in accord with the views of Campbell, Godfrey and Lewtas, where they state on page 28, "We can see no reasonable basis for Mr. Williston's proposition." In summary, Parliament could interfere with American gas whilst it is in Canada. I am of the opinion that a Province could not appropriate or expropriate the gas from the pipeline.

I wish to refer back to the provisions of the Canadian Bill of Rights Act. It is my understanding that in the United States there is a doctrine of law that a private party obtaining a statutory license or agreement aquires contractual rights thereunder which are enforceable by the Courts. This is not the case in Canada. It is important that the principal enunciated in Van Buren Bridge Co. v. Municipality of Madawaska and Attorney-General of New Brunswick, (1959) 15 D.L.R. (2d) 763, and Re Lofstrom and Murphy, (1972), 22 D.L.R. (3d) 120, be recognized as expository of the lack of contractual rights. Notwithstanding the phrases set forth in the Canadian Bill of Rights, the operative word is "before" which means - in accordance with the doctrine of Parliamentary Supremacy. In summary, the Government of the United States would be well advised to carefully consider the extent of the rights given by the Canadian Bill of Rights Act before choosing to rely on them. The rights, supposedly protected by the Canadian Bill of Rights, are susceptible to amendment, abrogation or repeal, with or without compensation, although Canadian law presumes that there will be compensation unless the legislation, by clear and unequivocal language takes away that right.

3) The taxation powers of a Province are limited to:

"Direct taxation within the Province in order to the raising of a revenue for Provincial purposes."

...5

This phrase, found in Section 92 (2) of the British North America Act, is of crucial importance in answering the third question as to whether or not a Canadian Province could tax in international pipeline passing through that Province, the pipeline right of way and the gas content of the natural gas pipeline.

The definition of a direct tax as adopted by the Privy Council since Canadian confederation and consistently applied by the Supreme Court of Canada is now one of law and has become a permanent criterian. The validity of the taxing statute must be determined within the classic definition enunciated in Bank of Toronto vs. Lambe (1887) 12 A.C.-575.

> "Taxes are either direct or indirect. A direct tax is one which is demanded from the very persons who it is intended or desired to pay it. Indirect taxes are those which are demanded from one person in the expectation and intention that he shall indemnify himself at the expense of another, such are the customs or excise taxes."

The definition set forth and given by John Stuart Mills,was accordingly taken as a fair basis for testing the character of the tax, not as a legal definition, but as embodying with sufficient accuracy an understanding of the most obvious indicia of direct and indirect taxation such as might be presumed to have been in the minds of those who enacted the British North America Act in 1867. The test of validity in accordance with these tendencies and not according to the results, in isolated or merely particular instances, must be the test. The question of validity cannot be made to impose on the Courts, the task of separating out individual instances in which a tax might operate directly from those to which the general scope of the taxation applies. One must determine what the general tendency of a tax would be on a pipeline. It is difficult to answer this question in the absence of specific legislation. It tends to be one of academic speculation because, as Mr. Williston has said in his opinion, to a large extent it would depend on how the legal draftsman prepared the tax legislation.

The Constitutional jurisdiction granting to a Canadian Province the power to impose a direct tax is contained in Section 92 (2) of the British North America Act referred to herein before. Any international pipeline must pass through the territory of one or more Provinces, and would, in my opinion, be subject to the taxing power of the Province in the sense that the Province could impose property taxes, taxes on income, sales tax and licencing taxes. With regard to the question of income tax, it should be more in mind that the tax

...6

is imposed not on the income per se, but rather on the person or entity earning the income, from whatever source it may arise. Kerr vs. Atty. Gen. of Alberta (1942) S.C.R.-435, is illustrative of the point.

The opinions of Campbell and Williston have spoken of a through-put tax. I agree that a through-put tax as such could not be imposed by a Province on the gas passing through an international pipeline or on the owners of such gas, because it would be an indirect tax. However, if the Provincial taxing legislation was drafted in such a way that there was a tax imposed upon the land, the tax was measured by the value of the products using the land, it would be held, in my opinion to be a direct tax on the land, rather than an article of commerce. See Canadian Pacific Railway Company vs. Atty. Gen. of Saskatchewan (1952) 2 S.C.R.-231. The Court approved of a statement in Atty. Gen. of British Columbia vs. Esquimalt & Nanaimo Railway Company (1950) A.C.-87, and the words receiving the approval were as follows:

> "Because land bears a tax which is measured by the reflected value of its products, is no reason to say that the tax on the land is a colourable tax on its products and that such a tax is not in truth a tax on the land itself."
>
> The following are also of importance:
>
> "The appellants are the owners of minerals, both severed and unsevered in title from the fee simple, and have brought this action for a declaration that the statute is ultra vires; and the narrow question presented is whether the annual tax of mineral in situ, as a component of the soil, having a special discrete value to be realized upon some manner of removal from the soil, is direct taxation within the meaning of these words as used in head 2 of section 92 of the British North America Act...
>
> "That, for the purposes of a land tax, the assessed value of land can reflect the value of its products, such as timber, even though the timber represents substantially the entire value, was laid down by the judicial committee in the case of A.G. B.C. v. Esquimalt & Nanaimo Ry. Co. (supra). This Court had held the proposed imposts to be a tax in substance on the timber as and when severed, but that view was rejected. I can see no difference, for this purpose, between the reflected value of a 'growing' product and one, such as mineral, of a somewhat disparate character and of a limited quantity or existence: they are all, in contemplation of law, part of the soil."

...7

> "The tax here in question is a tax upon an interest in land and, both within and without the producing area, is imposed irrespective of whether the mineral is being removed or not. The tax within the producing area is higher and in that area may be computed upon an assessment basis or a flat rate of fifty cents per acre, but no distinction is made in either case between the owner removing the mineral and the owner allowing it to remain in situ."

> "The majority of the learned judges appear to have been influenced by the decision of Rex v. Caledonian Collieries Ltd. (supra). There the Province of Alberta imposed a percentage tax upon the gross revenues from coal mines and this gross revenue was interpreted to mean 'the aggregate of sums received from sales of coal,' and to be 'indistinguishable from a tax upon every sum received from the sale of coal.' The parties contesting the validity of the tax in that case were producers of coal and the tax was, therefore, upon coal as a commodity rather than as it rested undisturbed in the soil. In the case at bar the tax is in relation to the mineral or minerals which constitute an interest in land and is imposed upon the owners without regard to whether that interest, or any part of it, will ever be removed from the land. It would, therefore, appear, with great respect, that the Collieries case is quite distinguishable."

Accordingly, I am of the opinion and agree with Mr. Williston in his opinion found on page 26.

Another factor to be considered is a "royalty."

A "royalty," is authorized to the Provinces by Section 109 of the British North America Act in addition to direct taxation. The statement in Keyes vs. Saskatchewan Minerals (1970) 12 D.L.R. (3d) 637 at 643, is definitive.

> "The term 'royalty'may be used in various senses and with different meanings. It may be used merely to indicate a basis for computing compensation for consideration given and thus establish a contractual right to recover that compensation. It is commonly used to indicate a reservation by the owner of land with mineral rights on the grant of a lease or right to search for or remove the mineral in question."

...8

A pipeline must of necessity cross one or more Canadian Provinces and use Provincial land. The Province may impose a "royalty" for the use of the land and space qua owner. This possibility has not been dealt with in any of the opinions rendered to you previously, however, I am of the opinion that the word "royalties" as used in Section 109 of the British North America Act and belonging to the Provinces in which they are situate or arise is a factor. It has been held in Rex vs. Atty. Gen. of British Columbia (1924) A.C.-213, that "royalties" as used in the British North America Act, is not limited by its association with the words lands, mines and minerals, and this confirms the thinking of the Privy Council in Atty. Gen. of British Columbia vs. Atty. Gen. of Canada (1889) 14 A.C.-295, where a conveyance by the Province to the Dominion of Canada of "public lands" did not imply any transfer of the interest of the Province in revenues arising from the prerogative rights of the Crown. Prerogative rights include the right to charge a "royalty" for the use of land.

I am of the view, that aside from the question of a Province being able to impose direct taxation on a pipeline, it does have the Constitutional power to impose a "royalty" for the use of the land and air space through which an international pipeline may pass and use.

With respect to the views expressed by Mr. Williston on page 31 of his testimony, and in particular, that a Provincial Government would be competent to legislate with respect to construction and safety standard for a pipeline; I must respectfully disagree with his opinion. I have searched the authorities and cannot find any support for that point of view. I concur with the opinion expressed by Campbell, Godfrey and Lewtas, that while Provincial legislation of a general nature and application may incidentally effect an international pipeline, it may not so do where it would have the effect of interfering or destroying the business operation of the international pipeline. See Campbell-Bennett Ltd. vs. Comstock and Trans-Mountain Pipeline Company(1954) S.C.R.-207.

While Parliament enacted S.79 of the National Energy Board Act R.S.C. (1970) Chapter N-6 to allow Provincial legislation to create mechanics' liens on international pipelines, such Act could be repealed and applicable legislation by the Provinces would be null and void without the Federal enabling legislation.

...9

Article III of the draft Treaty between Canada and the United States concerning pipelines states:

> "No public authority in either country impose any fee, duty, tax or any other monetary charge either directly or indirectly that would not be applicable to or for the use of similar pipelines located in the jurisdiction of that public authority other than intra-provincial or intra-estate pipelines."

For the United States, this means a prohibition on through-put taxes or export taxes by Canada.

I understand the position of the Government of Canada is that it could not give such an unqualified guarantee there would be an infringement on Provincial jurisdiction.

I strongly recommend to you that for the benefit of the American Pacific North-West, you should ask the United States State Department to require the Treaty contain an undertaking by the Government of Canada to "reserve or disallow" any Provincial legislation which would effect or come within the scope of Article III of the draft Treaty.

I believe this latter clause is an essential requirement that the United States should seek in order to protect its own interests. The writer's view is that no Canadian Federal Government could agree to such a clause. The possible effect of a Canadian refusal would be that the All-Alaska route would be built.

I trust the foregoing will be of assistance to you in clarifying the divergent views expressed by Messrs. Campbell, Robinette and Williston. Their comprehensive opinions cover a wide range of topics, some of which have not been definitively ruled upon by the Supreme Court of Canada.

I will be pleased to answer any inquiries that you have arising out of the foregoing review and opinion.

Yours truly,

Gerald S. Levey

Gerald S. Levey

STATE OF ALASKA

Inter-Department Route Slip

TO:
MAIL STATION NUMBER 3100
DEPARTMENT Senator Rudy's Office
ATTENTION Connie Barlow

☐ Approval	☐ Note & Return
☐ Signature	☐ Initial & Return
☐ Comment	☐ Return As Requested
☐ Contact Me	☐ Return For Approval
☐ Prepare Reply	☐ Necessary Action
☐ For Your File	☐ Your Information

Remarks:

FROM:
MAIL STATION NUMBER 0300
DEPARTMENT Fred Brooks

BY _____ DATE _____

02-002 (REV.10/73)

38,686

DEPARTMENT OF STATE

Dear Mr. Litt:

In your letter of July 12, you asked the Department of State to respond to several interrogatories submitted by the El Paso Alaska Company concerning the timing of a decision by the Canadian National Energy Board on an Arctic Natural gas transportation system. Joseph Greenwald responded on August 24, indicating that the Canadian Government has informed us that the NEB was unable to indicate at that time what impact "Alcan" and "Polar Gas" applications might have on the timing of a decision on an Arctic natural gas transportation system.

The Canadian Embassy has now informed us that incorporation of the hearings on the Alcan project with those of Canadian Arctic Gas and Foothills may add two months to the hearing time. The Canadian Embassy has further informed us that receipt of an application for the Polar Gas project would have no impact on the present proceedings involving Alcan, Canadian Arctic Gas, and Foothills. The Canadian Government estimated that, based on the present progress of the hearings, the recommendations of the Berger Commission will be in the hands of the Canadian Government by February and the decision of the National Energy Board will be transmitted to the Canadian Government for review and consideration by about May, 1977.

Responses are enclosed to the interrogatories which accompanied your letter of July 12.

Sincerely,

Julius L. Katz
Assistant Secretary Designate
for Economic and Business Affairs

Mr. Nahum Litt,
Presiding Administrative
Law Judge
Federal Power Commission

1. What effect would an application by Foothills, Westcoast and Alberta Gas Trunk Line to implement the Alcan project have upon the time schedule of National Energy Board hearings involving Canadian Arctic and Foothills applications

R. On September 10, 1976, the National Energy Board issued an order incorporating the hearing of applications of Foothills (Yukon) group (Alcan project) with those of Canadian Arctic Gas and Foothills, commencing October 18. It is estimated that the incorporation may add two months hearing time.

2. What effect would an application to the National Energy Board for authorization to construct and operate facilities to deliver gas from the Arctic Islands project known as "Polar Gas" have upon the anticipated dates for completion of National Energy Board hearings involving Canadian Arctic and Foothills applications.

R. No application for a certificate has been received by the National Energy Board from Polar Gas. In the National Energy Board's view, receipt of such an application would have no effect on the present proceedings before it.

3. Would the National Energy Board consider in a separate proceeding an application to certificate Canadian facilities for the transportation of Alaskan North Slope gas (i.e. the Alcan project) apart from any consideration of the delivery system for Mackenzie Delta reserves.

R. As indicated in the answer to the first question, the National Energy Board has decided to hear applications jointly.

NATIONAL ENERGY BOARD
OTTAWA, ONTARIO
K1A 0E5

CANADA

OFFICE NATIONAL DE L'ÉNERGIE
OTTAWA, ONTARIO
K1A 0E5

File: D780-4

24 March 1977

RECEIVED
MAR 29 1977
POLICY DEVELOPMENT
& PLANNING

Mr. Robert E. LeResche
Director
State Policy Development
and Planning
Office of the Governor
of the State of Alaska
Juneau, Alaska
U.S.A. 99811

Dear Mr. LeResche:

Thank you for your letter of March 10, 1977 and the enclosed reports.

Please be advised that the Office of the Governor of the State of Alaska has been added to our mialing list to receive copies of any material published in relation to natural gas in Canada.

Under separate cover, we are forwarding copies of two reports - "Canadian Oil - Supply and Requirements", and "Canadian Natural Gas - Supply and Requirements", which were compiled as a result of extensive hearings by the National Energy Board in order to ascertain the reserves, domestic demand, effects of conservation and potential for export of oil and natural gas.

I trust the foregoing will help to meet your needs.

Yours truly,

Brian H. Whittle,
Secretary.

March 10, 1977

National Energy Board of Canada
Government of Canada
Ottawa, Canada

Dear Sir:

As decisions regarding transporation of northern gas are moving into their final stages, we find it essential to keep directly in touch with activities in Canada as well as in Washington, D.C. We would, therefore, appreciate being added to your mailing list, and particularly would like to receive hearings transcripts, staff reports, and any other materials regarding to natural gas transportation in Canada.

In turn, we have enclosed several documents portraying Alaskan actions on this issue. We will be pleased to keep you abreast of further developments here.

Best regards,

Robert E. LeResche
Director

Enclosures

bcc: John Rader
Hugh Malone
Lowell Thomas, Jr.
Clark Gruening

Alaska State Legislature

Senate

JUNEAU, ALASKA

4/6/77

TO: Bill Lurria, Division of Policy Development & Planning
FR: Connie Barlow, Senator Rader's Office
RE: reports from the National Energy Board of Canada

Thanks for sending the two NEB reports to our office for our review:

Canadian Natural Gas: Supply & Requirements (April 1975)

Canadian Oil: Supply & Requirements (September 1975)

Since DPDP will be receiving additional materials from the NEB, could you send out notes to the following places whenever new reports come in so we can stop by and see them:

Senator John Rader
Representative Hugh Malone
Elke Kalab (Legislative Affairs)

We'll then make sure the rest of the legislators know about it. (Also tell Terry Dale in Lt. Governor's office.)

I found these 2 reports particularly interesting as they relate to our current interest in federal pricing in the US and Alaska's taxation and royalty rates.

Thanks much.

cc: Hugh Malone
Chancy Croft
Kay Poland
John Huber
Clark Gruening
Elke Kalab
Terry Dale

4/6/77

TO: Sen Rader
FR: Connie
RE: information from Canada's National Energy Board

DPDP is now on the mailing list of the NEB (at our request). They have received 2 reports, and I have asked DPDP to let our office, Hugh Malone, and Elke Kalab know when additional materials come in.

I then give notice to Croft Poland and Huber (anybody else?)

Attached are xeroxed pages from the conclusion of the two reports.

Although the reports are about 2 years old, I found the gas report particularly interesting as an insight into our current deliberations over oil taxation. Interesting elements of the report:

(1) The NEB finds that provincial and federal extraction of royalties and taxation has served as a disincentive to new exploration -- and that oil producers had moved to the US where the government take was not so high. Also, the need for stable and assured government royalty and taxation rates was emphasized.

(2) The companies suggested rate of return needs. Imperial suggested a 35 % industry take was needed after operational expenses. Other suggestions ranged from a 9 to 20 % rate of return.

I've underlined those portions of greatest interest. You might wish to skim thru it.

NOTE: House finance hearings are scheduled for TU, WED, THURS of next week. No one will be allowed to repeat testimony given to Resources Committees; however new testimony will be accepted and Finance may request some industry folks to respond to their questions (right now Finance is poking thru the reports and testimony industry submitted).

Finance will also have data prepared to show the projected state revenue take under varying circumstances of well-head value and tariffs.

Gruening's Ways and Means Subcommittee will be meeting in the near future with the industry to find out the projected production rate, so he can assess the effect on State revenues.

STATE OF ALASKA
JAY S. HAMMOND, GOVERNOR
DEPARTMENT OF NATURAL RESOURCES
ROYALTY OIL AND GAS DEVELOPMENT ADVISORY BOARD
11TH FLOOR, STATE OFFICE BLDG.
POUCH M – JUNEAU 99811

April 1, 1977

The Honorable John Rader
President
Alaska State Senate
Pouch V
Juneau, Alaska 99811

Dear Senator Rader:

The next meeting of the Alaska Royalty Oil and Gas Development Advisory Board is scheduled for Wednesday April 6, 1977, in Anchorage. The meeting will begin at 1 p.m. in the Division of Lands Conference Room in the Mc Kay Building, 323 E. Fourth Street.

Very truly yours,

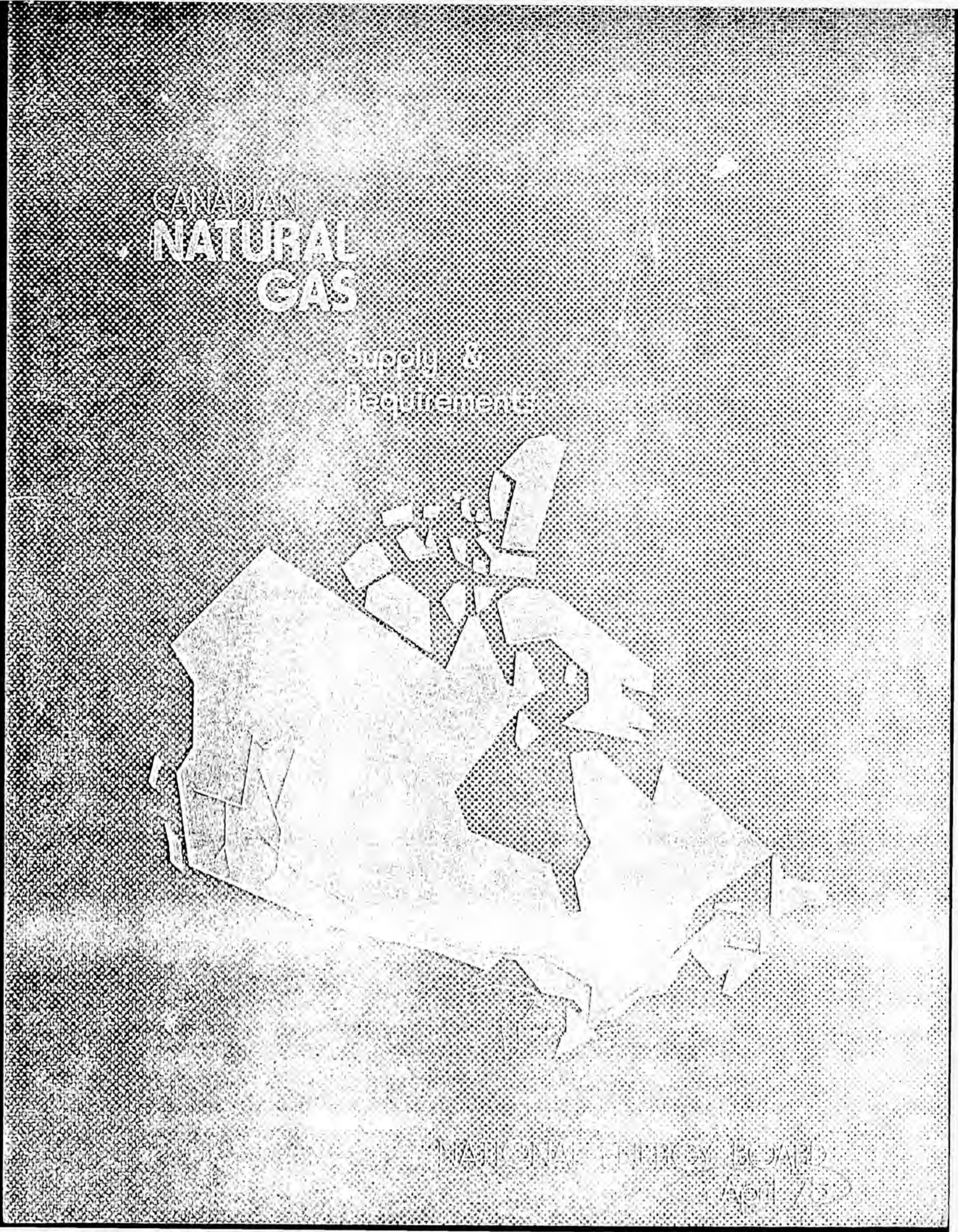
Donald G Wold

Donald G. Wold
Executive Director

DGW:jl

CANADIAN NATURAL GAS

Supply & Requirements



NATIONAL ENERGY BOARD

April 75

TABLE OF CONTENTS

April 1975

Preface

Table of Contents ____ iii

Recital and Order of Appearance ____ v

Definitions and Abbreviations ____ xi

Canadian Requirements ____ 2

1. Introduction
2. Demand for Natural Gas (Excluding Petrochemical Demand)
3. Natural Gas Requirement for Petrochemical Production
4. Summary and Forecast of Natural Gas Demand in Canada

Canadian Supply — Reserves ____ 32

1. Introduction
2. Conventional Producing Areas
   a) Established Reserves
   b) Reserves Additions and Ultimate Potential
3. Frontier Areas
   a) Reserves Discovered
   b) Anticipated Additions and Ultimate Potential
4. Supply Elasticity with Respect to Price

Supply — Deliverability ____ 46

1. Introduction
2. Conventional Producing Areas
3. Frontier Regions
4. Other Possible Supply Sources

Supply/Demand Balance ____ 68

1. Total Canada
2. British Columbia
3. Alberta
4. East of Alberta
5. Effect of Eliminating Exports in 1976
6. Conclusions

Protection of Canadian Requirements ____ 76

Environmental Aspects ____ 80

Conclusions Recommendations ____ 84

CONCLUSIONS & RECOMMENDATIONS

THE SHORTAGE IN SUPPLY

The actual and potential shortage until Frontier gas is connected, if and when adequate reserves are developed, results from two factors:

1. a lack of adequate growth in deliverability resulting from low finding rates and from a lack of incentive for producers to explore for and develop new reserves because of inadequate and uncertain netback. Producers have moved drilling rigs and personnel to the United States and other areas where opportunities at this time appear to be more attractive. The decline in exploration and development activity starting two or more years ago is now being reflected in fewer reserves being available to maintain deliverability. There has been an impairment in deliverability from large gas fields in northern British Columbia; and

2. a high rate of growth in demand in the Canadian market, partly caused by underpricing of gas in relation to alternative fuels. The growth East of Alberta in the past two years would have been greater but for the inability of TransCanada to obtain removal permits from the Province of Alberta and of distributors to contract for the desired supplies of gas.

Action to ameliorate the situation is likely to be needed in relation to three factors, namely, deliverability, domestic demand and existing export licences. Of these, improvement in deliverability including development of additional reserves to the extent feasible is the most attractive, since curbing domestic demand below levels which would result from Canadian pricing, conservation, and industrialization policies is not in keeping with the intent of the National Energy Board Act, and reducing exports could have serious consequences for United States' consumers of Canadian gas.

DELIVERABILITY

Improving deliverability is a complex national problem requiring the cooperation and coordinated planning of producers, gathering and transmission companies and distribution utilities, as well as the governments of producing and consuming provinces and the federal government. Furthermore, short term improvements will have to come from gas already found, but there is a lead time generally of about three years between the initiation of development activity and the delivery of the gas in the market place. It therefore seems imperative to mobilize a concerted effort to bring about appropriate action if any significant improvement in deliverability is to be

TransCanada Pipelines Limited, station 17, Regina, Saskatchewan

achieved in the remainder of the 1970's. If Frontier gas were connected -- assuming adequate reserves are discovered and suitable transportation arrangements made -- the need for and reliance on improved deliverability of gas from the Western Provinces would be reduced after that date.

PRICES, ROYALTIES AND TAXES

An essential component of a solution to the problem of deliverability would appear to be a known system of pricing and a stable system of royalties and taxation adequate to provide producers with the incentive to carry out vigorous exploration and development programs. Despite the recent clarification by the producing provinces and the federal government of the rates of royalties and taxes, uncertainty still appears to pervade the producers' minds. Clarification of the long term pattern of field pricing, royalties and taxes is a vital element in determining future producer netbacks -- the key to investment decisions by producers.

The recent changes in Alberta royalties and federal taxation provide clearer indications to the producers of the impact of these costs. What is less certain is whether the many producers who make decisions having an impact on future deliverability regard these recent changes as adequate without clarification of short and long term pricing policy.

In British Columbia the prices offered by the British Columbia Petroleum Corporation for both new and old gas may stimulate some activity but are not likely to be adequate to bring on the level of exploration and development required to offset the impairment in deliverability of the Westcoast system.

For Canada as a whole, evidence at the Hearing clearly indicated that even immediate implementation of pricing of natural gas at full parity with competitive fuels might bring relatively little short run improvement of deliverability, although it would encourage the development of reserves both in the Western Provinces and in the Frontier areas in the 1980's; it would also have an inflationary impact on the Canadian economy.

Further idscussion on the pricing of natural gas is set forth later in the report, but in the Board's view, immediate introduction of full parity pricing linked to international oil prices cannot be regarded as an effective solution to the problem of improving deliverability in the 1970's.

CASH FLOWS FOR REINVESTMENT

A more complex problem is the concern of the producers with the cash flows necessary to maintain an adequate inventory of oil and gas reserves to sustain deliverability in the face of higher royalties, changes in taxation, the high rate of inflation as it affects the oil and gas industry, the higher cost of finding the remaining reserves in the Western Provinces, and the still higher costs in the Frontier areas.

As a preliminary opinion, the Board doubts that cash flows available to companies are sufficient to develop an adequate reserves base to meet growing Canadian needs. For example, the present Alberta royalty on field prices in excess of 36¢ per Mcf is approximately 50 percent for old gas and this royalty is not deductible for federal tax calculation. On the other hand, the Alberta Petroleum Exploration Plan of December 1974 improved the netback to the producer.

The large proportion of the revenue from higher prices accruing to governments from royalties and taxes does not, in the Board's opinion, leave producers with sufficient cash for exploring and developing high cost reserves in a way which will maintain the inventory of reserves necessary for continuing maintenance of deliverability.

Given a national goal of some degree of self-sufficienty in energy, and the share of income from the industry going to governments, a program of investment of public funds in the oil and gas industry seems essential. Syncrude is a good example.

ALBERTA AND SOUTHERN PURCHASING

Another situation which could aggravate the shortage in the Canadian market results from the aggressive and successful gas purchasing activities of Alberta and Southern Gas Co. Ltd. Over 85 percent of Alberta and Southern sales are to the Northern California market. Alberta and Southern has filed an application for additional exports but has not asked the Board to proceed with it at this time; however, it had been buying gas to support its application. Alberta and Southern's reserves under contract are now 9.7 Tcf compared with remaining quantities licenced for export of 5.1 Tcf. The difference of 4.6 Tcf are reserves which, under the Board's 25A4 formula, would be assumed to be available for the protection of the Canadian market. Obviously, in the present circumstances, they are not available for this purpose. Alberta and Southern indicates it needs these reserves because of uncertainty as to the priority claims of Alberta utilities and the need to maintain the future deliverability of its export commitments.

Alberta and Southern is continuing to buy gas in 1975, aided to some extent by a higher payment to producers than other buyers can offer because most of its gas is sold at the export price of $1.00. Alberta and Southern stated that the higher payment of 27¢ per Mcf, when compared with payments to producers providing gas to the TransCanada system, results, after deducting royalties and taxes, in only a net increase of 3¢ per Mcf to the producer. In any event, the Board is recommending that this flow-back system be changed.

Alberta and Southern, it should be noted, has provided some relief to Westcoast Transmission Company Limited to help alleviate its shortfall in deliveries to the Pacific Northwest. In addition, Alberta and Southern is also making some deliveries available to TransCanada on a "best efforts" basis; that is, to the extent it can do so without impairing Alberta and Southern's contract obligations to its export customer. Alberta and Southern has also had to meet new demands by Alberta utilities and production from some of its existing fields has been impaired. The exceptionally high reserves protection by Alberta and Southern of its export contracts, in contrast with the impaired deliverability on the TransCanada system which serves Canadian needs East of Alberta, is clearly a problem requiring resolution in that it ties up reserves which could otherwise be available to meet Canadian requirements.

PAN-ALBERTA

The role of Pan-Alberta Gas Ltd. is also important in relation to the potential shortage in the 1970's. Pan-Alberta has purchased gas under six-year contracts with high rates of deliverability and, in many cases, from marginal pools which might not otherwise be connected. Deliverability of the gas in the 1970's would appear to complement the potential arrival of Frontier gas about 1980. Based on knowledge of Pan-Alberta's current contractual situation, the Board estimates Pan-Alberta might deliver up to the following quantities of gas:

	Bcf
1975	30
1976	50
1977	70
1978	60
1979	50
1980	45

The foregoing includes 14.6 Bcf per year under an initial contract with Gaz Métropolitain under which some gas is now being delivered. Other contracts are indicated to be near completion. There is still some doubt concerning the ability of Pan-Alberta to deliver the volumes indicated in the previous table, and there have been delays in deliveries to Gaz Métropolitain as well as in concluding further contracts. These delays have been caused by pricing problems as well as by the preference of the Ontario Government and Ontario distributors to continue to buy their gas from TransCanada.

There is also a question as to TransCanada's willingness to carry Pan-Alberta gas which is related to the broader problem of Alberta's actions in not approving removal permits to TransCanada even though TransCanada is buying new gas and renegotiating the price of old gas on the basis of the award under the Alberta Arbitration Act. Nevertheless, in the Board's view, it is important that these problems be overcome quickly so that the gas now under contract to Pan-Alberta as well as gas under contract to TransCanada, but not covered by removal permits, can contribute to the alleviation of the impending shortage of natural gas.

EFFECT OF EXPLORATORY ACTIVITY IN THE UNITED STATES

A further problem relates to the competition of the United States in particular, and the energy-short world in general, for drilling rigs, skilled personnel and investment funds. The uncertainty and lack of economic incentive on the Canadian scene in the past two years and the large exploration and development program underway in the United States under more favourable incentives, have caused an exodus of equipment, men and money south of the border. For example, at the present time, royalties in the United States are between 12.5 percent and 16.7 percent and are deductible for tax purposes, compared with royalties of up to 50 percent in Alberta – non-deductible for federal tax purposes – and not particularly attractive field prices, net of royalties, in British Columbia. The price of new gas in intra-state sales in the United States is relatively attractive. The Board therefore recommends that federal and provincial governments review the adequacy of prices, royalties and taxes and the resulting netback to the producer in relation to the incentives needed in Canada to offset the pull of exploration opportunities from the larger United States market. Such a review would necessarily need to cover oil and gas because of the interrelatedness of the exploration for these hydrocarbons.

INCENTIVES

In the Board's opinion, incentives should be particularly aimed at the specific segments which can make the greatest contribution to the solution of the problem, namely, the 2.8 Tcf of unconnected, uncommitted reserves available in Alberta, the 1.0 Bcf in the Suffield Block, and a further 1.0 Tcf of unconnected, uncommitted reserves in British Columbia, as well as any improvement which can be made in deliverability from presently contracted and connected reserves.

Evidence at the Hearing suggested that some improvement in deliverability could be achieved from already connected reserves but that it would not be prudent to rely on a quick and dramatic increase from this source. This is because of the time lags involved, and the fact that existing production is often tied to specific contracts between private parties. Incentives of various kinds will have to be designed in order to induce the desired improvements in deliverability.

As a starting point, better information is needed, for planning purposes, on the amount of gas which producing provinces expect to authorize for removal from the province for each of the next five years. The industry will need to coordinate the planning and execution of:

a) infill drilling;

b) connection of new reserves;

c) development of processing plants;

d) new gathering systems;

e) expansion of transmission systems; and

f) development of greater storage facilities available to distributors.

Some of the investments may have a comparatively short life and cannot be expected to be more than marginally attractive.

Incentives are needed to embrace some or all of the following features:

1) acceptance by distributors and consuming provinces of higher prices;

2) possible advances or prepayments by distributors and by transmission companies;

3) lower royalties for new gas (Alberta and British Columbia have instituted such differentials but they may need further adjustment);

4) faster write-off for tax purposes of expenditures for gas plants and gathering systems with a short life;

5) relaxation by producing provinces of their protection requirements if it becomes apparent that there are good prospects of future availability of Frontier gas; and

6) rate designs to encourage the efficient use of gas; for example, the avoidance of "dumping" of valley gas (gas transported in the system when spare capacity is seasonally available) in the summer.

DOMESTIC DEMAND

Sales of natural gas in Canada until recently have been growing at a rate of 10-11 percent per year partly because gas has been significantly underpriced in relation to other fuels. Gas has therefore not been used in all cases in a way compatible with conservation of a scarce non-renewable resource.

PRICING

Considering first the pricing of natural gas, in the medium term, as indicated earlier, full parity value based on world oil prices would not significantly improve the deliverability of natural gas over that provided by a more modest increase in price. For example, evidence was given that an increase in the field price to 80¢ to $1.00 per Mcf would be sufficient to induce the connection of gas which could improve deliverability in the 1970's. This more modest price increase would avoid some of the adverse inflationary consequences of full parity. In the longer run, prices will have to rise to the level necessary to develop whatever resource base is available under reasonable economic conditions. Nevertheless, movement towards higher prices need not preclude the continuation of a two-price system, one for exports and one for sales in Canada, nor prevent Canada, in particular the producing provinces, from taking advantage in industrial development of Canada's relatively favourable energy base.

If gas should become available from new areas in quantities more than adequate to meet Canadian requirements, the case will be even stronger for using this resource primarily to supply Canadian requirements at a price consistent with the costs of exploration and delivery. The Board therefore does not accept the argument of those submittors advocating full parity pricing, including premiums for form value based on OPEC oil prices, since this would do little to resolve the prospective

medium term shortage, would price all Canadian gas at a level in excess of U.S. levels, thereby impairing Canada's competitive position, and would result in a curtailment of Canadian demand in the 1980's when gas may be in ample supply. Such a policy does not appear to the Board to be in the Canadian public interest.

Agreement between the federal government and producing and consuming provinces on future prices is urgently needed as is agreement on the share of the revenue to accrue to the producers, so that the industry in general can proceed in planning its future courses of action and in making investment decisions with some assurance as to the regime of prices, taxes and royalties likely to prevail in the domestic markets over the next three to five years.

The Board believes that the substantial underpricing of gas in the domestic market relative to the price of other fuels should be progressively eliminated and the price should rise to a level sufficient to induce exploration for and development of major new sources of supply. Therefore, the Board recommends a pricing policy phasing upwards towards commodity value over about a three-year period, using in the 1970's, the equivalent Btu price of Canadian crude oil in the Toronto market as the yardstick of commodity value in this phase-in period, and reassessing the situation in the light of circumstances as they develop.

CONSERVATION

The need for conservation in the use of natural gas is implied in the recognition of it as a scarce non-renewable resource. The federal government has already launched an energy conservation program seeking the voluntary cooperation of Canadians, and more comprehensive programs are being developed. Much of the jurisdiction relating to conservation measures belongs to the provinces, and the Board is aware of conservation programs underway and being studied in several of these provinces. Conservation measures, in the Board's view, should increase the supply of gas which would be available for future use in Canada.

MAJOR NEW REQUIREMENTS

An important aspect of the Canadian demand for gas is that major new requirements which could not be foreseen a few years ago are now developing. These include the use of natural gas as feedstock for the petrochemical industry, the expansion of the gas-based fertilizer industry, and the new opportunities for natural gas in the Québec market for process use in the steel industry.

The new opportunities for chemical industry developments in Canada arise in part from the shortage of oil and gas in the United States and because planned chemical industry developments in the Middle East are likely to take some time to come to fruition. The opportunities include the production of ethylene, ammonia, methanol and their derivatives. These opportunities coincide with the objectives of Alberta to diversify and industrialize its economy.

The Board views with favour the rapid further development of an advanced petrochemical industry aimed largely at the domestic market, but also at export markets, provided there is some assurance of the longer run viability of these plants in the face of potential competition from Middle East production units based on lower cost feedstocks. The Board believes, however, that controls are needed over the export of basic petrochemicals derived from natural gas as a feedstock, particularly during the period when a potential shortage of natural gas for use as fuel in Canada may exist.

In Québec, until recently, natural gas could not compete effectively with oil because of the low price of imported oil and its penetration has been restricted to five percent of the energy market. The relative price of oil and gas has reversed but the Québec distributors have not been able to secure the gas they need to meet growth in existing market areas or to develop new markets, because of the difficulty in contracting for new supplies of gas.

A further problem, discussed later, relates to transporting the gas to the province. Québec desires more of this premium fuel, both for residential use and to develop its industrial base, including the use of gas in industrial processes and for reasons of security of supply. Ontario and Manitoba also have not been able recently to obtain supplies of gas sufficient to meet potential demand.

EFFECT OF FLOW-BACK FROM HIGHER EXPORT PRICES ON GAS PURCHASING

When export prices were increased to $1.00 per Mcf, the federal government required that the benefit from the higher export prices should flow back to producers -- except in B.C. where it would flow initially to the British Columbia Petroleum Corporation in respect of those producers selling gas to it. The initial scheme, which the Board indicated might need to be modified, caused the increased funds to flow back to the producers serving each group of licences. This has meant that producers selling to Alberta and Southern where the gas is shipped almost wholly to export markets, receive a much higher netback than producers selling on the TransCanada sys-

tem where at least 60 percent of the gas is sold in the domestic market. This is inequitable and inhibits gas being purchased for the domestic market. The Board is proposing to modify the export flow-back scheme on the basis that Alberta producers should receive the same flow-back for each Mcf of gas sold.

TRANSMISSION OF GAS BY TRANSCANADA PIPELINES

TransCanada Pipelines has been the major buyer of gas for utilities east of Saskatchewan; some time ago it stated it was willing to carry gas on a contract basis for others. More recently, because of its assessment of the impending impairment of deliverability on its system in relation to its contractual obligations to domestic distributors and export customers, it has refused to enter into further transportation contracts to carry gas for others. At the Hearing, TransCanada indicated that its present policies were based primarily on meeting its contractual obligations to domestic and export customers. It recognized some obligation to renew contracts to Canadian distributors when they expired, but its exact position on this point was not clear.

TransCanada stated that, following this policy, it was buying natural gas both in conventional and Frontier areas only to maintain deliverability, but indicated that at this time it estimated that all gas in Alberta surplus to that province's needs would be required to maintain deliverability on its system in the 1970's. Although it had earlier indicated to distributors that they should negotiate directly with producers for natural gas to meet growth in their own markets, TransCanada now reluctant to carry additional gas for them until it has acquired sufficient gas itself to restore the deliverability on its system.

Part of TransCanada's problem appears to stem from the reluctance of the producers and the Alberta Government to accept TransCanada as the sole buyer of gas for Eastern Canadian utilities, while at the same time, the Government of Ontario insists that TransCanada should be the sole buyer. These attitudes may have had relevance when gas prices were established by arm's length negotiation between private parties. That situation has virtually disappeared with pricing being determined in effect by decisions under the Alberta Arbitration Act. If prices are to be established by government, as seems likely, the producers' netback will not be affected by the identity of the buyer nor indeed by the number of buyers for a given market. In these circumstances, if it is more efficient for TransCanada to the buyer, and if Eastern distributors and the Ontario government wish to operate this way, the Board can see no disadvantage to producers as compared with direct purchase by distributors.

It is understandable in this difficult and complex situation that TransCanada should refuse to enter into new contracts while faced with the threat of impairment of its ability of fulfill existing ones.

From a Canadian public interest point of view, the present situation has the result that facilities will not be provided to meet growing Canadian needs for natural gas.

This situation could be improved if the pricing issue with Alberta is resolved and Alberta releases the outstanding removal permits. The attitude of TransCanada will also be affected by the treatment of existing export commitments recommended by the Board. Nevertheless, it is the Board's view that reasonably foreseeable requirements of Canadians should be supplied and that transmission facilities should be built to deliver the gas under appropriate safeguards to the transmission company.

The Board anticipates that TransCanada will wish to reconsider its present policy in the light of the Board's statement of intent to condition export licences in order to ensure that Canadian requirements are met and its recommendation, discussed later, to create powers of allocation in relation to natural gas. These two actions will place a new perspective on TransCanada's contractual obligations and, provided the company's financial integrity is not impaired, it is anticipated that TransCanada will provide the services expected of a pipeline transportation company in relation to approved Canadian requirements for service.

EXISTING EXPORT COMMITMENTS

Section 83 of the Act prescribes certain tests to be applied by the Board under an application for a licence. In particular the Board must satisfy itself that the quantity of gas to be exported does not exceed the surplus remaining after due allowance has been made for the reasonably foreseeable requirements for use in Canada.

Under Section 17(2) of the Act the Board may change, alter, or vary a certificate or licence issued by it, but no such change, alteration or variation is effective until approved by the Governor in Council. While this section has never been applied in relation to licences for exports of natural gas, circumstances may require the Board, in the public interest, to modify such licences and the conditions applicable to them.

These provisions of the Act must have been in the contemplation and knowledge of the parties at the time contractual commitments were made. In the view of the Board it is contrary to the provisions and the intent and spirit of the Act

that contractual obligations permitted under export licences should continue to be fulfilled under circumstances in which Canadian requirements for use of Canadian natural gas in Canada cannot be met. The applicable provisions and the powers of this Board under the Act indicate that the requirements for gas for use in Canada must be protected and the terms and conditions of licences can and, in circumstances such as now exist, should therefore be varied.

The Alberta Government conditions removal permits from the province to require that priority be given to the needs of Alberta utilities. This effectively ensures that Alberta consumers obtain the gas they need, including growth above present levels of demand, irrespective of contractual obligations to users outside the province.

It is also interesting to note that Alberta removal permits are conditioned as to the fields from which gas can be taken; similarly existing Canadian export licences will be regarded as conditioned to be limited to gas from currently producing fields and no Frontier gas will be allowed to be exported to meet existing licences without explicit Board approval.

At the present time, the Province of British Columbia does not have a system of removal permits. However, in the present Hearing, the B.C. Energy Commission stated that B.C. gas users would not be limited to their present contractual entitlements even if this meant that contractual obligations to export customers could not be fully met.

Saskatchewan is a net importer of gas and there are indications that applications to remove gas from the province would not be likely to be approved. Each of the three Western producing provinces has indicated that it has taken or is taking steps to protect consumers. Consumers in Manitoba, Ontario and Québec are, however, left without adequate protection.

The existence of the potential shortage makes it most unlikely that applications for licences for new exports of gas, before the connection of Frontier gas, could be granted. Within the constraints of the prospective shortage, the Board will, however, seek to the extent possible and in compliance with the Statute, to avoid or mitigate hardships among export customers isolated from substitute supplies of energy.

The present Canadian situation is, to some estent, understood in the United States as shown by the following quotation from page 19 of the National Gas Survey, Volume 1, "A Time for Decision and Action", preliminary draft published by the United States Federal Power Commission, February 1975.

"It is now clear that we cannot rely on Canada over the near term to continue to serve American export markets for either natural gas or oil at historic prices and levels of service. The potential for future natural gas deliveries from Canada to the U.S. is related to the extent to which Canadian reserve levels may be developed which are in excess of Canadian requirements and to the mutual advantages which may accrue to each through the construction of new oil and gas transportation systems from the as yet undeveloped Canadian frontier areas".

CANADIAN REQUIREMENTS AND EXPORTS

It is the view of the Board that reasonably foreseeable requirements for gas for use in Canada consistent with the pricing, conservation and industrialization policies of Canadian governments, must be given priority over existing export commitments. In this regard, several export licences have a cumulative feature so that gas not exported in any year can be exported in subsequent years. The Board will recommend that the remaining licences not having such a condition be made cumulative so that if an impairment does occur but adequate gas later becomes available, the quantities in the licence could be restored. If licences were to expire before the maximum authorized quantity could be exported, consideration could be given to making up any shortfall in the awarding of new licences, if and when new exports become possible.

NEED FOR ALLOCATION

The Hearing made evident that there is still uncertainty about the size and timing of a future shortage and the effect on peak-days will be more acute than on annual deliveries. Also there is no existing arrangement to ensure that reasonable demands for gas in the non-producing provinces are met, and unreasonable demands discouraged and that equity between the domestic and export markets is achieved. It is also apparent that the price mechanism can give only limited assistance in resolving these problems. While it is not yet clear whether these problems will be relatively light or severe, it is evident that there are, at present, inadequate mechanisms for dealing with them. The Board therefore will be recommending that allocation powers be created to cope with the situations outlined above.

PLANNING

The foregoing review of the problems of coping with the shortage of natural gas in the 1970's has highlighted the complexity of the issues, their national scope and the interrelation among actions by producers, gathering, transmission and distribution companies, and governments.

A coordinated approach is needed if the adverse impact of the shortage is to be minimized, yet no adequate planning mechanism exists to provide a forum for the various parties involved to come together and work out a comprehensive plan of action. A start is being made within the Canadian Gas Association but its forum needs broadening so that it embraces producers, gathering, transmission and distribution companies, consumers, as well as provincial and federal governments. The Board will be recommending the creation of such a body.

RESOURCE DEVELOPMENT AND MANAGEMENT IN THE 1980's

THE NEED FOR GAS

The evidence is clear that if existing export commitments are to be met, new sources of supply will be needed for use in Canada at an early date. The uncertainty as to the extent of the shortage in the 1970's and the fact that major developments for using gas in Canada, such as petrochemicals, may well have to be deferred pending the availability of new sources of gas both point to the prudence of connecting new sources of gas at an early date. Even if existing export commitments are not met, new sources of gas will be needed by Canadians by the mid-1980's.

DEVELOPMENT OF THE RESOURCE BASE

Since there is a demonstrable need for new sources of supply a strategy is needed on the development of the resource base. It is difficult to formulate such a strategy without adequate information and improvement of the knowledge of new sources of supply and alternative options.

The evidence indicated that there is still inadequate information to appraise the size of the Beaufort-Delta and High Arctic resource base. The reserves discovered are relatively small and estimates of the potential cover a wide range. A perspective on the role of Frontier gas cannot be achieved until more information is available. Several producers mentioned the urgent need to clarify jurisdictional matters in offshore areas, and the regulations relating to leasing and royalties in all Frontier areas, in order to stimulate exploration activity.

OPPORTUNITIES FOR CANADIAN USE OF NATURAL GAS

There was some evidence that if Frontier gas were connected to markets it would be likely to flow at first in quantities which would be difficult for the Canadian market to absorb immediately. Yet, on the other hand, there are additional major new uses as well as possibilities for extensions of existing markets for gas in Canada. It would appear that an opportunity exists for Canada to use this energy and feedstock supply to further its own development. Coordinated planning by the federal and provincial governments and industry is vital if full advantage is to be taken of the potential surge in supply which could result from successful Frontier developments.

SURPLUS TESTS – NEW EXPORTS

There was considerable but inconclusive discussion of whether new exports would be a necessary component of a pipeline project to connect Frontier gas. This question will be resolved only when applications are heard and decisions rendered.

The Board's view, given earlier in this report, is that any new exports must be relatively short term and conditional on Canadian needs having continuing priority. A forecast of "reasonably foreseeable requirements for use in Canada" can be overtaken by actual events not adequately foreseen; there is an obvious need to avoid repeating the present difficulty in which gas needed in Canada is committed to export on long term contracts.

There was virtually unanimous agreement among the participants at the Hearing that the Board's 25A4 formula, designed for protection of Canadian requirements, is inadequate in today's conditions to ensure protection of Canadian markets. More emphasis will have to be given to deliverability and to ensuring that Canadian requirements are met on a continuing basis. In addition, the complexities and uncertainties related to Frontier gas require that the Board maintain some flexibility in its attitude to applications for export licences.

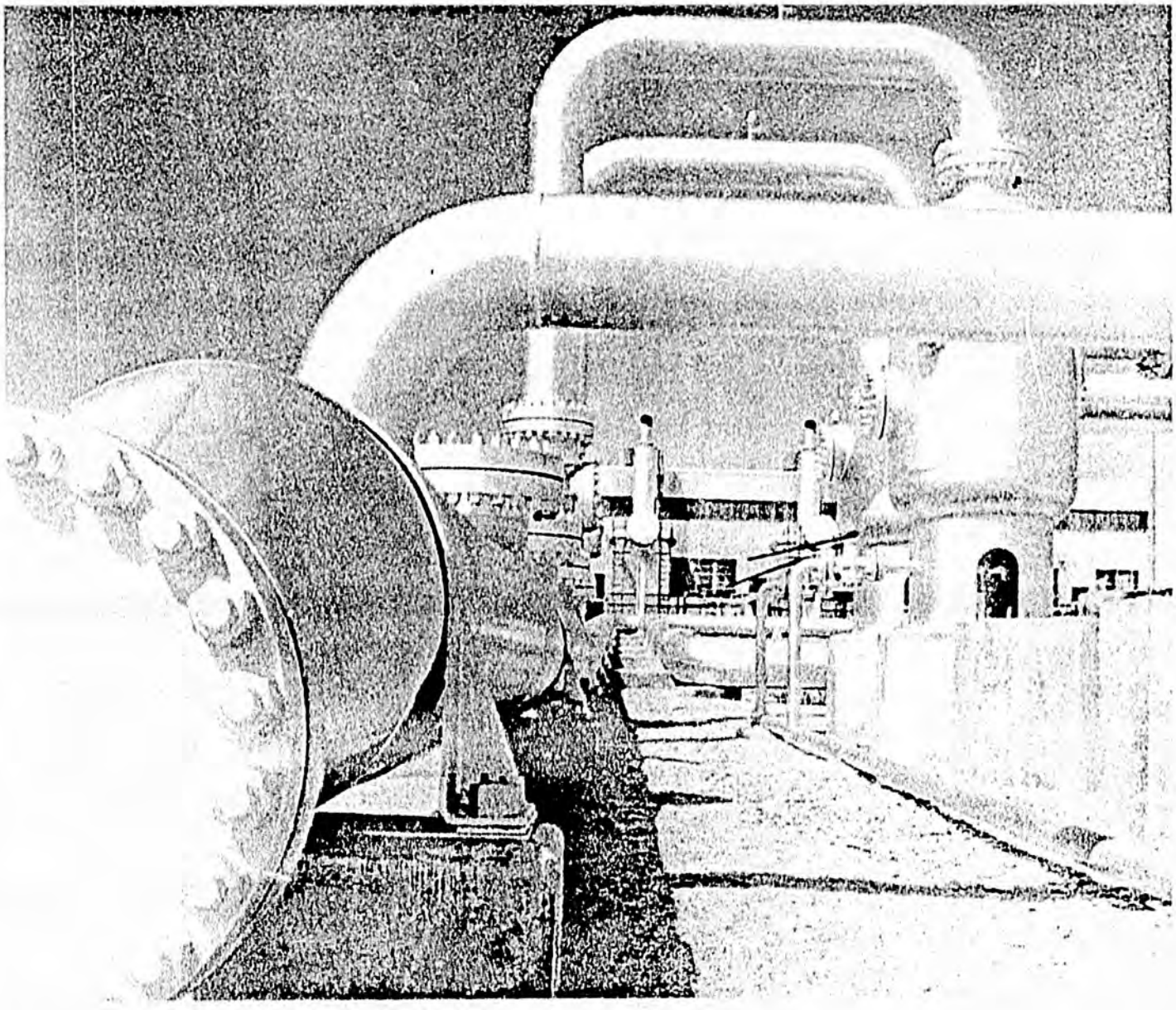
RECOMMENDATIONS

It is probably not possible to avoid a shortage even with a rare combination of optimum decision-making by producers, gathering and transmission companies, distributors, and provincial and federal governments; it would not be prudent to assume this optimum will be achieved. Nevertheless it is the hope of the Board in making its recommendations that the incentives for all parties to avoid the consequences of a shortage will be such that the use of any powers to allocate natural gas can be minimal.

The following recommendations are aimed at alleviating the impending shortage of natural gas in the 1970's, and at developing policies for the longer term when natural gas could once again be available in quantities such that some of it might become surplus to Canadian needs.

In relation to the shortage, the recommendations are of four types. First, there are proposals for improving deliverability; secondly, for raising prices in Canada which will have an effect on curbing demand and stimulating supply; thirdly, the Board recommends the creation of new powers to allocate gas in Canada; and fourthly, the Board indicates action that will be taken to condition existing export commitments so that priority can be given to Canadian demand.

Compressor station, Image, Ontario



DELIVERABILITY

Improvement of deliverability must be achieved to the greatest practicable extent in alleviating the impending shortage in the 1970's.

The most important single step in this regard is the removal of uncertainty from the minds of producers and the assurance of a netback to them which will be adequate to stimulate exploration and development. The necessary actions would appear to include:

1) assurance by provincial and federal governments that the system of taxes and royalties, once established on a basis adequate to stimulate exploration and development, will remain in effect for a sustained period;

2) an appropriate field price in Alberta (including the netback from exports) in 1975 which, in the Board's view, would be adequate to induce greater deliverability would be in the range of 80¢ to $1.00 per Mcf. In this regard, it would be of assistance if governments endorsed the principle that the flow-back from higher export prices should be equalized for Alberta producers.

It would be of assistance to the industry if governments could agree on a formula for pricing gas consumed in Canada over the next three to five years so as to provide the producer with sufficient assurance as to future prices in order that uncertainty in investment decisions could be reduced; there would then be less tendency to defer making them;

3) in the Board's view, the present schedule of field prices in British Columbia, where there is no explicit royalty, is unlikely to lead to a sufficiently vigorous exploration and development program and this will cause a continuation of the existing shortfall in deliverability. If this situation is to be improved, it seems essential that the B.C. Government should review its schedule of field prices in relation to those expected to prevail in Alberta and to the opportunities for exploration which now exist in the United States;

4) review by producers and provincial and federal governments of what further incentives might be needed beyond those identified above to encourage:

   (a) the early connection of discovered but not yet connected reserves; and

   (b) the maintenance and, where possible, increase of deliverability from reserves now connected;

5) assuming the domestic pricing issues have been resolved, it would in the view of the Board be in the public interest of Canada if the Alberta Government, in the light of the new circumstances prevailing, were to release the permits removal for TransCanada Pipelines already approved by the Alberta Energy Resources Conservation Board. It would be helpful to add removal permits to Alberta and Southern's permits so that gas under contract to that company can be more readily made available to relieve shortage East of Alberta. In addition, it would assist in planning measures to relieve the shortage if the Alberta Government were to make available annually a five-year forecast of deliverability, consumption in Alberta, and the quantity of gas which might be authorized for removal from the province.

PRICING

The Board's recommendations on pricing are intended to meet as equitably and fully as possible the interests of producing provinces and of Canadian consumers in such a way as to bring optimum advantage to Canada as a whole. The most appropriate pricing policy, when the bulk of production for use in Canada East of Alberta comes from one province, must recognize the interests of that province.

The Board recommends, for the purpose of conserving a valuable non-renewable natural resource and inducing exploration for the development of new supplies, that domestic prices of gas be phased in to commodity value -- using as a major yardstick the Btu equivalent of the price of Canadian crude oil at Toronto -- over about a three-year period.

The Board further suggests that the price of natural gas should be high enough when Frontier gas reaches markets to ensure development of the resource base for Canadian use. In the longer term, the Board recommends that consideration be given to maintaining a two price system, one for domestic sales and one for exports, if future supply developments are such that Canadians and Canadian industrial development can take advantage of a favourable natural gas resource base. The price to Canadians should be cost related in the broad sense of being adequate to ensure further development in supply; the price for exports should be related to the cost of alternative energy supplies in the export market.

CONSERVATION

The Board endorses the programs of conservation being undertaken and proposed by federal and provincial governments and would hope to see them strengthened.

In this regard, the Board attaches importance to the absolute saving of energy, rather than merely encouraging gas users to convert to oil, the longer term supply of which may be equally or more uncertain.

NEED FOR ALLOCATION

The Board recommends enactment of legislation to provide for powers of allocation.

The purpose of the legislation would be to ensure that gas to meet approved foreseeable requirements for use in Canada is given priority over exports and that, to the extent that gas available for use within Canada is less than the total Canadian demand, the available supply is delivered on an equitable basis in relation to the requirements of the various provinces in which Canadian gas is consumed.

EXPORTS

The National Energy Board Act requires that Canada's energy needs be protected and permits the export only of surpluses in excess of "reasonably foreseeable requirements for use in Canada". It was never the intent that, should circumstances arise which could not be foreseen when a long term licence was issued, Canadians should be denied the right to use their own energy resource. Export licences, issued by the Board with the approval of the Governor in Council, authorize the export of "not more than" certain daily, annual and total amounts and are not a commitment to maintain the maximum permitted export levels.

The Board proposes to take appropriate action under Section 17 of the Act, for the purpose first, of inserting a condition in all existing export licences making the annual and daily entitlement conditional on approved Canadian requirements being met, and second, of making cumulative those licences which are not now cumulative. Consideration could be given to making up any shortfall in any new export authorizations if and when they may be approved.

The Board recommends to the Government that the Government exert control over the exports of first stage derivative chemicals produced from natural gas as a feedstock which are not now subject to control under the National Energy Board Act. This appears to be essential to safeguard Canadian requirements for natural gas to ensure development in Canada of the secondary and tertiary stages of the chemical industry. The Board controls the export of ethylene but does not have control over such gas-based materials as ammonia and methanol.

With regard to the calculation of surplus for purposes of disposing of export licence applications, the Board will henceforth make a case-by-case assessment of reserves and deliverability both when licences, if any, are issued and at appropriate subsequent intervals. This will include both a Canada-wide assessment and one based on each delivery system. All future exports will be conditioned so that Canadian requirements will have continuing priority.

It is clear that great reliance for Canada's future needs is being placed by many who made submissions to the Board on anticipated gas supplies from the Beaufort-Mackenzie areas and the Arctic Islands. Although the extent of reserves so far discovered in the Beaufort-Delta area and the Arctic Islands is still far short of the amounts needed to resolve all concern about future supply, the Board believes that Arctic or other Frontier reserves are likely to be developed more fully and does not recommend cessation of all natural gas exports at this time. In fact, cutting off all exports at once would extend our period of self-sufficiency only very marginally compared with phasing out exports, as necessary, to meet Canadian needs. See Figure No. 30 on page 72. The same figure shows that such a phasing process does considerably extend the time during which Canadian requirements can be met from non-Frontier sources.

If it becomes apparent that Arctic reserves will not materialize in significant quantities or if whatever reserves may be proven should not be connected to market, the government should then seek an arrangement with the United States under which any further Canadian exports, under existing licences, would be repayable in gas. Further measures may require consideration if the supply and deliverability situation does not materially improve.

PLANNING

The Board recommends that a committee or council with representatives from all sectors of the gas industry and provincial and federal governments be formed:

1) to study and advise upon means to reduce the impact of the impending gas shortage;

2) to study and advise upon means of using to best advantage the surge of natural gas expected to be available and when gas from Frontier regions is connected to markets.

The Board is well aware that the problems we face cannot be solved by any new arrangement for consultation and discussion. The differences of view in Canada reflect real differences

(ii) *Views of the Board*

The Board is required to determine the reasonably foreseeable requirements of natural gas for use in Canada and to consider for export only the surplus, if any, above this amount. Clearly a procedure for calculating or determining surplus is necessary.

The Board considers that any procedure envisaged should have as many of the following characteristics as possible.

1. It should be easily understood and applied.
2. It should incorporate gas deliverability rather than reserves in the supply considerations.
3. It should be flexible to respond to changing circumstances.
4. It should provide continuing protection for Canadian demand throughout any period of export.
5. It should provide incentive and encouragement to the gas industry.
6. Licensed export commitments should be satisfied to the extent possible.
7. It should reserve for Canadians any benefits from conservation restraints undertaken by Canadians.

However, attainment of the primary objective of an immediately usable and effective procedure, with the capacity for incorporation of all of these characteristics at this time, is not considered practical under prevailing circumstances. The Board recognizes the probability of insufficient near term supplies of gas to cover fully both the quantities of gas licensed for export and the quantities required to meet increasing Canadian demand and sees little possibility of this problem being resolved within the next few years. Since the Board intends to carry out its responsibilities under the Act to ensure that supplies of gas are available to meet Canadian demand before allowing gas exports, the real problem lies in the treatment of existing licences for the export of gas, rather than in theoretical schemes to determine conditions and circumstances under which additional exports of gas might be authorized.

Nevertheless, the Board recognizes that, for the guidance of both industry and the public, it is desirable to establish general principles which could form the basis of a surplus calculation procedure in the future.

The surplus calculation procedure would be based on gas deliverability and gas demand schedules developed for as far into the future as reasonable forecasting accuracy and data dependability will permit. The comparison of these two schedules will indicate the feasible volumes, rate and timing of exports. Unsatisfied volumes under existing export licences would normally have prior call upon any amounts of gas that may become surplus and available for export in the future by this procedure. All future export licences will be for short periods and will be conditioned in order that Canadian requirements for gas will be met, on a day to day basis, before any gas is exported.

Therefore, beyond stating these general principles, the Board intends to defer the development of a structured gas surplus calculation procedure until such time as its application can reasonably be expected to be needed.

It will, however, conduct and publish an annual review and reevaluation of the supply, demand and deliverability of natural gas.

CANADIAN OIL SUPPLY and REQUIREMENTS

National Energy Board

September 1975

Contents

TABLE OF CONTENTS	(iii
LIST OF APPENDICES	(iv
COUNSEL AND WITNESSES	(v
INTRODUCTION	1
SUPPLY	2
– Established Reserves in Conventional Areas	2
– Additions to Established Reserves in Conventional Areas	25
– Pentanes Plus Reserves	27
– Oil Sands Deposits	28
– Frontier Reserves	30
REQUIREMENTS AND CONSERVATION CONSIDERATIONS	32
– The Demand for Petroleum Products	32
– Requirement for Crude Oil and Equivalent	42
PROTECTION FOR CANADIAN REQUIREMENTS	44
RELATED MATTERS	48
– Financial	48
– Licensing Exports by Grade of Crude Oil	48
– Licensing Exports by Province of Origin	50
CONCLUSIONS	51

List of Appendices

APPENDIX A — Notice of Hearing, 17 January, 1975. 57

APPENDIX B — Outline for Submissions, 29 January, 1975. 58

APPENDIX C — NEB Estimate of Established Reserves of Conventional Crude Oil. 68

APPENDIX D — NEB Forecast of Crude Oil Producibility from Established Reserves at 1 January, 1975. 76

APPENDIX E — Table 1 88

— Parties Which Provided Demand Forecasts

Tables 2 to 13 89

— NEB Forecasts of Petroleum Product Demand

Table 14 101

— NEB Estimates of the Effect of Conservation on the Demand for Energy

Table 15 102

— Requirement for Crude and Equivalent

Table 16 105

— NEB Forecast of Feedstock Requirement for Indigenous Crude Oil and Equivalent

Related Matters

Financial

i) Views of Submittors

Submittors were generally less optimistic in their producibility forecasts this year than they were a year ago. In terms of producibility from established reserves this was stated to be due mainly to the failure of the larger producing pools to perform as well at the peak as had been predicted. The other major reason cited, and this applies to all categories of supply, was the financial situation of producing companies. This was stated to be affecting exploration and development in two ways:

a) insufficient economic incentive to undertake major capital investment projects in Canada,

b) a general lack of confidence in the Canadian investment climate.

To support these claims, several companies provided estimates of their retained cash per barrel before and after the April 1974 price increase agreed upon by the Federal and Provincial governments. Estimates of retained cash prior to April, 1974, ranged from $1.53 per barrel to $2.04 per barrel. Estimates for a year later, following the $2.70 per barrel price increase and various tax and royalty changes, ranged from $0.24 per barrel to $2.26 per barrel.

In the short term, submittors felt that increases in producibility through major field facility expansions, infill drilling programs, etc. would be discouraged. For the longer term, there would be an adverse effect on exploration efforts, and expensive tertiary recovery programs.

Imperial proposed what it felt was a suitable program to stimulate investment. Firstly, companies must be permitted to retain 35 percent of the revenue stream after operating costs. Secondly, oil prices must be permitted to rise to world levels.

Submittors suggested that for confidence to be restored, they required stability in policy and favourable attitudes by governments.

Several companies were asked for views regarding an acceptable rate of return for the petroleum industry. Estimates ranged from 9 to 20 percent discounted cash flow rate of return. Some companies declined to cite any fixed rate of return because of the uncertainties of inflation.

ii) Views of the Board

The Board did not request financial information in its Notice of Hearing, or in its Outline for Submissions. However, the economic climate obviously has a major effect on producibility forecasting, and the Board has received the information under "related matters".

In its own producibility forecasts, the Board has assumed an economic climate suitable for vigorous petroleum exploration and development activities. The matter of revenue-sharing between producers and governments, and the appropriate crude oil prices are questions involving both levels of government and the Board does not feel it is appropriate to pursue the matter within the context of this report. It is the Board's opinion that the need for an adequate share of revenue flows to remain in the hands of industry is a matter now more fully appreciated by all levels and departments of government.

Licensing Exports by Grade of Crude Oil

This subsection of the report deals with the views received and the Board's views concerning the need to license exports of crude oil by grade. Although the Board did not specifically request views on this matter, evidence was accepted as being appropriate under "related matters".

For the purposes of this subsection, indigenous feedstocks include synthetic crude oil and pentanes plus.

i) Views of Submittors

Most of the evidence received from those addressing this question favoured the adoption of special licensing by crude type, particularly heavy crudes, whereas in previous discussions with interested parties the Board had received a generally negative response to the suggestion of separate licensing.

It was stated that heavy crude oil requires relatively stable producing conditions for maximum efficiency and that abrupt changes in production levels could impair ultimate recovery. It was also suggested that achieving high levels of production is not possible on the basis of the current Canadian market

for these crudes. There was general agreement that once Interprovincial Pipe Line Limited facilities were extended to Montreal, the domestic market could expand to include those Montreal refiners now utilizing imported heavy crudes. This would tend to maintain economic production levels without the need to rely on exports of these crudes. Until that time, however, heavy oil production would be greatly dependent upon export markets. Consequently, it was recommended that separate licensing be introduced to preserve the access of heavy crudes to export markets. Separate licensing was also advocated on the grounds that it would contribute to orderly marketing negotiations. There was some agreement, however, that appropriate pricing of heavy crudes could eliminate the need for such action. The evidence indicated that separate licensing was not required at this time to protect the needs of Canadian refiners.

The AERCB spoke against separate licensing and in favour of the free operation of purchaser nominations as the best method of ensuring maximum production of particular grades. It was stated that separate licensing increases administrative problems arising from unexpected changes in demand for and supply of particular grades and it was recommended that the Board adopt a common licensing system for all grades of crude oil and equivalent.

ii) Views of the Board

The Board has given consideration to separate licensing by grade of crude with respect to safeguarding the supply of specific types of feedstocks for Canadian market requirements and with respect to assuring an export market for heavy crude surplus to Canadian requirements.

Separate licensing by crude type as a method of assuring that the requirements of Canadian refiners are met is warranted whenever there exists sufficient risk of a particular type of crude being exported in preference to satisfaction of the Canadian demand for it. From information currently available, the Board does not see the need, at this time, to license heavy crude separately as a protection procedure for Canadian refineries. Furthermore, although pentanes plus have been licensed separately from other feedstocks since oil export controls were introduced in March, 1973, the Board intends to give consideration to the view expressed by the AERCB that separate licensing should be discontinued. The advantages and disadvantages will be discussed with the parties most affected, primarily from the viewpoint of providing protection for Canadian requirements.

From time to time, pentanes plus and heavy crude, each of which has certain production inflexibilities, have been in surplus supply, creating serious disposal problems. These circumstances provided opportunity for some assessment of the effectiveness of licensing by individual grade as a means of improving the flow of a particular stream to the export market. Experience has shown that the elimination of such surpluses usually turned upon pricing action.

Refiners WOV mainly process light and medium crude oils and, as stated previously in this report, most heavy crude oils are exported. With the projection of a phase-out of crude oil exports, it is understandable that some heavy oil producers anticipate increasing problems in the disposal of their production. The Board recognizes that separate licensing could have some beneficial effects on the marketing of heavy crude oils on the assumption that if export customers are severely limited in their choice of alternative sources of supply, they might be encouraged to purchase greater volumes of Canadian heavy crudes. There are, however, several potential developments which could improve the market demand for heavy crude oils. Some of these potential developments are:

(a) Preferential Import Allocations

Several of the refineries located in the so-called "Northern Tier" of the United States ("U.S.") have historically been the main export customers for heavy crudes. These are, physically, the most dependent of all U.S. refineries on supplies of Canadian crude oil. It is the Board's understanding that the U.S. Federal Energy Administration is reviewing methods whereby these refineries might receive preference in the allocation of Canadian imports. The extension of such preference may present greater opportunity for export sales of heavy crude oil.

(b) Exchange Agreements

Officials of the Canadian and U.S. Governments have had discussions on possible methods of continuing supplies of crude oil to refiners in the Northern Tier in view of the anticipated phasing out of Canadian exports. The method which appears to have greatest promise is the exchange of

crude oils between U.S. and Canadian companies. An example of such an exchange is one in which Canadian crude oil would be delivered to a Northern Tier refinery by a Canadian oil company and the U.S. company would deliver in return U.S. domestic crude oil or equivalent at Chicago for delivery to Ontario by the Lakehead – Interprovincial pipeline system. Such agreements, which it is expected would be on a barrel for barrel exchange basis, could maintain the demand for Canadian heavy crude oil if the United States refinery receiving the Canadian oil were a heavy crude processor.

(c) Increased Canadian Demand

Refineries located in Montreal are capable of processing heavy crude oils. It was stated in evidence that the opportunities to market Canadian heavy crudes would be increased when there is a pipeline connection from Western Canada to the Montreal area.

(d) Wellhead Price Adjustments

The demand for specific crude oils can usually be increased by price reductions. Since November 1974, export flows of heavy oils have been maintained by applying lower export charges than those for light and medium crude oils. It is some time since wellhead prices have been adjusted for quality differentials and action in this regard could increase the marketability of heavy crudes in both Canada and the U.S.

After giving due consideration to all relevant views and information it is the opinion of the Board that:

- demand for any crude type is primarily a function of its price and product yield for individual refiners relative to other feedstocks;
- licensing by grade introduces a degree of inflexibility which may aggravate any surplus problem associated with that grade; and
- licensing by grade for the purpose of expanding the market for particular types of crude would be largely ineffectual.

Licensing Exports by Province of Origin

This subsection of the report deals with the views received and the Board's views concerning the desirability of licensing exports of crude by province of origin. For practical purposes such a procedure would involve only oil from Alberta and Saskatchewan. Evidence on this subject was accepted under "related matters".

i) Views of Submittors

The two major oil producing provinces provided opposing views on this point.

Saskatchewan based its argument in favour of allocating the surplus between provinces on the relative differences in the economics of crude oil production in Alberta and Saskatchewan. It was pointed out that Alberta with its greater number of producing wells and its higher production rate per well has a greater capability for reducing output before reaching the minimum economic level of well production. Saskatchewan suggested that the Board, by not allocating the exportable surplus between provinces, places a disproportionate burden on Saskatchewan.

The imposition of a formal system of sharing the export market between Alberta and Saskatchewan was opposed by the AERCB on the grounds that it would mean not only a loss of provincial control over its energy resources, but would also result in administrative complications and increasing marketing rigidities. Concern was expressed that licensing the exportable surplus by producing province would inevitably lead to further extension of control over the domestic market and to allocation by crude type. It was suggested that experience to date has demonstrated the efficacy of a simple, flexible system of export controls.

ii) Views of the Board

Federal restriction on the export of crude oil inevitably has an effect on provincial control over energy resources. Increasing restriction may further affect provincial controls and might at some point give rise to inequities between individual provinces or producers of differing qualities of oil. Redress, however difficult and administratively complex, may then become desirable.

In the Board's judgment, such a point has not been reached. Moreover the Board is not yet persuaded that the adoption of licensing by province of origin would necessarily provide ready solutions to the multiplicity of problems which future developments could bring. The Board intends to keep the matter under continuing review.

Conclusions

This is a report on the evidence and opinions presented at the second hearing called by the Board in the matter of Canadian oil supply and Canadian oil requirements and volumes of oil surplus to such requirements. The views of submittors and of the Board concerning each of the main subject matters have been recorded in the preceding chapters. The Board's conclusions follow.

Supply

The Board requested that data be provided in a specified format to ensure that supply information for some 160 pools and areas was submitted on a uniform basis. While not all data sheets were complete in all respects, the Board is satisfied that the information provided, together with the detailed studies of its own staff, has resulted in a reliable forecast of the producibility from established reserves. However, this does not obviate the necessity of updating the forecast in the future in the light of changing circumstances.

As described more fully on page 2, the Board has adopted as its measure of potential producibility, the maximum producibility which would be achieved in a field or pool after a period of 90 days for any necessary remedial work. As indicated in Figure 5 on page 25 of the report, the forecast of producibility based on the current data and studies for established crude oil reserves differs little from the forecast presented in last year's report. The slightly lower producibility in the first half of the period is offset by slightly higher estimated producibility in the second half of the 20-year forecast period.

In reviewing the evidence presented and its staff studies, the Board concluded that its forecast of additions to crude oil reserves presented in the October 1974 report remained valid. Its estimate of producibility from these reserves additions as shown in Figure 6, page 27, is somewhat lower than that shown in the last report because reserves which have been added in the interval are now included in established reserves.

Similarly, the Board decided to adhere to its October 1974 forecast of producibility of pentanes plus from established reserves and reserves additions after reviewing the evidence presented at this hearing. This forecast is shown in Figure 7, page 28. A major change in the supply-availability picture results from the evidence presented concerning oil sands producibility. Although the Board has confidence that additional oil sands plants will be built, it has become apparent since the last hearing that such plants will not be constructed at the rate previously anticipated. For the reasons outlined on page 28 the Board has "stretched out" its previous schedule of plant construction, resulting in a million barrels per day productivity level being reached in 1994 instead of in 1991 as previously estimated. The difficulties in financing the Syncrude project have been well documented and need no further comment by the Board. In view of the long lead times required for planning and completion of oil sands plants, there is a need for co-operation between industry and governments to foster development of additional mining and in situ plants with the least possible delay.

In so far as frontier oil reserves are concerned, there has been insufficient change in the situation in the last year to warrant the Board giving any recognition to possible oil producibility from frontier regions within the 10-year protection period.

The Board's current estimate of potential producibility of crude oil and equivalent for the next 20 years is shown in Figure 9, page 31. Reductions in producibility in a particular year from the corresponding estimate in the October, 1974 report range from some 50 Mb/d or 2 percent in 1975 to some 180 Mb/d or 13 percent in 1984, and average some 130 Mb/d or 8 percent over the period to the end of 1993. These reductions are largely due to lower anticipated producibility from established reserves and reserves additions in the earlier years of the forecast and due to the changed outlook for the rate of oil sands development in the later years of the forecast.

Requirements and Conservation Considerations

The Board received more detailed evidence on Canada's requirements for petroleum products and for refinery feedstocks than was available to it for its last report. In addition, at this hearing definition and quantification of conservation as an element in demand forecasting were presented for the first time. The chapter entitled "Requirements and Conservation Considerations" deals with these matters in detail.

The Board appreciates the assistance given to it by submittors in the matter of estimating energy savings which reasonably can be attributed to "conservation". As shown in Figure 10, page 32, the Board presently estimates that conservation will result in a reduction in potential demand for petroleum products in Canada in 1994 of some 445 Mb/d or 13 percent. This is an aspect of demand forecasting which requires additional research and on which additional views will be sought by the Board as more experience is gained. The Board's estimates of requirements for indigenous feedstocks, before and after taking into account anticipated energy conservation, are shown in Appendix E, Table 16. As indicated in the discussion commencing on page 42, the plans of industry with respect to product imports, inter-regional transfers, product exports and therefore expected levels of refinery utilization must all be considered in forecasting feedstock requirements. The Board carefully considered the evidence and also utilized its own knowledge of the plans of individual companies concerning these operating matters.

In the October 1974 report, the Board recognized that security of products supply afforded by incremental refining capacity beyond normal Canadian requirements would be desirable. The report further expressed some concern that exports of refined products resulting from the processing of Canadian crude might increase significantly, but expressed confidence that the existing product licensing requirements provided sufficient checks and balances to ensure that refineries would not be built to process Canadian oil for the sole purpose of serving the export markets. The Board still believes this to be the case but also recognizes that as the level of authorized exports of petroleum products becomes a larger proportion of total exports of crude and products, it may become desirable to take it into account in the calculation of exportable surplus. Views of interested parties will be sought on this matter at the next hearing.

The Board's current estimate of requirements for indigenous feedstocks, including those EOV, before making provision for conservation are in reasonable agreement with those shown in the October 1974 report. For the years 1980, 1985 and 1990 for example, the current estimates are higher by some three to four percent. After allowing for conservation effects, the current estimates are lower than the previous estimates for the years 1980, 1985 and 1990 by 1.9, 4.2 and 6.3 percent, respectively.

Protection for Canadian Requirements

The application of the formula for the protection for Canadian requirements, using the supply and demand data resulting from the hearing has been discussed in the chapter entitled "Protection for Canadian Requirements" commencing on page 44.

As may be seen from Figure 21, page 46, the period of protection for Canadian requirements without conservation, for indigenous crude oil and equivalent would be 6.2 years from 1 January 1976. The time of intersection of the supply and demand curves, i.e. early 1982, compares to the corresponding intersection at the end of 1983 shown in the October 1974 report. The period of protection for the anticipated actual requirements with conservation is estimated to be 6.8 years.

The shortening of the period of protection by even as little as one year (over and above the passage of one year's time) must be regarded as serious when the total period of protection is now indicated to be only some seven years. In view of the extended lead-times required for pipelines and related facilities, there is a requirement for a commitment by both industry and government to a continuing review of the alternatives available to Canada to meet its long-term crude oil needs. Steps should be taken now to achieve this objective.

The strong views of the industry with respect to the need for a greater percentage of cash flow to be retained by industry to finance exploration and development have been recorded elsewhere in this report and in other recent reports of the Board. Steps taken by the Federal government and Provincial governments to reduce the taxation and royalty burdens, since the hearing, undoubtedly will help to restore impetus to the petroleum industry. Whether or not these steps are adequate can only be determined by continued surveillance of the effects on exploration and development activities.

On the demand side, it is the expressed policy of the Federal government to encourage conservation of energy by

all means possible and the provinces are also pursuing the same over-all objective. The matter of reducing demand for Canadian feedstocks through greater restriction of product exports will be a subject for future consideration.

Exports of Crude Oil and Equivalent

The application of the formula for the protection for Canadian needs results in allowable exports for 1976 of 460 Mb/d, as shown on page 44. However, the Board believes it would be in the interests of the producers and the U.S. export customers to have the formula applied on a monthly basis in 1976, to take into account demand served by the Sarnia-Montreal pipeline plus line fill. This should result in more uniform levels of production and higher levels of exports in the first half of 1976 and lower levels of exports in the second half of 1976 than would otherwise be the case. After 1976, average annual levels of exports could be authorized without causing wide fluctuations in producing rates. It is the Board's intention, therefore, to authorize exports in 1976 initially at the level of 510 Mb/d. After commencement of deliveries of oil to the Montreal pipeline extension at Sarnia, the export levels will be reduced in accordance with the formula. When the throughput of the line reaches the planned level of 250 Mb/d, the authorized level of exports will become 385 Mb/d.

The 1976 levels of exports mentioned above indicate significant reductions from the current level of authorized exports of 750 Mb/d. However, it may be recalled that in announcing the levels of exports for 1975, commencing at 800 Mb/d, the Honourable Donald Macdonald, Minister of Energy, Mines and Resources, indicated the intent to seek a reduced level of exports of 650 Mb/d commencing 1 July, 1975. However, as a result of reduced demands by export customers in the first half of 1975, authorized exports for the last half of the year were adjusted to 750 Mb/d.

The 1976 level of authorized exports forecast in the 1974 report was some 560 Mb/d, on the basis of the supply and demand data available at that time. The new levels of authorized 1976 exports, averaging 460 Mb/d, represent a reduction of some 100 Mb/d from the level anticipated for 1976 a year ago. As indicated in this report, the reduction is largely because of a changed outlook on forecast producibility from western Canadian sources of oil.

Licensing Systems

Finally, the desirability of licensing feedstock exports by grade of crude and/or by province of origin was again reviewed by the Board. In light of the mixed views expressed at the hearing and the Board's own knowledge and experience, the Board does not intend to reduce the flexibility in licensing by such segregation at this time. The system will be kept under continuous surveillance with a view to making such changes as may be warranted by future circumstances.

J. G. Stabback
Associate Vice-Chairman

W. H. Brooks
Member

W. A. Sutherland
Member

Alaska State Legislature

Senate

JUNEAU, ALASKA

May 23, 1977

TO: Bill Luria, Division of Policy Development & Planning
Office of the Governor (mailstop 0164)

cc: Gregg Erickson, Legislative Research (mailstop 3100)

FR: Connie Barlow CB

RE: National Energy Board of Canada documents

Thank you for routing the NEB documents to our office. During the interim could you route them to Gregg Erickson, Legislative Research?

Thanks.

Canada's Resources and the National Interest

A Summary of a Report
by an Independent Task Force on the Crisis
in the Development of Canada's Mining
and Petroleum Resources

A Report by an Independent Task Force on the Development of Canada's Mining and Petroleum Resources

SUMMARY

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January 1977

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Alberta

ENERGY AND
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April 6, 1977

PUBLICATION NOTICE

ENR REPORT NO. 1 (162 p.)
March, 1977

A History of Crown Rentals, Royalties and
Mineral Taxation in Alberta to December 31, 1972

This review relates to the history of rentals and royalties payable to the Crown on Crown minerals within the Province of Alberta during the administration of the mineral resources:

a) by the Federal Government until the transfer of the natural resources to the Province on October 1, 1930, and

b) by the Provincial Government until the end of 1972.

Companies or individuals wishing to purchase this new publication are asked to write to Alberta Energy and Natural Resources at the address given below. Each purchase should be accompanied by a cheque or money order for the sum of $10.00 Canadian funds.

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TO: C. Barlow
AA to President Rader
Alaska State Senate

FROM: J. Rhode
AA, House Finance

This booklet summarizes the main findings and recommendations contained in the full Report of the Task Force, which is published as a separate volume. The Task Force has also published the following four research studies as appendices to its main Report:

Taxation of Non-Renewable Resources	*Appendix A*
Canada's Oil and Gas Resources	*Appendix B*
Canada's Mineral Resources	*Appendix C*
An Oil and Natural Gas Energy Plan for Canada 1977-1985	*Appendix D*

The main Report and its accompanying appendices set out in more detail than is possible in this summary the sources of statistics and other material, the methodology and assumptions underlying projections, and the background of recent developments in the resource sector.

Copies of the report of the Task Force and its appendices and additional copies of this summary are available at a price intended to recover publication costs only from: The Canada West Foundation, P.O. Box 1030, Calgary, Alberta T2P 1T4.

Preface

This booklet is a summary of a report prepared by an Independent Task Force on the critical policy choices facing Canada with respect to the development of its mining and petroleum resources.

The Task Force was organized under the initiative of the Canada West Foundation, a non-profit organization supported by individuals, corporations, and provincial governments in Western Canada. However, the Task Force operated entirely independently of the Canada West Foundation, and this summary and the report of the Task Force are issued solely on the responsibility of the Task Force and without any prior review or endorsement by the Canada West Foundation or any other body.

The report of the Task Force represents a culmination of almost two years of research and discussion concerning the fundamental problems facing Canada with respect to the development of its resource industries. The report expresses the concern of the members of the Task Force that, unless action is taken now, Canada will fail to secure the benefits that it should from the use of our national heritage of mineral and petroleum resources.

The main report of the Task Force is accompanied by four major research studies, published as Appendices to the main report, and covering the broad subjects of the taxation of non-renewable resources, a survey of our oil and gas resources, a survey of our other mineral resources, and a possible plan for the development of our oil and gas reserves in the coming decade.

At the beginning of 1976, the Task Force released a preliminary draft of its main report to representatives of federal and provincial governments, industry and other concerned parties for their review and comment. Subsequently, members of the Task Force have had the benefit of many discussions with government and industry representatives on this preliminary draft: the Task Force gratefully acknowledges the assistance which it has received in these meetings, and from other sources, in the preparation of this report.

However, the Task Force accepts sole responsibility for its work, which is not necessarily endorsed by the organizations which have assisted in providing material or by the organizations to which the members of the Task Force themselves belong.

This booklet represents only a summary of the Report's main discussion and conclusions, and readers are referred to the main report itself, and to the accompanying research studies, for a further elaboration of the arguments and conclusions contained herein.

This summary, together with the accompanying report and studies, is being issued by the Task Force to assist in the review of Canada's resource policies and the development of Canada's resources in the national interest.

January 1977

A decline in our living standards and a crippling dependence on foreign fuels: that is the prospect which could face Canadians within the next ten years unless we take action now to reverse the results of our present resource policies.

Without a rationalization of our present mineral and petroleum policies, and encouragement for the massive new resource investment that we require to buttress our economy, The Task Force believes that Canada could suffer by 1985:

- a continuing decline in mining production, employment, and exports
- a multi-billion dollar trade deficit in oil, and a long term dependence on imported fuel.

The combined impact of these two developments would deal a heavy blow to the country's economy, and to the welfare of all Canadians.

A number of factors have contributed to the impending crisis. They include:

- a dramatic increase in the cost of our future resource supplies: our mineral and petroleum reserves are vast but increasingly lean, difficult of access and expensive to extract, process and transport
- extraordinary tax and royalty hikes which have virtually stripped the producing industry of both the ability and the incentive to commit huge sums to resource development
- a climate of uncertainty brought about by federal and provincial government wrangling and a royalty and tax structure which is counter-productive, fails to direct reinvestment to needed high risk developments and imposes burdens unrelated to the industry's ability to pay
- a failure to implement, through specific actions, the general resource policies which have been articulated by governments.

The result is an acute scarcity of new investment capital, and a reluctance on the part of resource industries to invest in high cost, high risk ventures.

Despite numerous conferences, position papers, policy statements and new programs, the blunt fact is that we are not now spending the funds necessary to maintain the relative contribution of the mining sector to our economy in the years ahead, or to bridge the yawning energy gap facing Canada.

Over the past months, both federal and provincial governments have shown increased awareness of the problems which confront resource industries, and have translated some of that awareness into new and positive legislation and policies. While the Task Force welcomes this trend, it believes that the situation is still critical, and calls for more far-reaching, more determined, and more coordinated policies.

Complete petroleum self-sufficiency for Canada is likely to be extraordinarily expensive to achieve, and is not necessarily desirable. But since oil and gas will jointly continue to contribute the bulk of our energy requirement in the foreseeable future, we must make a concerted effort – now – to recapture at least the ability to produce enough oil and gas combined to either eliminate net imports or reduce them to manageable proportions. The delays which have already occurred in the development of our frontier resources will cost the country billions in additional petroleum imports and lost mineral exports in the years ahead.

At the same time, we must create a more stable and rational environment for our mining industry so as to prevent the probable decline in metal production which will otherwise occur within the next ten years – a decline which will see a serious loss of jobs, tax revenues, and export earnings occurring at the same time when we will face massive bills for imported fuels.

The pursuit of these two objectives will require the active and informed cooperation of governments, industry and the public.

Governments – both federal and provincial – must:

- Place greater emphasis on the national interest in resource development
- Formulate coordinated long term policies for resource development to restore a climate of confidence among investors
- Implement a fair tax and royalty system, designed to attract risk capital and encourage exploration and development, particularly in the high risk but vital frontier areas
- Encourage efforts to develop new energy sources and means of conserving energy
- Work out settlements of native land claims and environmental issues related to resource development.

The resource industry, for its part, must recognize the reality that the era of automatic preferential treatment is at an end, and that future important incentives may well be related to reinvestment in critical new resource projects. The petroleum industry in particular must accept the fact that government involvement in northern and other frontier development has become both politically inevitable and an economic necessity.

Finally, the public will have to accept more rational, consistent and long term policies for the utilization of our common resource heritage. We will have to restrain our insatiable appetite for energy and for metals. Even a decrease of one tenth of one percent in the annual growth rate of our energy consumption would result, by 1990, in savings equivalent to the output of an entire oil sands plant with a cost in excess of $2 billion.

All of these measures must be implemented *now* if they are to have the desired effect. Given the time lag between exploration and the achievement of production from a mine or oil field, 1985 is just around the corner.

OIL

In Canada's economic history, 1975 marked the end of an era. That is the year when the country lost its self-sufficiency in oil, a state which many Canadians had come to regard as their birthright. As late as 1974, our oil exports still exceeded imports by $761 million. In 1975, imports topped exports by $247 million, for a turnaround of more than $1 billion in our trade balance. For 1976, our net oil import deficit is estimated at $870 million (although we still have — temporarily — a net export surplus on oil and gas combined).

That is only the beginning. Our net trade deficit in oil has already embarked on a steep growth curve which certainly will not level off before 1985, and which will quite possibly keep on climbing for the balance of the century. Even in the more immediate future, the continued growth in demand, combined with a drop in discovery rates and a decline in production from established western Canadian

CANADA'S TRADE IN CRUDE OIL AND NATURAL GAS

	$ Million		
	1974	1975	1976 (Estimated)
Crude Oil			
Exports	3,407	3,052	2,150
Imports	2,646	3,299	3,020
Surplus (Deficit)	761	(247)	(870)
Natural Gas			
Exports	494	1,092	1,520
Net balance	+1,255	+845	+650

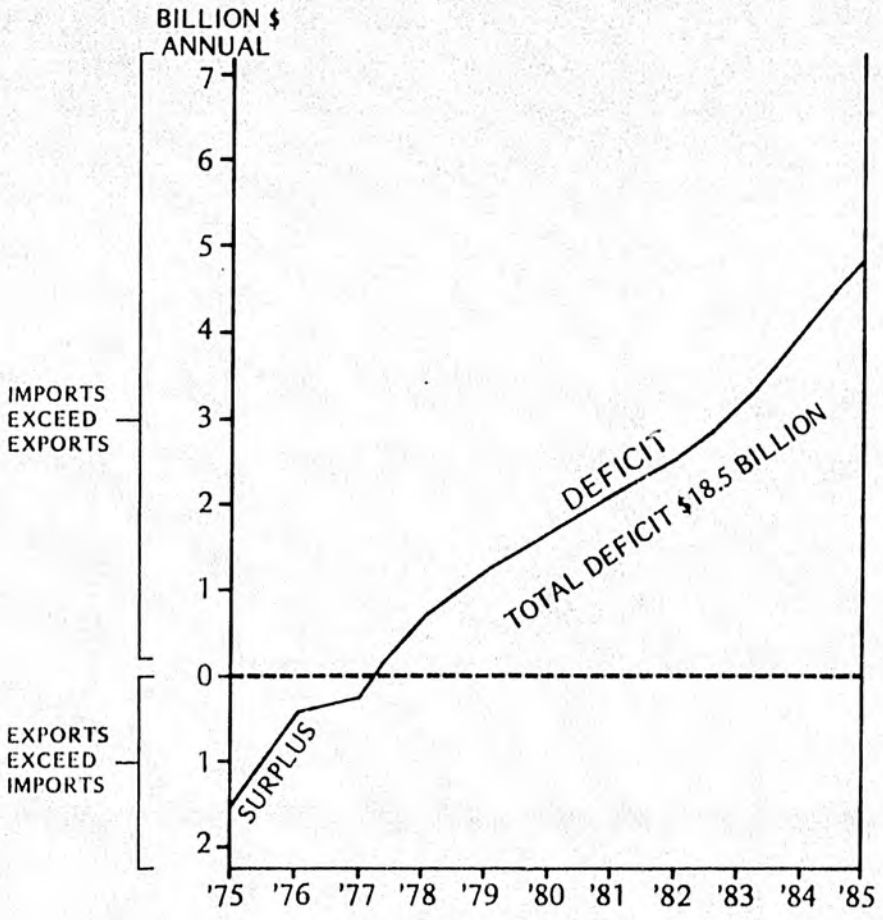
SOURCE: Statistics Canada for 1974 and 1975: preliminary estimate for 1976 supplied by Economics Research Department, Toronto Dominion Bank.

NOTE: Oil exports in 1976 amounted to 173 million barrels, while imports totalled 254 million barrels. Oil exports will be virtually phased out by 1980. Exports of natural gas equalled 960 million m.c.f. in 1976: gas exports are expected to decline in future, at least until substantial new supplies become available.

oil reserves, will cause a shortage of domestic supplies in markets traditionally served by western oil. Indeed, a recent submission to the National Energy Board suggests that the Montreal pipeline may have to be reversed by 1982 in order to supply southern Ontario with imported oil, instead of oil from Western Canada as in the past.

It appears that, by 1985, western conventional reserves will have declined to the extent where, even with some production from the oil sands, the western provinces will be able to meet less than half of the country's oil requirements.

In the longer term, the bulk of Canada's oil production will have to come from such "frontier" areas as the Arctic, the offshore continental shelf, and from the oil sands and heavy oils in Western Canada. But even assuming a vastly stepped up effort in exploration and development – an effort which so far has failed to take place – oil from these new frontier resources is not likely to supply more than 25% of our domestic consumption much before 1990.



NOTE: Above graph based on 1975 National Energy Board projections, which differ slightly from Task Force estimates: graph assumes no major new supplies of arctic gas. Estimates are based on 1975 oil price of $11.51 barrel remaining constant, and subsequent price increases will increase deficit.

The Task Force believes that, under present tax and economic conditions, increased production from the Athabasca oil sands will provide at best minimal relief within the next decade. Even with substantially more favourable tax and royalty policies, the development of our vast oil sands and heavy oil potential will be slow: it may require a breakthrough in technology before a substantial expansion of oil sand and heavy oil production can be achieved. We must therefore rely on the development of our Northern and offshore oil potential to supplement the declining production from the present conventional sources in Western Canada.

Even with some limited supplies coming from the oil sands and from northern areas, our annual oil imports could climb to as much as 450 million barrels in 1985 and to 700 million barrels or more in 1995 (implying annual import bills of perhaps $8.1 billion and $12.6 billion respectively). To put the matter in perspective Canada's total oil consumption in 1975 was 640 million barrels.

NATURAL GAS

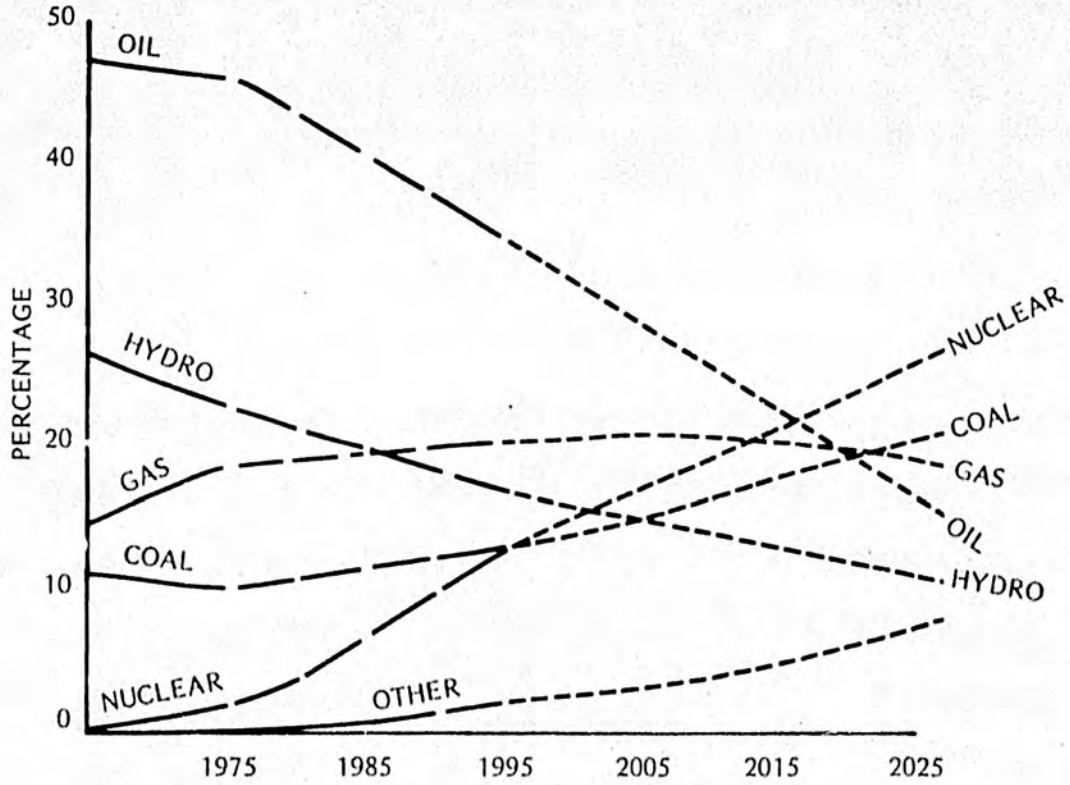
The impending oil crisis can be alleviated to some extent by our relative wealth of natural gas. Present reserves and new discoveries in western Canada should be sufficient to meet both our own requirements and our export commitments up until 1985. In the long run, we are likely to find relatively more gas and less oil in the development of our Northern and other frontiers than we would like to have for our own requirements, possibly justifying some future additional gas exports to help pay for oil imports. But even if natural gas from the Mackenzie Delta and related areas were to become available in the early 1980's, we probably shall not be able to satisfy the demand for natural gas beyond the late 1980's without bringing other new areas into production.

ENERGY

Due to its climate and geography, Canada depends more than most industrialized countries on a steady and growing supply of energy. Canada has one of the highest per capita consumption of energy in the world – and up to last year our appetite for more energy seemed insatiable. The growth in demand for energy can – and should – be slowed by vigorous conservation measures; but barring a major economic upheaval, it will not be halted. Additional energy supplies are needed to provide for a growing population and for a widening of the high standard of living already enjoyed by many Canadians.

Recent events suggest that Canada's recent 5% average annual growth rate in energy consumption may be reduced to below 3.5% within the next ten years, to below 2.5% by the end of the century, and to 1% thereafter. But even if this relatively optimistic forecast should prove correct it would mean that Canada would be consuming 40% more energy by 1985 than in 1975 and over twice as much at the end of the century.

Most of that energy will have to be provided by oil and gas. In spite of growing reliance on nuclear power, coal and new sources of energy, the following chart shows that the contribution of oil and gas to the total energy "mix" can be expected to decline only gradually during the balance of the century from 65% in 1975 to 50% in 2000. In particular, it will take many years before the unconventional sources of energy — such as solar energy and wind or tidal power — can be developed to supply an appreciable portion of our total energy needs.



Source: Appendix D

It is clear that, by 1985 our domestic production of oil and gas will already have fallen short of our still growing energy requirements. Only a massive and prompt investment in exploration, development and infrastructure, can enable Canada to recapture even a reasonable measure of energy self-reliance within this century. Any delay in launching such a program will sharply curtail and possibly close off whatever options we still have to prevent an extraordinary and virtually permanent dependence on imported energy in the years ahead.

The actual quantities of mineral and petroleum resources which can be recovered and made available to Canadians during the remaining years of the twentieth century will depend surprisingly little on the dimensions of the potentially recoverable resources. The real limiting factor is the amount of new investment committed to the discovery and development of these resources.

METALS

Canada's presently operating mines can meet the country's requirements for domestic supplies and exports at something approaching present levels until the mid-1980's. Beyond that, production from presently discovered and developed resources will inevitably decline, and new deposits of copper, lead, molybdenum, zinc and uranium will have to be discovered and developed if mining is to maintain its relative importance to the Canadian economy and to Canadian exports.

Production from our vast mineral reserves has contributed mightily to the building of Canada as a nation, to employment throughout Canada and especially in our remote regions, and to our exports (minerals traditionally have made up about 25% of our total exports).

But the enormous effort required to maintain Canadian mining's economic contribution is simply not taking place. Far from accelerating, exploration activities in Canada have actually been slowing down under the combined impact of rising costs, high taxes, and foreign competition from high grade deposits.

The basic issue is that Canada's mineral resources, while vast, are increasingly lean. Canada has an established international reputation in the field of mining and metal processing technology. Yet in today's adverse environment, the Canadian mining industry is simply not investing the funds required to maintain its relative contribution to the economic well being of all Canadians.

The copper situation is a case in point. Copper has been the second most valuable commodity produced in Canada (second only to petroleum): its sales in 1973 and 1974 amounted to $1.2 and $1.4 billion respectively. But the porphyry type deposits which hold some 45% of our remaining copper reserves are perhaps the lowest grade now being mined anywhere in the world. Because of our low ore grades, high operating costs, and the highly cyclical prices the industry is experiencing difficulty in justifying new commitments.

Canada's iron ore industry, with an annual output of 60 million tons, is losing its traditional markets to higher grade and lower cost ores from such countries as Australia, Brazil, and the United States. Domestic as well as export sales are affected. Mr. C. Bruce Ross, General Manager of Hollinger Mines,

recently told the meeting of the Conference Board in Canada that all of the new iron ore deposits for the expansion of Canada's three major steel plants will be located in the United States. During the years 1970-74 total exploratory drilling for new mines declined in Canada by more than 18%. In 1976, for the first time since World War II, no new mines were under development anywhere in Ontario.

Canada's mineral resources, while vast, are increasingly lean. In today's adverse economic and tax climate, the Canadian mining industry is simply not investing the funds required to maintain its relative contribution to the economic well being of all Canadians.

Without massive new investment in exploration and development, production from our existing mineral resources will decline, especially after 1985 when a number of existing mines will be towards the end of their economic lives. In order to reverse this trend, exploration and development activities have to be expanded — now — to take up the slack of older mines. A possible decline in mineral exports after 1985 would be of extreme concern to Canada, given the fact that we will at the same time be facing large trade deficits in oil.

Unless present trends are reversed, Canada's shortfall in net oil production could amount to some $6.6 billion (1976 dollars) in 1985. The implications of such a massive trade deficit, combined with a presumed decline in metal and natural gas exports, can be summed up under three headings:

BALANCE OF PAYMENTS

Products of mineral industries have always dominated Canada's exports. Along with oil, natural gas and coal, mineral resource exports in 1975 added up to $9.2 billion; historically these have represented 30% or more of our total exports.

Our heavy reliance on primary resource exports has occasionally been criticized as being symptomatic of a "hewer of wood and drawer of water" economy. But the fact remains that Canada's comparative advantage in world trade rests in large part on the country's natural wealth, and our standard of living depends on our ability to find exports to pay for our essential imports of both consumer goods and machinery and equipment. A possible reduction in mineral exports could be viewed with relative equanimity if an increase in other international earnings were readily available to offset the loss. However, there is no evidence that agriculture, manufacturing or the service industries are capable of the vast expansion in foreign markets that would be necessary to redress the balance.

The following table illustrates the hypothetical merchandise trade deficit which would occur in 1985 in the absence of additional fuel and mining development, all other things being equal.

POSSIBLE EFFECTS OF FUEL AND MINING DEVELOPMENT ON CANADA'S BALANCE OF PAYMENTS 1985
(Billions of Current Dollars)

	The Current Situation	No Additional Fuel and Development	Substantial Additional Fuel and Mining Development
	1975	1985	1985
Mineral and Metal Exports	$ 4.6	8.7[1]	20.5[2]
Oil, Natural Gas and Coal Exports	4.6	3.5	5.7[3]
Other Merchandise Exports	23.9	72.5	72.5
Total Merchandise Exports	33.1	84.7	98.7
Merchandise Imports	33.9	97.5	97.5
Merchandise Trade Balance	- 0.8	-12.8	+ 1.2

Department of Economic Research, Toronto-Dominion Bank, July 1976.

Notes:

1. Assuming mining industry achieves 95 per cent utilization of present capacity by 1985 and assuming export prices of minerals and metals increase at average rate of 5 per cent per year. Does not take account of changes in domestic inventories of minerals and metals.

2. In addition to assumption No. 1, capacity volume increase 9 per cent per year.

3. Assumes some natural gas exports from Eastern Arctic in addition to presently licensed export volumes, but no oil exports.

The $12.8 billion annual trade deficit projected in this table for 1985 would, of course, never occur; long before it reached such disastrous proportions, there would have to be a continuing devaluation of the Canadian dollar, accompanied by a sharp reduction in imports of machinery and consumer items, and an accompanying drop in our standard of living, so as to make our effective wage rates again competitive in world markets.

EMPLOYMENT

Although mining is not considered to be a highly labour-intensive industry, it does employ more than 140,000 Canadians in mining and in such related activities as exploration and development, processing, smelting and refining. By including in the total jobs generated indirectly in resource-related industries and communities, the Mining Association of Canada estimates that mining provides a livelihood for 9% of Canada's full time employed labour force. The petroleum and petroleum processing industries generate employment for tens of thousands of other Canadians.

A decline in resource production would therefore seriously curtail job opportunities available to Canadians, particularly in remote areas.

NATIONAL INDEPENDENCE

Failure to recapture a reasonable degree of self-reliance in oil and gas – so that our production came close to meeting our needs – would condemn Canada to a permanent state of dependence on imported oil. Such a position would jeopardize our security, all the more so since the price and supply of oil are largely determined in some of the more volatile parts of the world.

Individually or jointly, these implications are not compatible with the economic health or sovereignty of Canada.

> Canada could well be faced, over the next quarter century, with immense expenditures to develop what could be the highest cost oil and gas in the world. The costs of this effort will be immense: the costs to all Canadians of not undertaking the development could be even higher.

If there is one overriding issue likely to affect the future well being of all Canadians, it is this country's management of our non-renewable resources. There is an urgent need for the formulation and acceptance of clearly defined and generally accepted resource objectives, and — even more importantly — the adoption of specific plans to implement these objectives.

A number of energy and mineral policy statements have been made by governments in Canada. In 1974, the federal and provincial governments adopted a common set of policy guidelines for the development of our mining industry. In 1976, the federal Department of Energy Mines and Resources published *An Energy Strategy for Canada* in which it identified the main issues facing energy developments in Canada and articulated a balanced policy to deal with these problems.

The Task Force finds no major quarrel with the basic policy of "self-reliance" set out in the Federal Government's energy paper, or on its identification of the main issues facing the country and our energy development over the next few years. However, we do disagree with the view implicit in this and other statements by governments that present tax, royalty, regulatory and economic policies will permit the expansion in our energy production identified in these policy documents as essential for our economic well being. In fact, and as discussed later, the Task Force believes the recently proposed federal legislation on the development of federal oil and gas lands will instead work towards making attainment of the federal government's own goals more difficult.

The Task Force similarly approves in principle the earlier policy statement by federal and provincial governments on mining, in which the necessity of continuing the industry's economic contribution was stressed. But federal and provincial governments have not yet implemented regulatory, tax and other policies that would enable mining development to go forward: indeed, they have instead created an unstable environment that actually impedes such progress.

Canada does have an energy policy and a mineral resource policy, but it has not yet implemented programs to make these policies work.

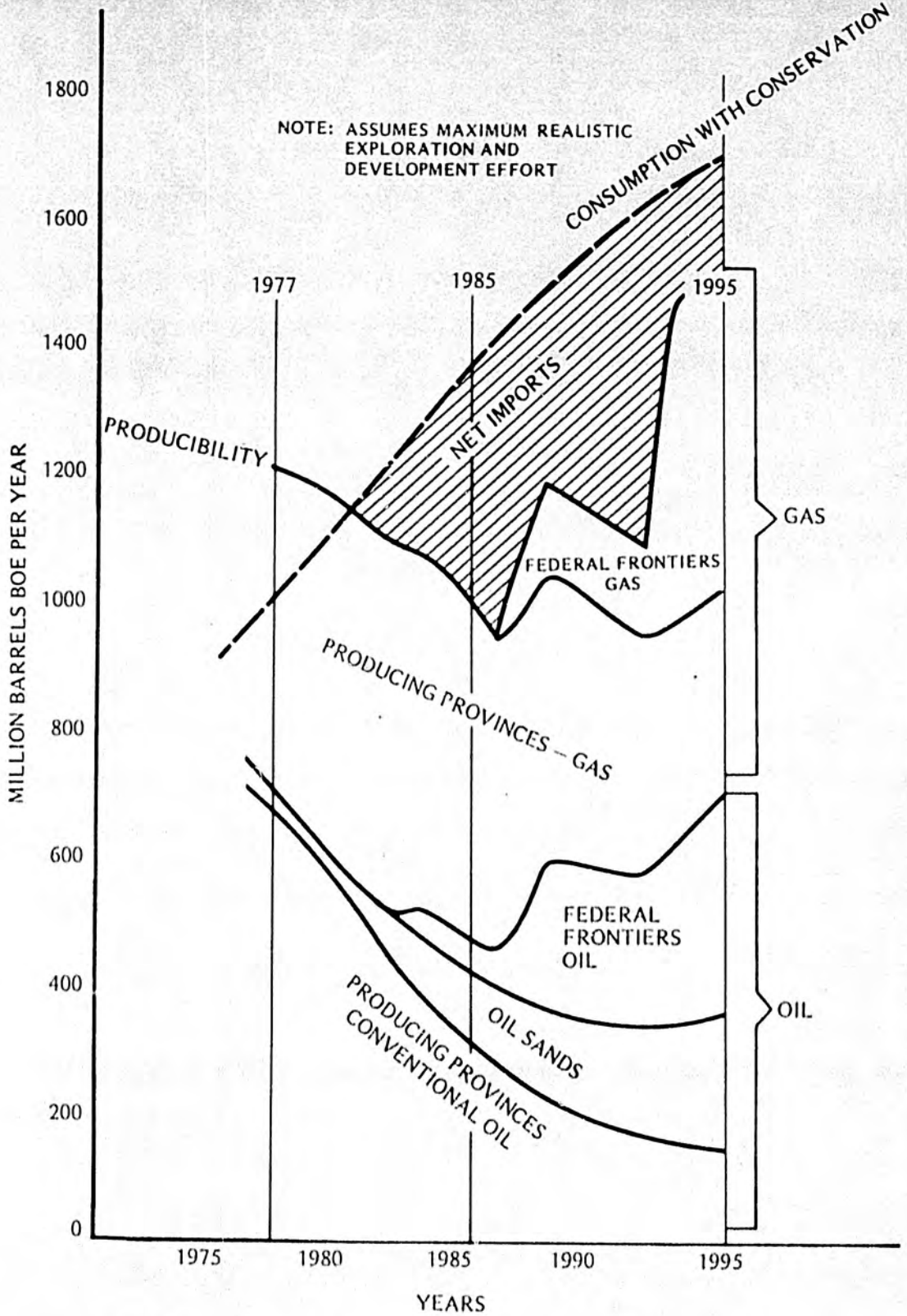
The Task Force believes that a rational goal for Canada is to achieve a high degree of self-reliance with respect to energy supplies. This does not mean that an extravagently expensive crash program can or should be launched in pursuit of oil and gas self-sufficiency by 1985 at any cost. It does mean that Canada should adopt a sustained program to produce enough gas and oil so that it will have the capability to achieve long term net self-reliance should circumstances require the effort and expense.

At the same time, steps should be taken to maintain and enhance the contribution of mineral resources to Canada's export revenues by creating the climate necessary to support increased exploration and development efforts. Such efforts are particularly essential at a time when the country faces mounting petroleum deficits and continued balance of payment problems.

The implementation of such policies calls for a commitment on the part of governments, industry and consumers: it calls for the subordination of the more parochial concerns and partisan allegiances to the national interest; it calls for an enormous investment of money, now and for many years to come.

If such a commitment is made, the following chart Appendix D to the Task Force's report shows a projection as to how oil and gas production from new areas could help to bring Canadian production back up towards our estimated consumption.

The production levels indicated in this table do not represent a prediction of the amount of oil and gas we will actually produce over the next twenty odd years: indeed, the Task Force believes that under present tax and other conditions, our actual production will fall far short of these goals. Rather, the projection shows the production that we might expect to achieve from the maximum exploration and development effort that, from an economic viewpoint, we are realistically capable of mounting under improved taxation and regulatory policies. Even with this enhanced investment program, the chart indicates that Canada can only hope to again approach self-reliance in oil and gas by 1995.



See Exhibits 1 and 2 at the end of this Summary for separate projections of domestic production and producibility for oil and for natural gas.

Within the past few years and months, the Canadian public has been exposed to a wide variety of estimates as to our "ultimate recoverable" resources. Particularly with regard to oil, recent forecasts of our reserves have swung away from blithe euphoria in the direction of profound pessimism or even despair. Although proven reserves have been accurately reported, differences between various present and past estimates of our future potential supplies of minerals and oil have generated confusion and even cynicism on the part of the public.

Frequently forgotten in the controversy is the fact that the actual quantities of mineral resources which can be recovered and made available to Canadians during the remaining years of the twentieth century will depend surprisingly little on the dimensions of the potentially recoverable resources. *The real limiting factor is the amount of new investment committed to the discovery and development of these resources.*

OIL AND GAS

The Task Force commissioned a special study in late 1975 to estimate the possible producibility of oil and gas in Canada during the next twenty years, and the likely costs of such production. The study was based on the assumption that total expenditures on exploration and development would rise rapidly from $1.2 billion in 1974 to $5 billion in 1984, and taper off from 1986 to 1995.

This expenditure assumption is not to be interpreted as a prediction of things to come: indeed current trends in exploration and development spending strongly suggest that we are and will continue to fall far short of that level of investment. The objective of the study was merely to arrive at some indication of the quantities of oil and gas which could theoretically be developed, given a large but realistic capital commitment, consistent with anticipated higher prices and forecast demand and supply.

Future discoveries of oil and gas in four frontier areas were projected on the basis of the historical relationship between investment and discovery, and adjusted for geographic differences in costs and size of reserves. In addition, it was assumed that exploration and development would continue in the western Canada sedimentary basin.

The study led to the conclusion that $65 billion (1974 dollars) spent on exploration and development during 1975-95 could lead to the discovery of 9 billion barrels of new reserves of oil and 14 billion BOE (barrels of oil equivalent) of gas. By way of comparison, $12 billion (current dollars) spent during 1947-74 resulted in the discovery of 18 billion barrels of oil and 15 billion BOE of gas.

The following table illustrates the eightfold escalation in exploration and development costs which can be expected to occur as we become increasingly dependent on high cost frontier resources and increasingly scarce and therefore more costly prospects in Western Canada.

OIL AND GAS -- INCREASING EXPLORATION AND DEVELOPMENT COSTS*

	$ Billion	
	Actual 1947-74 (Current $)	Projected 1975-95 (Constant 1974 $)
Exploration	$ 6	$41
Development	6	24
	$12	$65
Reserves discovered and developed (Billion BOE)	33	23

*excluding cost of land, permits, etc., and cost of oil sands developments: Appendix B

The following table, taken from this 1975 study (Appendix B) illustrates the possible range of basic bare costs that we may be facing in order to bring our frontier resources into production. This table shows only the bare projected costs of oil from these new developments: it does not contain any allowance for taxes or royalties, or for a return to the entrepreneur for extraordinary risk. It indicates that required prices for frontier oil can readily exceed current world prices, even before considering the tax element of costs.

PROJECTED COSTS OF FRONTIER OIL EXCLUSIVE OF TAXES, ROYALTIES AND RETURN FOR RISK

$ per barrel of oil (constant 1974 $)

	Discounted Cash Flow Rate of Return Assumed*		
	7-1/2%	10%	12-1/2%
All Canada			
Exploration	1.85	1.85	1.85
Development	1.08	1.08	1.08
Direct cost (pre tax)	2.93	2.93	2.93
Capital employment cost	4.37	6.47	9.27
Developed cost	7.30	9.40	12.20
Operating and transportation costs (will vary by area)	3.50	3.50	3.50
Total delivered cost*	10.80	12.90	15.70

*pre tax rates of return and pre tax delivered cost

The above estimates were prepared in 1975. Today, the cost position facing Canada is in fact even worse, because of the failure to secure the needed exploration and development expenditures in 1975 and 1976, and because of continued cost inflation.

Now – at the beginning of 1977 – it is estimated that expenditures of $47 billion (1976 dollars) on exploration and development will be required during the nine years 1977 – 1985 in order to approach self-sufficiency. This contrasts with the original 1975 estimate of required spending of $38 billion (1974 dollars) for the same period.* Further, the likely delivery date of new energy supplies from our frontier regions has and will continue to be pushed forward as we fail to meet the necessary commitments.

It is clear that our frontier resources – Northern and offshore areas, and the oil sands and heavy oils of Western Canada – have huge potential reserves of oil and gas.

But these reserves are, in the main, rather more difficult to locate and define than we had hoped, and it will clearly cost far more than we had first expected – and take far longer – to bring these supplies to our markets.

Based on the range of projected costs reviewed above, the Task Force believes that Canada could well be faced, over the next twenty years, with spending immense sums on developing what could be the highest cost oil and gas in the entire world.

SELF RELIANCE IN OIL AND GAS – AT ANY PRICE?

We should not aim at self-sufficiency or self-reliance at any price. Rather, we must always compare the costs and risks of producing our oil and gas from our frontier areas against the costs and risks of importing it. But given the deficits in foreign exchange, and the political and economic risks that we would face if we became completely dependent on imports, it is increasingly obvious that we must make the critical decision to commit substantial resources, beginning now, so that we might be in a position in the future to strive towards a rough balance in our overall energy imports and exports.

THE TOTAL COSTS OF ENERGY

In its document "Energy Strategy for Canada", the federal government itself estimated that over $180 billion (in constant 1975 dollars) in capital investment would be required over the next fifteen years to bring our primary energy supplies from all sources up to something approaching our energy needs. (This includes the cost of required electric power, oil gas and coal investments, including infrastructure such as pipelines: however, oil and gas investments come to about half the total, with the bulk to be committed to "frontier" areas in the north, offshore, and in the oil sands.)

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* The updated analysis is contained in Appendix D: The quoted figures here include costs of land, permits, etc.

To look at this investment in another light, our required spending on energy capital would rise from 3½% to perhaps 5% of our Gross National Product over the next five years, and to 6½% in the following five years. Even this staggering commitment may understate our actual capital needs: the Task Force believes that recent government cost projections tend to underestimate the gigantic inflation in the cost of resource development that has occurred in recent years.

MINERALS

A study undertaken by the federal Department of Energy, Mines and Resources estimates that exploration expenditures of some $1.2 billion (in 1974 dollars) will be required for every five year period between now and 1995 if Canada is to meet mineral requirements on the domestic and export markets. Such an investment would triple the mineral exploration expenditures recorded in the recent past.

The study further estimates that capital expenditures for existing mines and those to be developed from known deposits will average $656 million annually between now and the year 2000, or almost double the annual average spent during 1960-74.

Startling though these figures may be, they are overly conservative in the opinion of the Task Force. The government study does not fully take into account the steep rise in costs of operation, construction and capital which occurred between 1973 and 1976 – a rise which far outpaced other price increases.

As a result, the Task Force estimates that exploration expenditures will have to be four and a half times the 1951-70 level (rather than three times as projected by the government study) if Canada's position as a producer and exporter of minerals is to be maintained. Similarly, the government's estimates of development and other capital investment requirements are grossly understated under current conditions.

> Canada has excellent long term potential for new mining developments, and has the capability of continuing to be a major world producer and exporter of many minerals. But the costs of new developments will be high as grades and accessibility decline with new discoveries. Canadian mineral producers will be under increasing pressure from rising costs and from new production from projects abroad, many of them involving higher grades and lower costs than Canadian reserves.

However, the plain fact is that we are not at present spending anything like even the government's estimated requirements: it is therefore clear that, under present trends, our mineral resource production will decline dramatically within the next ten years as new discoveries fail to keep pace with the exhaustion of old reserves.

The gigantic investment required for the development of our mineral and petroleum resources should not be beyond the capacity of Canada's economy, assuming a favourable combination of world economic conditions, domestic growth and appropriate public policies. Increased prices paid by consumers at home and abroad can provide the bulk of the required funds, provided that taxes and royalties are at a level which permit the investment by industry of a sufficient portion of its gross receipts. But the resource industries will have to compete for increasingly scarce capital with other sectors of the economy, and they will do this successfully only if they are allowed to earn reasonable rates of return.

As shown in the table on the following page, Canada's 1985 GNP should amount to approximately $470 billion (in then current dollars) with $79.2 billion available for all business investment. The resource industries would have to attract over 36% of this business capital in order to meet their objectives.

For this reason, the possible advantages of any further measures to restrain foreign ownership of resource industries should be weighed against the probable impact of such measures on the supply of risk capital. There can be no doubt that the extent to which our petroleum and mining industries are owned by non-residents is a matter of concern to many Canadians. On the other hand, it is unlikely that Canadian investors could or would be immediately inclined to fill the vacuum created by a cut-back of the high risk seed capital traditionally provided to our resource industries by foreign-controlled corporations.

CAPITAL SPENDING AND GROSS NATIONAL PRODUCT: GROWTH RATES
(Billions of Dollars)

Year	Housing & Social Capital	Business Capital				Total Capital Investment	Energy As % of Total Business	Gross National Product	Total Capital Investment As % of GNP
		Energy	Resources	Other	Total				
1965	5.0	1.6	1.2	5.1	7.9	12.9	20.2%	55.4	23.2%
1975	15.1	6.7	2.7	14.9	24.2	39.3	27.7%	161.1	24.4%
CAGR[1] 1965-1975	11.7%	15.4%	8.4%	9.0%	11.8%	11.8%		11.3%	
1985	37.3	29.2	7.7	42.3	79.2	116.5	36.7%	469.1	24.9%
CAGR[1] 1975-1985	9.5%	15.8%	11.0%	11.0%	12.6%	11.5%		11.3%	

[1]Compound Annual Growth Rates

SOURCE: Department of Economic Research, Toronto Dominion Bank
December 1976

Indeed there is evidence that governmental policies may succeed not only in curtailing foreign investment, but also in encouraging some Canadian capital to leave the country in pursuit of greater investment security and more favourable returns in the United States and other parts of the world. If this trend continues, the situation could soon be ripe for still further government involvement in our resource industries. The Task Force believes such a possibility is undesirable from the point of view of ultimate costs as well as its destabilizing effect on private investment.

What is an acceptable rate of return? Variables such as complex taxation rules, rapidly changing rates of inflation and the possibility that project costs may rise at a different rate than the price of the end product conspire against any definite answer. However, three facts do emerge beyond dispute:

1. When it comes to investing in exploration and development of as yet undiscovered resources, it is the prospective rather than the existing rate of return which counts. A rate of return which is acceptable or even favourable for existing operations may still preclude investment in new projects, especially those involving important risks.

2. In the short run, when the industry can estimate with reasonable certainty its capital and operating costs, the determining variables affecting rates of return are

   (a) the price of the end product (or, more precisely, the relationship between direct production costs and product prices)

   (b) the government's slice of the income pie

3. Judging by the capital now available for exploration and development, the investing public and the industry itself clearly do not consider the rate of return in new mining or frontier petroleum developments to be satisfactory.

Another point about profits in the resource sector – particularly in mining – is that they tend to be of a cyclical nature. The fact that the bulk of our minerals are sold on world markets, at fluctuating prices, means that the profits of mining companies at one point in the cycle can appear "excessive", even though over a longer period, including years of depressed prices and profits, average income may be only barely adequate to provide a minimum return.

Equally, in the resource industry as in any other, some firms will be more efficient, better organized, or have better luck than others, and hence will be able to earn a better rate of return.

If tax and royalty policies are such that governments demand a lion's share of the profits from the years of high prices and from the more efficient, while leaving the industry to bear losses and low profits in other cases, then it is clear that on average, the industry will fail to make an adequate return. Governments in Canada have been far too quick to cut themselves in on the supposed bonanza of high resource revenues, without considering whether those revenues represented — in the long run — funds that could be withdrawn from the industry without crippling its incentive and ability to reinvest for future developments.

While the price of most metals is governed, to a large extent, by international market forces, the price of oil and, more recently, gas is increasingly being determined by political considerations. Artificially low oil and gas prices constitute a triple-barrelled attack on Canada's energy supply. Not only do they reduce cash flow available for reinvestment and discourage new investment capital by cutting into the industry's rate of return; they also undermine any attempts to curb the continuing growth in energy demand. A recently published study by the Paris based International Energy Agency revealed that countries which keep their oil and gas prices below world levels have the worst track record in energy conservation.

Though the federal government has accepted the conclusion that oil and gas prices should be allowed to rise to world levels, a number of provinces have in the past imposed retail price controls on oil and, in some cases, natural gas. The Task Force believes that provincial price controls are inconsistent with a national energy policy and should be phased out as quickly as possible.

The Task Force therefore supports an increase in the price level of Canadian oil to world price levels (and gas to its commodity value) as soon as practical — likely within two years. The increase in Canada's oil and gas prices to world levels should be reasonably gradual, and should be timed to coincide, if at all possible, with similar price increases in the United States. Since energy is a significant component in certain manufacturing and processing costs, some sectors of our economy cannot afford a large and permanent price differential with their major competitors south of the border.

This recommendation is based on the assumption that, given an appropriate tax structure, world price levels for oil and gas would be sufficient to call forth the necessary industry response. This appears to be true now in the case of gas but the time may well come when prices even slightly above world levels will be necessary to attract the required capital for oil exploration. It is quite conceivable that the cost of developing our own resources may turn out to be as high or higher than the world price.

Such price increases will inevitably have a negative impact on consumers and energy-hungry industries. Even now, the effect is being felt in the Atlantic provinces, and to a lesser extent in central Canada. The Task Force believes that, painful though such adjustments will be, they are part of the price Canadians must pay for a national energy policy and future energy security. Such a price increase is the most effective way to provide inducements to restrain consumption and achieve an approach to energy self-reliance. The Task Force supports temporary federal programs to ease the transition to higher energy prices in the most directly affected areas of the country, particularly those involving incentives for increased conservation.

During the past few years, dramatic increases in the price of oil, combined with a temporary jump in the price of other minerals, produced record earnings for many resource industries. In an effort to collect what they considered to be their respective fair share of this bonanza, provincial and federal governments launched a tug of war for the resource revenue dollar with little regard for the continued health of the industry or its long term contribution to Canada's economy.

SHARING OF RESOURCE REVENUE
1970/71 to 1975/76

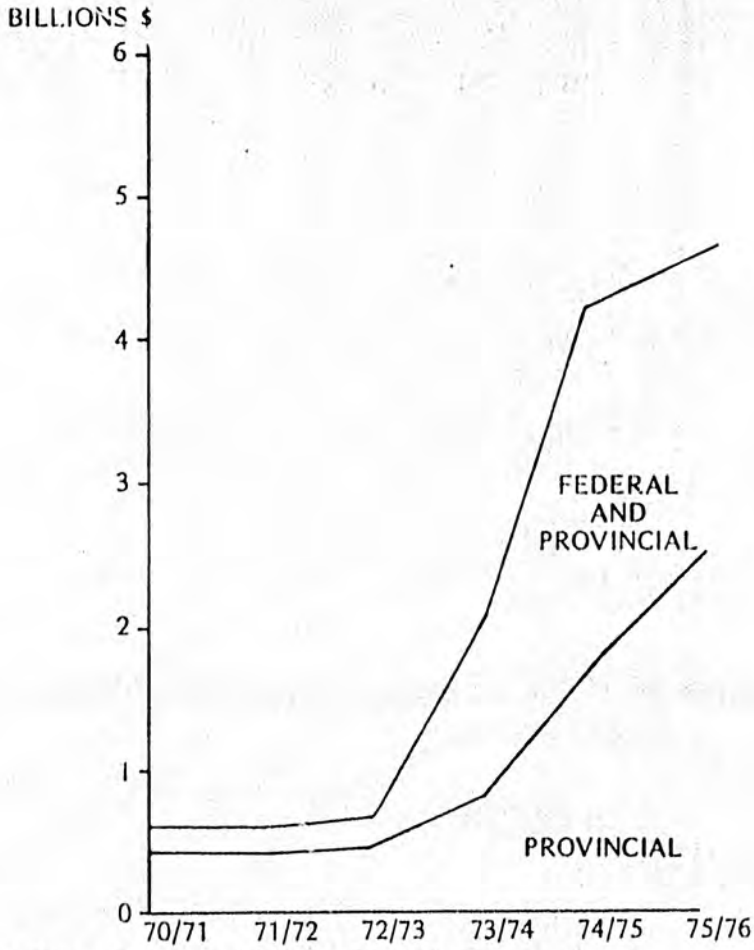
GOVERNMENT RESOURCE REVENUES		Up 650%
Provincial resource revenues	Up 519%	
Federal resource revenues	Up 895%	
PRIVATE ENTERPRISE RESOURCE REVENUES		Up 126%
Corporate net income, after tax		
PRIVATE ENTERPRISE MANUFACTURING REVENUES		Up 135%
Corporate net income, after tax, of all manufacturing companies		

SOURCE: Appendix A

NOTE: Federal resource revenues in the table above, and in the chart on page 27, include the provincial share of corporate income taxes collected by the federal government, due to the difficulty of separating such amounts: accordingly, federal resource revenues are somewhat over-stated, and provincial revenues under-stated in the calculations on which figures are based.

Drastic increases in provincial taxes and royalties, and the subsequent disallowance by the federal government of these levies as tax-deductible items, are the two most important but by no means the only moves and countermoves in this intergovernmental conflict. A rapid succession of far-reaching and totally uncoordinated tax changes has resulted in a situation where tax and royalty rates can range from 30% up to and beyond 100% of net income. Not only has this tax squeeze stripped the industry of its historic tax concessions and incentives; it has transformed it into the most heavily taxed segment of the Canadian economy.

In the five years between 1970/71 and 1975/76, federal and provincial revenues from resource taxes and royalties escalated from $0.6 billion to $4.7 billion — an increase of 650%. Taxes now represent about 71% of the resource industry's pre-tax profits (67% without the oil export tax) compared to 42% five years ago. During the same period, net profits of Canadian resource companies increased from $875 million to just under $2 billion for a rise of 126%. (The net after-tax income of all Canadian manufacturing companies increased by an estimated 135% during the same period, a higher rate of increase than in the resource sector despite relatively lower capital investment.



NOTE: Includes federal Oil Export Tax Revenues

SOURCE: Exhibit 6 of Appendix A, "Taxation of Non-Renewable Resources"

True, recent rationalizations of our tax structure, such as a federal resource allowance and provincial drilling incentives and royalty rebates in Alberta and elsewhere suggest that the country has weathered the most virulent stage of the intergovernmental struggle. However, even with these changes, only about 25% of future increases in current oil and gas prices will accrue to the industry: the balance will be absorbed by governments. This is a distinct improvement over the situation which prevailed during the past four years, when governments obtained about 6½ times as much additional resource revenue as did the resource producers. But it is still not acceptable as a basis of achieving future energy security.

Some relief is also being provided to the mining industry. This is particularly true of British Columbia where new provincial legislation reduces the combined federal and provincial tax rate on mining profits from up to 100% or more under the previous royalty structure to an effective maximum of 57%. Other provinces have either introduced or are contemplating changes in their taxation of mining profits, in some cases to provide new incentives for exploration and for domestic processing.

But more than piecemeal measures are needed to reform a tax and royalty regime which is chaotic, and imposes tax burdens unrelated to the industry's ability to pay. The present tax and royalty system is a hodge podge of extraordinarily high and capricious tax burdens, combined with ad hoc incentives and subsidies designed to offset in part the high marginal rates. It is a "take it away – give it back" system, based in part on ill conceived and unsuccessful efforts by governments to "fine tune" their tax and incentive policies. But short range, narrow incentives are not likely to result in investments being made in the volume or the places where they are required. What would be far more productive for Canada would be an integrated tax system with reasonable and relatively stable rates, and with rational incentives, particularly for high risk investments.

Specifically, the present system:

- combines excessive and widely uneven marginal rates – up to 100% in the case of some oil production in Saskatchewan – with some extraordinarily generous incentives. In Alberta, for instance, it is at least theoretically possible to realize a profit by drilling a dry hole while in Northern Ontario, tax concessions can ensure a 14% or better after-tax return even for an unprofitable processing facility

- encourages an undesirable degree of "high grading" of resources by imposing a large part of the tax burden as a percentage of gross revenues. Such royalties result in a much higher tax rate on net profits and cause expensive low grade reserves which cannot support such taxes to be left underground

- fails to recognize legitimate production costs, such as provincial royalties, as tax deductible expenses

— erects interprovincial trade barriers by offering provincial incentives to companies which locate processing facilities within the province of extraction: such incentives are often equivalent in practical terms to tax penalties on processing minerals in other provinces or countries. While the provinces' desire to create jobs and eliminate regional disparities is both understandable and praiseworthy, the incentives currently available to resource companies constitute interference with free market forces and are not consistent with Canada's best interest. For example, a new smelter in Timmins, Ontario, built with the help of multi-million dollar provincial tax incentives, will do little for the country as a whole if it renders uneconomic other existing processing facilities in Quebec.

The present tax and regulatory environment of the industry not only involves extraordinarily high marginal tax rates, but also uncertainties, disincentives and contradictions which are severely inhibiting new investment. The uncertainties and complexities of the present tax and regulatory system can prove just as inhibiting to private sector investment as the higher tax rates themselves. Faced with the necessity of committing large capital investments years in advance of anticipated pay back, private industry must have assurance of long term relative stability in tax and royalty structure.

Who will pay for the huge capital investments necessary to bring our energy supplies back in line with our consumption, and to maintain our mineral production? In large part, the Canadian consumer will pay. Indeed, he is paying now, in the form of higher oil and gas prices: the question is whether he is getting what he has paid for.

In a study for the Task Force* the total spending of Canadian consumers on domestic oil and gas at wellhead prices in the period from 1977 through 1985 is estimated at about $125 billion. (This excludes retail taxes, and transportation marketing and processing costs.) Something approaching one half or more of this immense sum is likely to flow to federal and provincial governments in the form of taxes royalties and other payments, leaving the industry with the other half to pay all current operating costs, provide for necessary reinvestment to replace the resources being used up, and obtain some element of return on capital investment.

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*Appendix D

The same study estimates that – dealing only with oil and gas – Canada could achieve a high degree of energy self-reliance in the 1990's through the investment of $47 billion (1976 constant dollars) in exploration and development (including land costs) between now and 1985, with the bulk of the investment being made in the frontier areas such as northern territories and offshore. (In addition, perhaps $8 billion will be required for the further development of the oil sands and heavy oil deposits.)

Even this massive spending commitment would not lead to oil production sufficient to balance our consumption but it would allow modest gas production surpluses to be available for export, and would therefore bring us, in dollar and energy terms, back to within close range of a balance in our oil and gas exports and imports.*

The projections in this report show that of the $50 billion in cash flow available to the oil and gas industry in the period through 1985, under present conditions it is possible to assume that a maximum of about $28 billion of this might – under relatively favourable assumptions – be reinvested. The industry is unlikely to be able to achieve any larger reinvestment, given the resources available to it, and the tax and regulatory policies now in effect. But this reinvestment will be almost $20 billion short of the actual investment required by 1985 to bring us in the following decade towards self-reliance. Most of this shortfall will occur in the critical frontier regions, where our main hope of ultimate self-sufficiency lies.

The calculations in this report also illustrate that, with a shift in taxation and royalty policies, the industry could find the funds necessary to bridge this gap. What is required is a package of tax and incentive measures which would see that perhaps 35% of production revenue is channelled back into exploration and development in the industry.

If governments were to take a modest decrease in the revenues that they might otherwise expect from future oil and gas price increases as Canadian prices rise to world levels, they would still obtain higher total revenue than they are now receiving. But they would also allow the industry sufficient cash flow to make the necessary commitments to see Canada moving back towards a reasonable level of self-reliance. This reduction in tax and royalty levels must be accompanied by structural changes in the tax and royalty systems to mobilize the oil and gas industry's reinvestments where they are needed – at our frontier developments in the north, offshore, and in the oilsands. A new level of incentives for high risk investment will be required and as well some measures to allow some of the increased royalties which would otherwise flow to producing provinces from future price hikes to be directed to frontier investments.

The following chart illustrates one approach to the sharing of cumulative production revenues from oil and gas in Canada that would permit an adequate investment program (including the introduction of new investment from outside borrowing and new capital) to achieve a reasonable degree of self-reliance.

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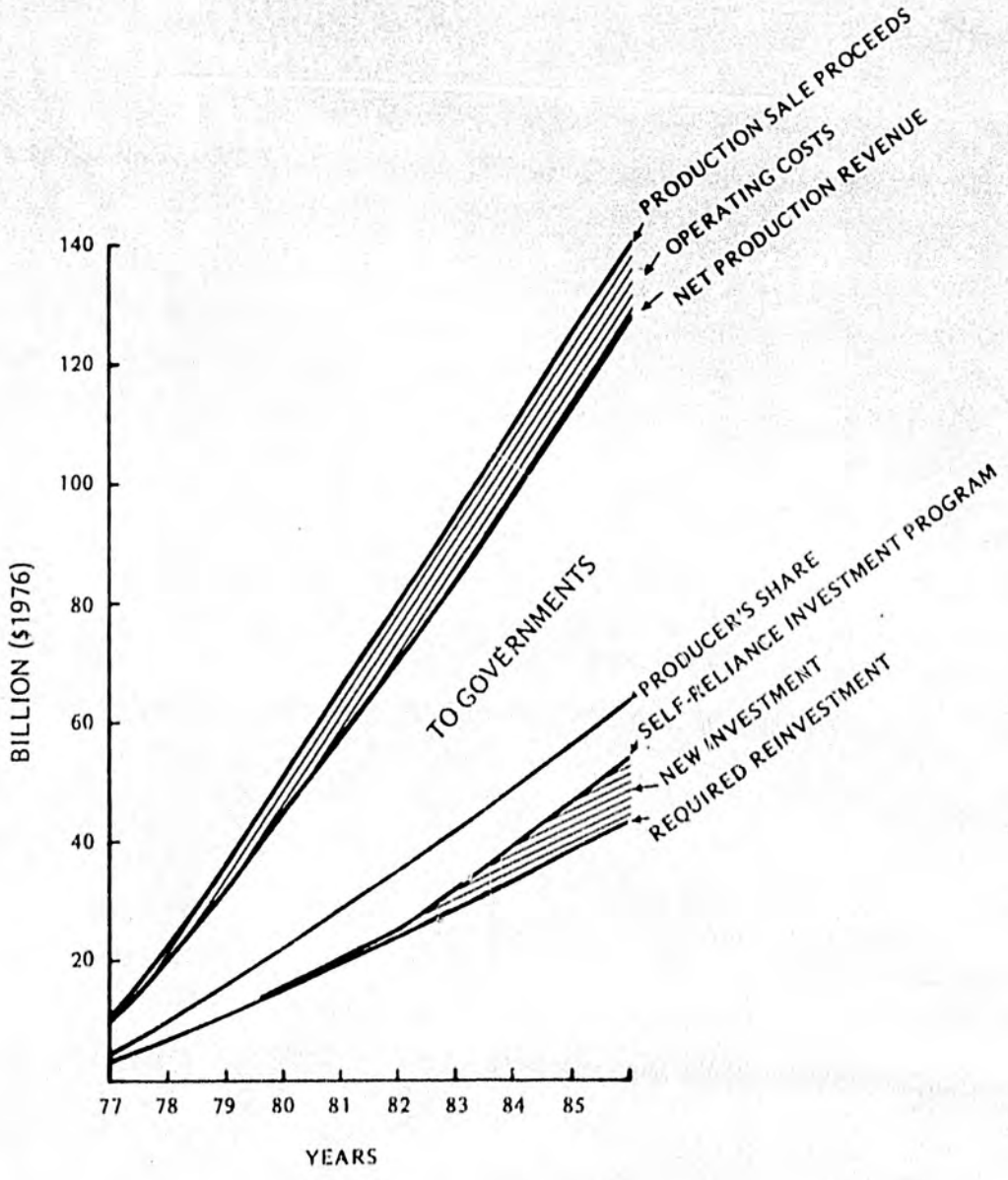
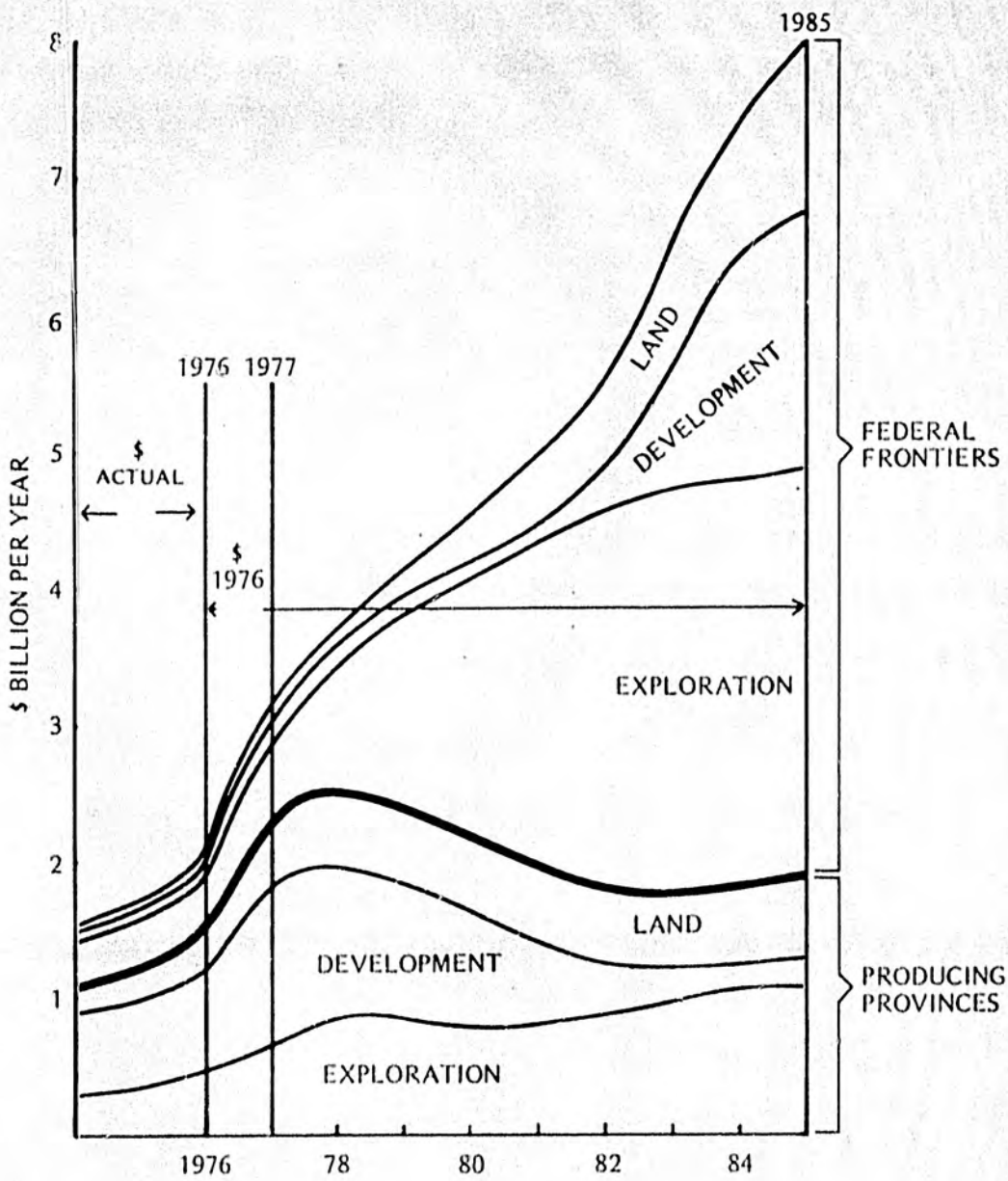
*See Exhibits 1 and 2, at end of Summary



SOURCE: Appendex D: responsibilty of author

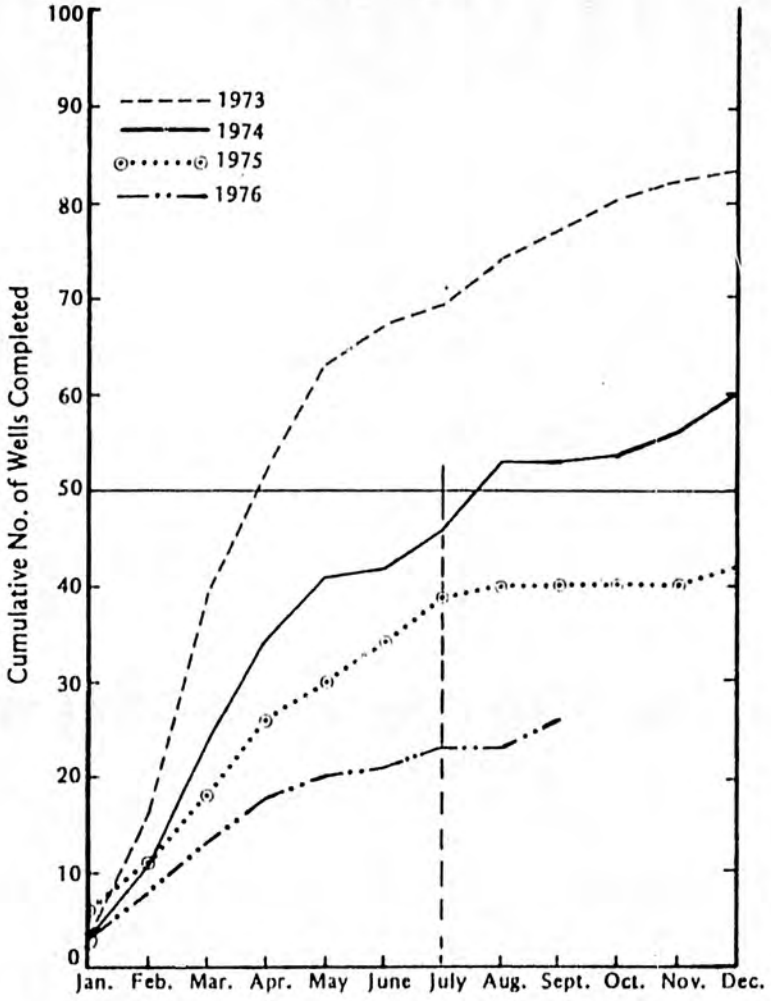
NOTE: The massive increase in exploration and development spending called for in Appendix D would in itself result in a significant reduction in industry's current taxes, provided that it could be claimed immediately against otherwise taxable income. However, it may be questioned whether spending of this magnitude could be all deducted currently, and in any event the present tax and and royalty structure does not appear capable of calling forth the indicated effort from the industry, particularly in the frontier areas (as is indicated in the chart on page 33).

The following diagram illustrates where, in geographic terms, the necessary oil and gas exploration and development funds might be spent.



In order to serve the resource objectives outlined in this report, Canada's resource tax structure must undergo a complete overhaul. Energy self-reliance and maintenance of mineral production will be served only by a system which acknowledges that increased resource prices do not necessarily justify higher taxes, particularly in a period of rising costs. The Canadian resource industry is not entirely a mature industry, but is still in a position where its cash flow must be augmented and directed to new ventures. In a sector subject to enormous risks and violent price fluctuations, profits should be considered extraordinary only if, over a long period of time, they clearly exceed levels required to attract development capital. The Canadian resource industry has not in general achieved this level.

CUMULATIVE NO. OF WELLS DRILLED BY MONTH NORTH OF 60°



Source: North of 60 – Oil and Gas Monthly Activities – Sept. 1976

This does not mean that the resource industry should expect governments to enact policies which would enable companies to provide all development capital from re-invested earnings. The era of automatic special status is gone forever, and there is no reason why the resource industry should not be in a position to rely on new debt and equity issues for some of its capital requirements.

But the industry does have a right to expect adequate rates of return on investment, and sufficient regulatory stability to revive the climate of confidence which once existed among the investing community. It is significant that the Syncrude project could only proceed with substantial government participation and special tax provisions, and that frontier exploration programs are experiencing difficulties in attracting capital. In spite of our impending dependence on frontier resources, the number of oil and gas wells drilled north of 60 degrees of latitude and the expenditures associated with such drilling, have dropped markedly each year since 1973.

Consumers, for their part, have a right to expect that the higher price they have paid and will pay for oil and gas in the future does not simply represent additional transfer payments from the public to the provincial governments in Western Canada and to the federal treasury. Higher oil and gas prices will contribute nothing toward the objectives of a national resource policy unless a sufficient portion of the revenue escapes taxation to flow into exploration and development.

The place that the average Canadian most notices higher resource costs is when he fills up the tank of his car. But he frequently fails to realize that up to 60% of the price paid represents taxes and royalties accruing to governments, with only the balance available to pay all of the costs of exploration, production, refining, transportation, and distribution. Gasoline has joined liquor and tobacco as the most heavily taxed commodities in Canada.

Percentage taken by government will vary with rate of provincial gasoline taxes, and with other factors.

Perhaps the most urgent prerequisite for a rational tax and royalty policy is a prompt settlement of federal/provincial conflicts over resource revenues. Since both levels of government have legitimate claims in this area, it is essential that a joint mechanism be created to work out a compromise designed to serve Canada's resource objectives.

The Task Force believes that the federal government could and should allow some portion of oil royalties and provincial mining levies to be deducted from taxable income but only in return for a national agreement on the basic aspects of resource taxation. Such a compromise would amount to a renunciation, on the part of the federal government of some of the resource tax revenue for the sake of securing a national consensus on the industry's total tax structure. Such an agreement should involve the provincial governments restructuring their levies, particularly royalties, so as to permit increased industry cash flow for reinvestment even outside of the province where the funds are earned.

Suggestions for intergovernmental cooperation may seem unrealistic and utopian in the context of recent and current conflicts; nevertheless, ways of achieving such cooperation have been found in the past, and will have to be found again if Canadians are to avoid a serious erosion in their living standards during the balance of the century.

Both the federal and provincial governments have particular responsibilities in the design and implementation of resource policies in Canada. The areas of jurisdiction differ, but each level of government must recognize that, in carrying out its responsibilities, it cannot act in isolation, but must have due regard for the interests of the other.

The development of gas, oil and other resources in the areas under federal jurisdiction, such as the Northwest Territories and offshore, is subject to new federal tax, royalty, and land tenure arrangements. With respect to oil and gas, these new rules provide for a complex set of regulations to guide future development of our critically important frontier area, including:

- a basic royalty of 10% of production
- a progressive incremental royalty imposed on net revenues from particular producing areas

- a preferred land tenure position for Petrocan, the federal government's own oil and gas corporation
- more onerous requirements for permit holders to spend money on exploration and development, in order to retain drilling rights.

While the proposed new federal regulations do have positive aspects, the Task Force believes, that, on balance, the provisions are unduly onerous in their treatment of industry, and that they will not permit an early and successful development of our northern production potential.

The federal proposals are biased in favour of obtaining an early and relatively high cost cash flow to the government from profitable developments: they tend to require the operator to accept the bulk of the losses from unprofitable or marginal ventures.

The new regulations appear designed to provide a tax and royalty environment for a mature and profitable industry, rather than adequate incentives for high risk investment in an extraordinarily high cost (and hence low profit potential) environment. The basic point – here and elsewhere – is that the appropriate share of resource revenues that should accrue to the government can only be determined by reference to the surplus that is left after all necessary costs – including an adequate return for capital invested and risk taking – have been satisfied. In our northern and other frontier areas, this surplus is likely to be small – indeed, in some areas it may be non-existent. For governments to demand a return which is disproportionate to the economic value of resources, particularly in situations involving a high degree of risk, means that the remaining resource revenues will be inadequate to call forth the required investment.

The Task Force believes that the federal lands proposals should be re-assessed, and recast into a system that is more in tune with the actual conditions in the frontier areas under federal jurisdiction. It is essential that the potential rewards of a rich strike be available to induce producers to invest in high cost (up to $50 million a well), high risk frontier developments.

Canada has immense potential resources of oil, gas, and many minerals: there is no physical reason why we should not in the long run continue to have adequate supplies of these products for our own use, and in the case of many minerals and natural gas, for possible export. If we fail to maintain the relative contribution of the resource sector to the Canadian economy, it will only be because we have provided a tax and regulatory environment in which the resource industries cannot commit the needed investment, or because Canadian costs have got out of line with the prices of resources determined in world markets.

It is not the purpose of this Report to formulate highly detailed recommendations. But the Task Force does put forward the following guidelines which it believes to be conducive to the implementation of national resource policies in the country's long term interest:

- The general structure and basic level of taxes imposed on the non-renewable resource sector should be reassessed by provincial and federal governments acting together. A permanent federal/provincial consultative mechanism should be established to coordinate tax and regulatory policies, with the objective of reaching a broad consensus on structure and rates.

- A single definition of resource income, directly related to the ability to pay and mutually acceptable to federal and provincial governments, should serve as a basis for all income-related taxes.

- A compromise solution should be sought concerning the deductibility of provincial royalty and other costs for federal income tax purposes. The Task Force recommends that the federal government allow some stated portion of provincial royalties and similar taxes to be deducted on condition that

  (a) the provincial royalty or other levy meets federal guidelines as to structure and rate and

  (b) the relief is limited to a maximum percentage of the federal income base.

- The basic combined federal and provincial tax rate applicable to the resource industry should be approximately equal to that imposed on other industries.

- Provincial mining taxes should be integrated with provincial corporate income taxes, imposed only at flat rates and based on realistic measurements of mining profits.

- Additional taxes on excess profits are appropriate only where a broad section of the industry is earning – over a long period of time – an extraordinary rate of return because of its access to public resources. Such super taxes should be applicable only to specific areas after all applicable costs have been recovered, and should only tax away a portion of the excess.

- Incentives which allow resource companies to reduce their tax burden are desirable, so long as such incentives are clearly conditional on the companies' past performance or future commitments. A new "second

level" of incentives relating to a high risk investment in the oil and gas "frontier" regions, and to remote mining sites, is desirable in order to direct more reinvestment of industry cash flow in critically important areas.

- Royalties and other levies which impose a "front end" cash load on the industry, in advance of profitable production, increase substantially the required investment and the risk associated with the development of new fields. Such royalties should be replaced, in whole or in part, by taxes on profits or profitability.

- Provincial charges for the right to take oil and gas from Crown reserves should be gradually and partially shifted from royalties based on production to levies based on the income or profitability of production. Flat rate royalties levied on production tend to discourage secondary recovery and the development of marginal fields: incentives provided in such royalty arrangements also tend to lock the industry into reinvestment in the same province or area.

- The entire tax structure on the oil and gas industry needs to be recast, so as to allow us to mobilize reinvestment funds on a national basis – across provincial and territorial boundaries – for needed frontier development. At present, high provincial royalties and related incentives tend to "lock in" reinvestment to the area where the funds were earned: some means of providing royalty relief resulting from reinvestment in new frontier resources – even outside of the province – needs to be explored if we are to marshall our funds where they will be needed.

The potential crisis in our resources has arisen because of a combination of factors, some relating to the cost structure of resources and some to inappropriate policies by both industry and government. Government actions which have contributed to our potential resource crisis in Canada have included a series of rapid tax and regulatory changes that has substantially raised the industry's tax costs, and also resulted in an overall tax system with capricious tax burdens that are not related to ability to pay and work against the most efficient utilization of our resources. While government actions are far from being solely responsible for the present situation, they are in large part the only variable we have to work with to reverse these unfavourable trends and ensure that Canadians get as much out of our resources as they are capable of providing.

- Federally and provincially owned corporations engaged in resource operations should in general be subject to the same taxes and regulatory environment as privately owned companies. At present, provincial governments can establish provincially owned companies to take over the

production, processing and marketing of provincial resources and thereby escape tax liability. The tax system should not provide an artificial inducement for one level of government to beggar the other by expanding government ownership of resources.

- Crown corporations actively engaged in resource operations should not have preferred access to crown lands, or act as a rent collector for governments. Such crown corporations should be designed to add to our total exploration and development effort, rather than detract from private investment; they should also be structured so that their performance can be measured and monitored, rather than being provided with special privileges that make performance of their management virtually impossible to judge.

- Provincial governments should abstain from erecting or maintaining barriers to interprovincial commerce. Specifically, they should agree to discontinue tax incentives designed to lure resource processing facilities away from other provinces.

- Jurisdiction over continental shelf areas should be determined as soon as possible so as to facilitate future developments, but regardless of the disposition of revenues from such areas, the federal government should maintain a strong and direct role in the development of offshore and northern frontier resources. The recent tentative inter-governmental agreement concerning the sharing of revenues from offshore mineral resources, and the establishment of a federal-provincial board to administer such resources are important steps in this direction.

- Governments should take immediate action to resolve, on an equitable basis, native rights and environmental issues which affect the implementation of a national resource policy. However, governments and the public should recognize that all major development – including the settlement of this country – involves some impact on the environment and that the basic objective must be to deal with such changes intelligently and sympathetically, rather than to protest the idea of change.

- Governments, industry and the consuming public should adopt effective measures to restrain demand for energy fuels and, eventually, other minerals. Price increases should not be relied upon as sole instrument of restraint, but higher prices are nevertheless the most effective way to restrict demand. Lower speed limits, incentives for the purchase and use of energy-saving devices, and research directed toward the development of such devices could reduce significantly the demand for energy.

- Governments should encourage, by tax incentives and other policies, investment in industrial research and development relating to alternative energy sources and conservation.

- Tax and royalty policies, once reformed, should remain relatively stable over a long period of years. An industry which requires extraordinarily large investments of capital much of it truly risk capital with long payback terms, must have reasonable assurance of tax stability.

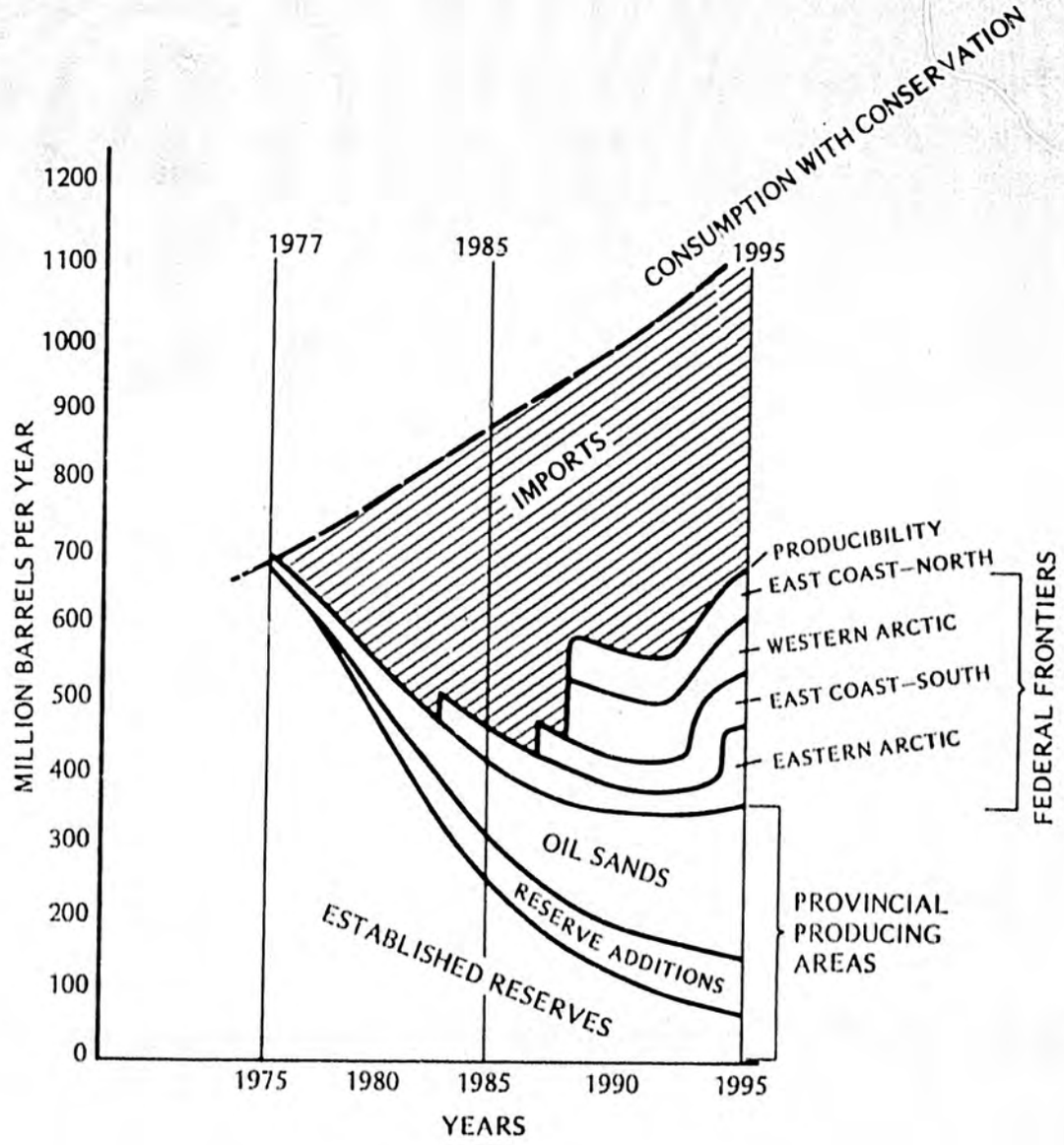
In summary, under our present tax and royalty rules, we do not have sufficient private investment funds from the industry's share of the cash flow from our depleting reserves to bridge the energy gap and get our frontier resources into production: the funds that are available cannot be mobilized on a national basis, and tend to be locked into established areas, and the frontier resources — with high costs, high risks, and long payback periods, do not have sufficient attraction for new capital.

There are hard choices to be made in developing our resources of minerals, oil and gas in the national interest. Even if some of our resources provided bonanzas in the past to both investors and governments, the future is likely to yield adequate returns only after massive commitments of capital and the acceptance of large risks by all concerned.

Unless we are prepared to face up to our challenges, and implement — now — policies that will benefit all Canadians, we will not get the most out of our resources. Without additional commitments to the development of new resources to replace those we are now using, we may all have to freeze in the dark — or buy our warmth and light in uncertain world markets, and with no sure coin to make the purchase.

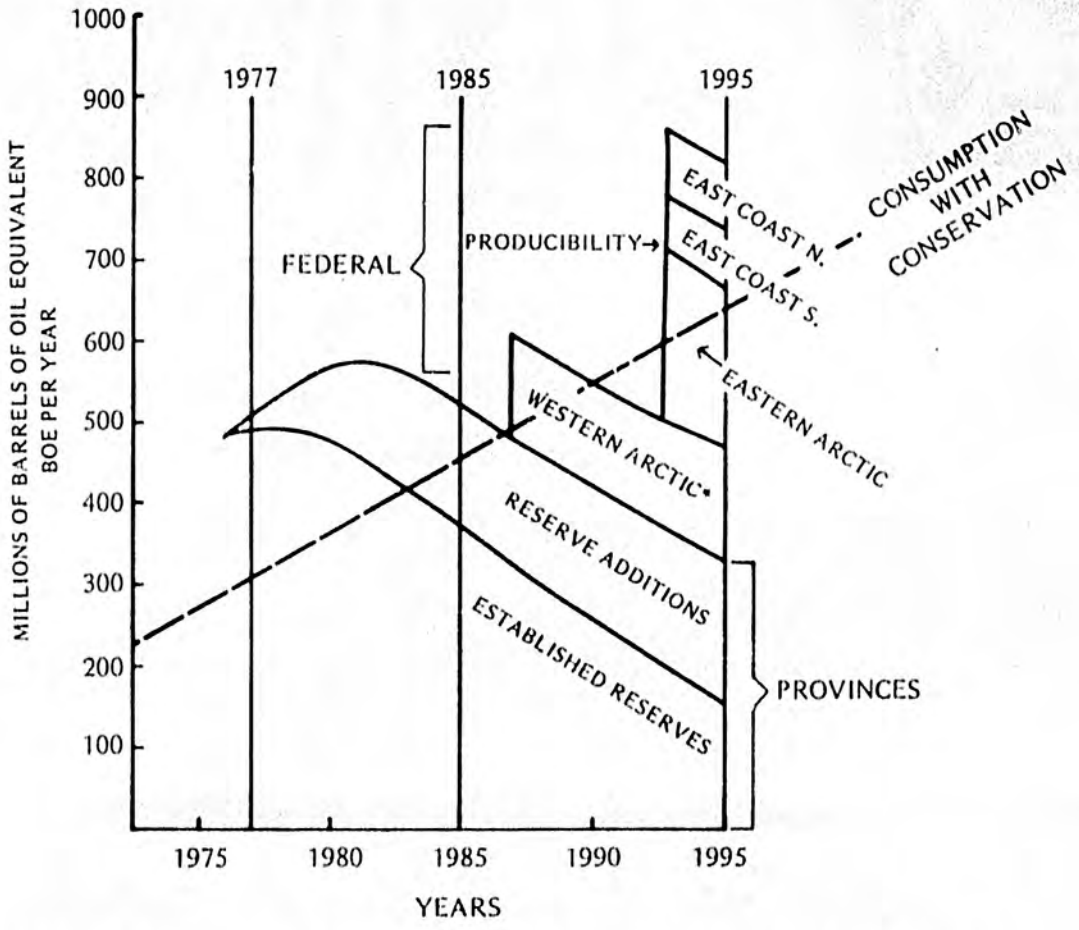
Canadians, informed and motivated, are equal to the challenge. If this Report is successful in stimulating further debate and decision on the resource crisis facing Canada, it will have served its purpose.

EXHIBIT 1



NOTE: Exhibit 1 and 2 are not forecasts of the amount of oil and gas that Canada is likely to produce between now and 1995: rather, they are projections of what might be obtained from the maximum exploration and development effort that we are realistically capable of mounting between now and 1985, and effort that would require changes in our present policies.

EXHIBIT 2



• FROM ALL CANADIAN RESERVES (A JOINT U.S. CANADIAN LINE COULD BE EARLIER)

SOURCE: Exhibit 1 and 2 derived from Appendix D.

Chairman

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The Honourable E.C. Manning, P.C., C.C., L.L.D., D.U.C. President, M & M Systems Research Ltd., Edmonton; member, Senate of Canada, Ottawa; former Premier of Alberta, 1943-1968.

A. E. Pallister, B.Sc., P.Geoph. President, Pallister Resource Management Ltd., Calgary; Former Vice Chairman of Science Council of Canada; Past President, Canadian Society of Petroleum Geologists.

D. D. Peters, B.Comm., Ph.D. Vice President and Chief Economist, The Toronto Dominion Bank, Toronto; Participant in economic and industry conferences, and a writer on economic subjects.

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TRANSCRIPTION DE LA CONFERENCE DE PRESSE DU PREMIER MINISTRE
AU CERCLE NATIONAL DE LA PRESSE, À WASHINGTON,
LE 23 FEVRIER 1977

TRANSCRIPT OF THE PRIME MINISTER'S PRESS CONFERENCE
AT THE NATIONAL PRESS CLUB, IN WASHINGTON,
FEBRUARY 23, 1977

Q: Paul Racine. Monsieur le Premier ministre, vous avez proposé, dans votre discours au Congrès hier, la possibilité de modifier la Constitution canadienne. Vous en avez déjà parlé à quelques reprises ces dernières semaines, mais, comme en ce moment au Québec, il y a un gouvernement qui est intéressé à toute autre chose ... (inaudible).

R: Cela dépendra un peu des premiers ministres des provinces. Ce que j'ai voulu indiquer et répéter hier, c'est que le Gouvernement fédéral, quant à lui, est prêt à reprendre les discussions constitutionnelles que nous avions entreprises en 1968, jusqu'en 1971. Evidemment, si les provinces ne sont pas intéressées, nous ne les forcerons pas à engager le débat constitutionnel, mais je crois que les Canadiens en général s'y intéressent d'une façon plus vigoureuse et il est possible que nous acceptions de discuter la question avec des groupes de citoyens, mais notre préférence, bien sûr, ce serait d'avoir des conférences fédérales-provinciales sur le sujet constitutionnel. Encore une fois, il ne s'agit pas de forcer la note ou de brusquer les choses, seulement si les provinces le désirent.

Q: Mr. Prime Minister, have you discussed with the President or will you discuss with the President the Arctic Gas pipeline proposal and what is your position on that?

A: Well, we discussed not particularly that proposal, the Arctic Gas one, but we looked at the various alternatives including the Alcan route. There was a great interest on the part of the President of our attitude with regard to pipelines. I was as forthright as I could be within the strictures of the present situation. Canadians generally and certainly our government want to be as helpful to the Americans as we can in this particular aspect. That is what our visit is all about. That is what friendship is all about

and, after all, there is American gas to American consumers and we don't want to be dogs in the manger about it.

I reminded the President, as he knew I am sure, that we have pipelines through the United States servicing Canadian territory and other things being equal we want to be as forthcoming with the Americans. The President knows that there are some problems which have to be solved which are also familiar to Americans: environmental problems and native rights problems and rather complicated economic consequences of a vast injection of capital into Canada, investment capital into Canada and these are problems which are being studied now by the National Energy Board and by a Royal Commission headed by Judge Berger. Until these reports are received, the government will not be even legally in a position to accept or reject any proposition. Our National Energy Board has to make a recommendation on proposals before that Board before the government can act and we are expecting these reports in the first half of this year.

Q: Mr. Prime Minister, we were told that after reading your speech, President Carter asked for a briefing on the Quebec situation and that you then discussed privately for about ten minutes. Can you tell us the kind of response you got from him? Did he express a concern on the possible secession of Quebec?

A: He expressed interest in my views on the situation in Canada in general and Quebec in particular, but was not particularly volunteering any American point of view beyond the very general statements that he has made publicly. Naturally the Americans are looking to the north as a country with stability and duration and I think they are properly sensitive about interfering into our internal political problems and that seems to characterize the attitude of the President.

It was quite clear that if asked a preference the Administration would prefer to see a strong united Canada but beyond that, and I think quite properly, they are not expressing a point of view; just expressing interest.

A: Well, it is kind of technical but a simple way of saying it is that an interim agreement was reached because of the imminence of the 200-mile limit adopted by the Americans. I think the deadline was the 1st of March. We brought it in on the 1st of January. We had very few days to make sure that there wouldn't be a cod war between us and very positive results were obtained in every area except one and the positive results were that we would forbear at least until the end of this year and regardless of our new proclamation of a 200-mile limit we would continue more or less with the status quo anti while the two administrations worked toward a more accurate definition of the line on the east coast or some way of ascertaining what that line should be and the same thing on the west coast. There was one area of difficulty which had not been solved and that was the area of salmon fishing on the west coast and yesterday after a great deal of work on the part of our ambassadors and officials and ministers (and I think with some pressure from the President and myself) accommodation was reached also on the salmon. It is essentially an interim agreement to forbear and not to insist on imposing each of our theses on the other before the 1st of March. In other words, not to start throwing the other person out of one's waters just because the problem hasn't been solved.

Q: Mr. Prime Minister, regarding a possible pipeline route to Canada, you mentioned the issues of the environment and the native claims. Do you anticipate that those can be settled so that your government could make a final decision within, say one year, or is it likely to be longer than one year before Canada gives a definite final answer?

A: We realize we have to give you a final answer whatever it be before the end of the year. The President's deadlines (I believe the ultimate ones) will expire at the end of the geographical year and likely they will expire before so we realize that giving you no answer is an answer in a sense and if there is no pipeline to Canada I suppose there is the El Paso route which is the one that the Americans would go for. It is a more costly one for you and it has certain [illegible]

Canada too and therefore we are very aware of the time strictures and we have to give you an answer at whatever deadline the President feels he has. Likely one in September. There will be an answer and I hope it will be in line with the friendship of our country and one which is to the advantage of both countries.

Q: Mr. Prime Minister, a moment ago in answer to Doug Small's question about the choice, you mentioned that Canadians will have to make a mature choice in respect to the accommodation of the Quebec problem. Presumably on the understanding that you cannot convince Quebec to stay in unless the rest of Canada wants Quebec to stay in, how and when will Canadians be asked to and be able to make that mature choice? How will that be done?

A: I think essentially it will be shown in the understanding expressed by English Canada of the reality of the French fact.

I don't think any one event, for instance, or referendum will be needed to show that. I think a different attitude and different understanding towards either our policies as a Liberal government towards one Canada or policies of the Opposition which would be acceptable, too, would be the test of the public. I don't think we can ignore the question. I don't think we can continue to say, "Well, it is not going to happen and we can conduct ourselves as though separation wasn't even a remote possibility." I am really answering you that there is not going to be one event, to my knowledge, which will sort of crystallize the acceptance by English Canada of the French fact. If I had to signal any one event, it would be an event like the Air Traffic Controllers' or the Air Pilots' strike. If too many negative evidences of this kind are given to Quebecers that the French language is not acceptable to the rest of Canada even in Quebec air space, then I think we have begun seriously to lose the battle.

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ANALYSIS OF TRANSPORTATION PROPOSALS FOR NORTH SLOPE NATURAL GAS

Report to State of Alaska
Office of the Attorney General

(Draft)
March 31, 1975

Arlon R. Tussing
Institute of Social, Economic
and Government Research

University of Alaska

AGO 913321

TABLE OF CONTENTS

SUMMARY AND POLICY CONCLUSIONS i

TABLE OF CONTENTS iv

In Brief 1
Project Costs 2
The Volume of Demand and the "Value" of Gas to Consumers 4
OPEC Oil Prices 13
Other Gas Supplement Projects 17

Seasonality of Demand 19
Pipeline Imports of Natural Gas into United States Markets 22
The Regulatory Regime 23
Assumptions of the Applicants 29
Regulation and Wellhead Prices 31

Prognosis 34
Comparison of Routes (National Interest) 35
Variations on the Applicants' Proposals 37
Fuels for Fairbanks 38
Comparison of Routes (Alaska Interest) 39

APPENDIX

Table I: Volume of "Latent" Demand for Natural Gas, 1980 . . . 44
Table II: Value of Natural Gas in 1980 45
Table III: Value of Natural Gas in 1985 46
Table IV: Natural Gas Demand in 1980 (prices at burner tip) 47
Table V: Natural Gas Demand in 1980 (prices at entry into distribution system) 48
Table VI: Natural Gas Demand in 1985 (prices at burner tip) 49
Table VII: Natural Gas Demand in 1985 (prices at entry into distribution system) 50

Excerpt from U.S. Senate, Committee on Interior and Insular Affairs, Toward a Rational Policy for Oil and Gas Imports, "Imports of Natural Gas and Synthetic Natural Gas Feedstocks." 51

Long Term LNG Projects (As of June 15, 1974) 54
Summary of SNG from Petroleum Plants (As of August 15, 1974) 56
Comparison of Peakshaving Alternatives 60
Announced Commercial and Demonstration Coal Gasification Plants (As of January 15, 1975) 61

AGO 913322

SUMMARY AND POLICY CONCLUSIONS

1. There is serious doubt about the economic viability of either the El Paso or Arctic Gas proposal. Either is likely to result in transportation costs to the Lower 48 greater than the price at which the quantity of gas to be produced on the North Slope could be sold. One implication is a very low or possibily negative wellhead price.

2. Deregulation of the field prices of natural gas in interstate sales and rationalization of transmission company and gas distributor rate structures would further jeopardize the economic viability of either project by reducing the artificial "shortage" of natural gas now created by regulation.

3. Notwithstanding the foregoing, a policy of promoting U.S. energy self-sufficiency will probably lead the FPC (or Congress) to certify one prospect or the other somewhere down the line; however, the sponsors will later have to go to the Federal government (and perhaps to the State) for aid.

4. In view of the marginal economics of both systems, the lowest cost variant of one or the other is likely to be chosen. Additional costs (resulting, for example,

for a less than optimum routing) will have a powerful leverage effect on the wellhead price.

5. The Arctic Gas proposal appears to be the most economically advantageous from a national standpoint (or least disadvantageous, if the costs of either exceed its benefits). The overwhelming likelihood is for ultimate approval of this system, on political as well as economic grounds.

6. If the Arctic Gas proposal is approved, there seems to be no variation that would improve fuel costs or availability in Fairbanks (or elsewhere in the more densely populated areas of Alaska.) In this instance, the state's interest is solely in maximizing the netback value on which its royalty and production tax income is calculated. This interest is advanced best by minimizing construction and operating costs, and avoiding expensive add-ons to the system.

7. Gas from a Trans-Alaska pipeline would have costs at the burner tip in Fairbanks comparable to that of distillate fuel oil from the proposed refinery. Its availability would jeopardize that refinery's viability.

AGO 913324

8. A Trans-Alaska gas pipeline, associated with a project to carry LNG to the West Coast, would provide the optimum transport system from the point of view of the state's revenues from Prudhoe Bay gas, if:

(a) the pipeline's owners (or the federal government) would take the financial risks for the system as a whole;

(b) the Trans-Alaska pipeline component were operated as a common carrier on a cost-of-service basis (as contemplated by El Paso); and

(c) industrial customers could be found for the state's royalty gas.

9. The state's choice between the two proposals also depends, of course, upon its evaluation of the construction impact of the pipeline project and of the socio-economic and environmental impact of gas-using industry, as well as upon the environmental implications of the transportation projects themselves.

10. In endorsing the concept of a Trans-Alaska gas pipeline, the state does not have to endorse the application of El Paso-Alaska, but might consider urging the FPC to direct that a broader, financially more competent entity (essentially the Arctic Gas group plus El Paso) construct the system.

11. In order to be able to take maximum advantage of opportunities for intrastate industrial gas sales, the state should amend its tax law to permit taking production taxes in kind, and should not prematurely sell or option its royalty gas.

Xerox Copy

AMOS R. TUBBS
5352 29TH STREET, NORTHWEST
WASHINGTON, D. C. 20015

May 26, 1976

The Honorable Chancy Croft
President, Alaska State Senate
Juneau, Alaska 99801

Dear Chancy:

The following is a personal account, in response to your request, of my own views on the merits of competing proposals for a transportation system to carry natural gas from Alaska's North Slope to markets in the Lower 48 states.

Over the last year I have devoted considerable attention to proposals for the transportation of natural gas from the North American Arctic to the population and industrial centers of the United States and Canada. During that time I arrived at evaluations of several major issues which were in some respects contradictory to the assumptions on which the major private interests and governmental authorities (U.S., Canadian and Alaskan) were proceeding.

I have of course taken for granted your acquaintance with:

(1) The two principal transportation systems proposed to the Federal Power Commission before May 1975: El Paso-Alaska's "trans-Alaska" pipeline and LNG tanker system, and Arctic Gas' overland pipeline system across Canada which would also carry natural gas from the Mackenzie Delta to Canadian markets;

(2) Foothills Pipeline's proposal for an all-Canadian, "Maple Leaf" pipeline to carry Mackenzie Delta gas;

(3) The principal advantages and disadvantages argued for both proposals;

AGO 913326

(4) The rationale for the State of Alaska's endorsement of the El Paso system; and

(5) My own concern with the issue of transportation systems as a consultant to the State of Alaska and to the U.S. Senate Committee on Interior and Insular Affairs, and as a public member of Alaska's Royalty Oil and Gas Development Advisory Board.

I have, as you probably know, no financial stake in any of the proposals, nor have I had any business relationship with any of the systems' sponsors or participants.

From the time they were initially proposed, I have had serious questions about the viability of the transportation systems proposed by both Arctic Gas and El Paso for taking Alaska North Slope natural gas to Lower 48 markets. An investigation I conducted on the economics of the two proposals for a State of Alaska task force in early 1975 raised the possibility that the cost of delivering the gas might actually exceed its value to consumers. [Excerpts from my report are appended to this letter.] Subsequently I have become quite convinced that both projects as proposed by their sponsors are so risky that they could not be privately financed, even if their political and regulatory problems could be overcome -- itself a questionable issue.

Risk Factors

Both projects face the following risks:

(1) Gas supplies: production from the Alaska North Slope (and in the case of the Arctic Gas proposal) from the Mackenzie Delta may be substantially less than the design capactiy of either transportation system, meaning that each unit actually carried would have to bear a larger portion of the system's fixed costs than projected by its sponsors.

(2) Delays and Capital cost overruns: Actual construction costs may exceed estimated costs by substantially more than the effect of general inflation. The Arctic Gas project would use a chilled gas pipeline concept untested in North America, while its route traverses hundreds of miles of difficult Arctic terrain where there has been no previous construction of either pipelines or roads. El Paso proposes a system of unprecedented pipeline pressures and a huge scale-up

of existing LNG technology. New technology, unfamiliar environments and a large scale relative to previous projects are exactly the ingredients for the most spectacular cost overruns. For these reasons I would not be surprised to see the total cost of either project exceed $20 billion, including interest on funds used during construction. [See Appendix 2.]

(3) Market: Both El Paso and Arctic Gas insist that the natural gas shortage in the United States is an absolute one, and that Lower 48 markets will accept North Slope natural gas at any price. Not everyone agrees; the Federal Energy Administration, for example, estimates that no market for Prudhoe Bay gas would exist in 1985 at a "city gate" price exceeding $2.40 per million BTU (in 1975 dollars). The Interior Department's study reaches a similar conclusion. This price could easily be exceeded even without implausibly large cost overruns or shortfalls in gas supplies to the system.

(4) Political, regulatory and other institutional issues: Each project would face serious political and legal obstacles, even after it received a certificate from the Federal Power Commission. Lack of coordination in U.S. and Canadian approvals, for example, could block or delay construction of the Arctic gas system, while there is some chance that resistance in California to port and terminal facilities would jeopardize completion of the El Paso system. The Arctic Gas system is, significantly, opposed by the governments and the preponderance of public opinion in both Alaska and Alberta, and the El Paso system is opposed by the state of California. The major environmentalist organizations are hostile to both projects. Neither they nor various local interest groups are likely to abandon every attempt to obstruct or delay construction simply because one system had been sanctioned by the Federal Power Commission.

Financing Problems

The financial consequences of the risks I have listed are magnified by the fact that neither project can be built in smaller self-sustaining stages. Either would be a large integrated system which could not carry any gas or produce any cash flow until it was completed. All the capital invested ($10 to $20 billion or more) would therefore be exposed to these risk factors for at least the entire planning and construction period.

Private lenders simply will not accept risks of this sort, and neither projects' sponsors are financially large enough to carry them, even if they were willing to do so. They do not in fact seem to be willing, as they both propose tariff conditions which would protect their own profits as well as their debt service obligations against "all events." Only the federal government and/or (perhaps) potential gas consumers are in a position to carry financial risks of the size associated with either of the systems.

Accordingly, El Paso proposes to use federal loan guarantees (under an existing program) for its LNG tankers, and spokesmen for Arctic Gas have suggested that government indemnify the sponsors against cost overruns exceeding 40 percent (nearly certain, in my judgment). But, more importantly, each applicant proposes to rely on "full cost of service all-events tariffs" to cover their debt service obligations and to assure a return on their equity. These tariffs provide, in brief, that consumers be required to pay the debt service and operating costs of the transportation system (plus a profit to the owners) no matter how great these costs are and whether or not the customers receive any gas. Arctic Gas' tariff would begin to run as soon as gas was first delivered; El Paso's would begin 60 months after approval of its project, even if it were never completed.

The proposition that consumers should bear or share in the risks associated with a project which benefits them is not in itself unreasonable, provided that the economic expectations of the project are clearly favorable and the risks of a reasonable magnitude. But with these projects there are good reasons for doubt on both scores. Moreover, even if the Federal Power Commission were to approve all events tariffs, local gas distributors would not sign contracts containing such tariffs unless they were assured in advance by their state regulatory commissions (as well as by their own market analyses) that they would be able to pass these charges through to their own customers. Responses by the state commissions to Federal Power Commission inquiries suggest that there is almost no chance that they would give such advance approval.

These considerations lead inexorably to the conclusion that neither system can be built without either substantial federal financial backing, Federal Power Commission authority to preempt the jurisdiction of state utility commissions over the tariffs of local distributors, or both. No plausible proposals

AG-09133281

of either sort have yet been made, either by the applicants or by any of the responsible federal agencies. Moreover, either project would be of questionable economic viability -- even if the question of who will bear the risk were resolved. In addition, there is still a significant possibility that either project could effectively be blocked or delayed indefinitely by legal or political obstructionism by its opponents.

In summary, there seem to be two problems that work together to make questionable the completion of either project as proposed: each of them requires too large an initial capital, and that capital would be exposed to too many large risks. Once these are recognized as the critical problems to be overcome, it is obviously worthwhile to investigate whether there might not be some alternative system (or modification of one of the applicants' systems) which could begin with a smaller investment and perhaps be expanded in stages after gas and income begin to flow, a system with a smaller potential for cost overruns, and one which would have fewer opponents on environmental, developmental or economic nationalist grounds.

Transportation of North Slope Gas as Methanol

As of the beginning of 1976, two proposals, neither of them in the form of applications to the Federal Power Commission, seemed to have some such potential. Firstly, a group of firms headed by the Westinghouse Oceanic Division have been advocating converting North Slope natural gas within Alaska into fuel grade methanol, which could be blended with motor gasoline, burned in combustion turbines, or used as chemical feedstock. Westinghouse's main interest in this system was in developing submarine tankers to haul the product, and its promotions seemed directed mainly at getting Maritime Administration funds for construction of a prototype tanker. Methanol could, however, also be transported in batches through the Trans-Alaska oil pipeline with conventional technology, and carried to ports elsewhere in the United States by conventional products tankers.

A methanol system would need no fixed transportation system of its own (other than additional storage tanks at both ends of the pipeline) until the oil pipeline reached full capacity, a date that seems to be steadily receding because of construction problems and the lack of transport facilities to move Alaska crude oil beyond the West Coast . Unlike the El Paso

and Arctic gas sytems, which would require all the gas from the main Prudhoe Bay reservoir (at least 2 billion cubic feet per day, and perhaps more) to be even arguably feasible, the least-cost methanol conversion facility would require only 25-150 million cubic feet per day. One to three pilot conversion trains could be installed at an initial risk of perhaps a few hundred million dollars; there would thereafter be plenty of time to be sure of the amount of gas available, conversion and transport technologies, markets and the economics of the system before investment gradually (if ever) reached the many billions of dollars proposed for either of the gas pipeline systems.

Wentworth Brothers has proposed a complex variation on the methanol conversion concept that would use natural gas (including the natural gas liquids and carbon dioxide produced together with the methane, but which would otherwise have to be removed from the gas stream) together with coal to produce fuel grade methanol, which would then serve as the vehicle for a coal slurry. Significantly, however, Wentworth (like Westinghouse) has advanced its concept as a rationale for getting government research and development money, not as an immediately commercial practicality. The methanol concept need not be pursued further here, because if it indeed makes sense, there seems no reason why private enterprise cannot take the initiative and establish a pilot facility, without a guarantee of all the Prudhoe Bay gas, without a Federal Power Commission certificate of public necessity and convenience, and without federal or state financial assistance. [See my testimony for the Alaska Senate State Affairs Committee, which is appended to this letter.]

The Alaska Highway Route

The second system which seemed to have a possibility of meeting some of the criteria mentioned above would be an overland natural gas pipeline along the general route of the Trans-Alaska oil pipeline to Fairbanks, and along the general route of the Alaska Highway into Northern British Columbia or Alberta. Such a route has been suggested as an alternative for the Arctic Gas system by various parties, including the FPC environmental staff. Simply as a variant to the Arctic Gas proposal, adoption of the Alaska highway route would result in higher costs, because it would require an additional separate pipeline leg to serve the Mackenzie Delta gas reserves, its length depending upon whether it came

(1) Southwesterly into the Yukon along the Dempster Highway, (2) South into Alberta as proposed by the Foothills group, or (3) Westward across the Arctic Slope to Prudhoe Bay.

Use of the Alaska highway routing would at first seem to have only two advantages over the system proposed by Arctic Gas: (1) a reduction of the likelihood of major cost overruns because the new system would follow existing transportation corridors, where construction conditions are less extreme and better known, and (2) less intense environmentalist oppostion because the alternate route has far fewer river crossings and would not invade the Arctic Wildlife Range.

Coupled with two other changes relative to the Arctic Gas proposal, however, an Alaska highway system would appear to be considerably cheaper in initial capital outlay, and still competitive or even superior in terms of expected transportation tariffs for Prudhoe Bay gas. The first of these two variations is to use, as much as is practical, conventional technology and existing transportation facilities in the United States and Canada. The second is to postpone construction of a transportation system to serve the Mackenzie reserves.

Maximum Use of Existing Facilities

Arctic Gas originally proposed to build an entirely new trunkline system extending from Prudhoe Bay through the Mackenzie Delta into California on the West and Pennsylvania on the East. The Interior Department, among others, criticized this proposal for unnecessarily duplicating hundreds of miles of existing pipelines. As a result, the applicants have made some reductions in the scope of their proposal in the Lower 48, but there still appear to be significant opportunities for reducing first costs by using existing facilities, both in the United States and Canada.

The system with the lowest initial capital costs seems to be one which would tie into (1) the Westcoast Transmission system in Northern British Columbia and thence the Northwest Pipeline system for transportation of part of the gas to Western United States markets, and (2) the Alberta Gas Trunkline (AGTL) system and the Trans-Canada pipeline to the Great Lakes pipeline and other connections in the mid-western and eastern United States. These facilities would of course require some expansion and elimination of bottle-necks.

The Mackenzie Connection

The second departure from the general strategy of Arctic Gas concerns postponing a pipeline connection to the Mackenzie Delta and Canadian Beaufort Sea areas. If the reserves in this region were large enough to support half the total design capacity of the Arctic Gas pipeline, and if there were a Canadian or authorized export market for this much additional gas, the least expensive way of moving the Canadian gas would probably be to route the pipeline from Prudhoe Bay through the Mackenzie Delta and to provide sufficient capacity at the outset to carry the gas from both sources, in other words to adopt Arctic Gas' strategy.

But presently proved Mackenzie reserves fall far short of the Arctic Gas system's Canadian design capacity (2.24 billion cubic feet per day); the Interior Department estimates that proved and probable reserves in that area will support production of at most .9 to 1.1 billion cubic feet per day. At the same time, anticipated Canadian demand, plus existing contractual commitments to United States consumers, can be met for at least the next ten years from existing and anticipated reserves in the Western Provinces. On the other hand, even if there were enough Mackenzie gas to fill the pipeline, it would likely not be enough to induce the Canadian authorities to increase exports to the United States beyond those existing contractual commitments. All these propositions are conjectures, but the fact is that there is a good likelihood that a Mackenzie gas pipeline -- or at least a substantial part of its design capacity -- would be economically superfluous for many years after Prudhoe Bay gas began to flow. If this is the case, as seems probable, the Arctic Gas strategy is actually less economical than building a pipeline to carry exclusively Prudhoe Bay gas, by the least problematical route, and then to build a separate link later to connect the Mackenzie, when and if reserves and markets clearly indicate that it is justified.

At the beginning of this year these notions were only abstract possibilities because of the lack of any serious corporate interest in them. As one of the original participants in the Arctic Gas study groups, however, AGTL had advocated using existing pipeline facilities, including its own, to carry Alaska gas. The decision of Arctic gas to build a separate, competing trunk line was one of the reasons AGTL left the study group and (with Westcoast)

established the Foothills Pipeline Company to promote an all-Canadian "Maple Leaf" project for the Mackenzie Valley.

An inquiry in connection with the U.S. Senate hearings to Robert Blair, President of AGTL, about the probable costs of using existing Canadian transportation facilities was apparently one factor encouraging the Foothills group to appear at those hearings and at hearings of a committee of the Alaska legislature, where they set out their own rationale for a pipeline along the Alaska Highway route, which would maximize the use of existing Canadian pipeline facilities.

About the same time, some of the major environmental organizations began to explore the potentials of the Alaska Highway route, which they (along with the Federal Power Commission's environmental staff) regarded as far superior to either Arctic Gas' or El Paso's proposals, and a representative of one of the Midwestern governors started making similar inquiries. Similar but isolated interest began to appear on the part of business groups in Fairbanks and Yukon Territory, Provincial officials in Eastern Canada and gas utilities on both coasts. This alternative seemed to have a great deal of latent support. It lacked corporate sponsorship, however, and as late as March of this year it was not clear (1) that there was any way a third alternative could be seriously considered by the Federal Power Commission and Canada's National Energy Board, or (2) that Canadian authorities would consider approving any system principally designed to serve United States needs which did not result in an early connection of the Mackenzie reserves to Canadian Markets.

Procedural Feasibility of the Alaska Highway Alternative

Each of these doubts can be resolved, at least in part. The Foothills group (AGTL and Westcoast) is prepared to undertake construction and operation of the Canadian portion of the system. Northwest Pipeline, brought into the project by the Canadian companies, has announced its intention to apply to the Federal Power Commission by

July 9 for a certificate to build and operate the Alaska portion of the system, and is negotiating with other pipeline companies who might participate.*

It appears that both the Federal Power Commission and the National Energy Board can (and there are grounds for believing they must), consider a new application competitively. It is not clear whether addition of a third applicant in either case would necessarily mean a great delay in arriving at a decision. FPC Chairman Dunham estimates only a one to two month delay if Northwest files an application and all parties "cooperate."

Since a gas pipeline along the Alaska Highway route would traverse an established utility corridor and would not carry natural gas of Canadian origin, application to build such a pipeline apparently would not invoke Canada'a elaborate Guidelines for Northern Pipelines, but could be treated as an expansion of Westcoast's existing system. The route has, moreover, already been thoroughly considered by the Berger Commission, which is investigating the implications of northern pipelines for the environment, Native welfare, and development of the Territories.

In the United States, procedural legislation will probably be approved which would much reduce the likelihood of administrative, regulatory or judicial delays arising from either two or three competing applications. Even if

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*Perhaps it is not too heretical to suggest that Northwest's natural partners in this venture seem to be El Paso and Tenneco. Northwest's application significantly weakens both the rationale and the potential base for El Paso's own LNG proposal, yet the Northwest system is the logical route for delivering gas overland into El Paso's market area. Much of El Paso's engineering effort North of Fairbanks, moreover, could be transferred to the system proposed by Northwest.

Tennessee Gas Pipeline Company is not a sponsor of either the El Paso or the Arctic Gas application, but has been negotiating for Alaska's royalty gas on the basis of support for the El Paso proposal. Tennessee, however, now exports natural gas into the Trans-Canada system, and this connection may be a logical basis for serving its own market area with North Slope gas by displacement. Tenneco, moreover, is a participant in the Polar Pipeline project to deliver gas from the Canadian Arctic islands, a project which might benefit substantially from a delay in development of Mackenzie Delta reserves.

Northwest Pipeline had not decided to file an application, the legislation would be likely to require the Federal Power Commission and the President to consider all reasonable alternatives, which would clearly include the Alaska Highway route and maximum utilization of existing facilities.

What's in it for Canada?

The probable reception by Canadian authorities has been in my opinion the most difficult issue to judge. A major appeal of the Arctic Gas proposal is purportedly its early (if not necessarily more economical) attachment of the Mackenzie reserves. Without this feature, it may be asked, what is the advantage to Canada of accommodating the United States in moving Alaska gas?

The attachment of the Mackenzie reserves is, on the other hand, also a disadvantage of the Arctic Gas system, from one Canadian standpoint. There is no particular reason why Canada should not accommodate the United States with a transit line across Canadian territory; after all, a substantial portion of Canada's oil and gas supplies transits the United States. There would seem to be little objection in Canada on nationalistic grounds to American gas moving in either an American or a Canadian-owned pipeline across Canada. The Mackenzie project, however, raises the issue of an American-dominated consortium developing an important frontier area of Canada. The fact that an early Mackenzie connection is being justified in the United States by the (doubtful) proposition that it would lead to greater Canadian exports to the United States aggravates its potential difficulties in Canada. Both the timetable and logistics would be dictated by the convenience of the American interests. The Native claims and environmental complications of this route are also well known.

More importantly, however, a decision today in favor of immediate development of the Mackenzie Delta -- Beaufort Sea region can be seen to prejudice whether that region or the Arctic Islands (where recent exploration seems to have been more successful) shall be developed first.

Canada does not have an urgent internal need for gas production from either area, and development of either one could strain the capacity of domestic capital markets. Simultaneous

construction of the two pipelines under Canadian majority ownership is almost out of the question. It is not obvious which of these considerations is likely to be dominant in the eventual decision by the National Energy Board and the Cabinet, and it is possible to get contradictory opinions from key people in the decision process in Canada. The issue is clearly a blind-men-and-elephant situation; there is no person who can make an authoritative statement at this time.

On balance, however, my best informants in Canada indicate that there is a high-level commitment to a cooperative project with the United States concerning Alaska gas; absent a credible third application, this means that the Arctic Gas proposal will be approved. The Maple Leaf project is not a serious contender at this time.

A decision in favor of Arctic Gas would, however, be a reluctant one and would be opposed from many quarters within the Canadian federal government, by several provinces and by a large body of Canadian opinion. These objections rest on a broad range of environmental, economic, nationalistic and Native claims considerations, and most decisively perhaps on the fact that approval of Arctic Gas would effectively preclude or postpone for many years the Polar alternative. For these reasons, my own tentative judgment is that the Canadian government will -- once it has had an opportunity to consider the alternative -- welcome the opportunity to avoid an early decision one way or another regarding the Mackenzie.

The State of Alaska and the El Paso Proposal

Some of the concerns that led the Alaska state government and the bulk of the state's business and political communities to support the El Paso proposal were set out in detail in my 1975 report to the State Task Force, which provided part of the rationale for the Governor's endorsement of El Paso's application before the Federal Power Commission. The main theme of that report was that the cost of moving North Slope gas to the Lower 48 by either proposed system would be so great that the wellhead value of the gas would be very low -- if it was indeed high enough to justify investment in developing the field. As a result, the State's royalty and severance tax revenues from sale

of the gas in interstate commerce would be negligible compared with the contributions a Trans-Alaska pipeline might make to the Sate's economy through, for example, (1) the payrolls, profits and tax collections from pipeline and terminal construction, (2) property and income taxes on the pipeline and terminal when it was operating (3) the availability of natural gas in the Fairbanks area for household and commercial use and at tidewater in Southcentral Alaska, where it might be used as an industrial fuel or feedstock.

The system proposed by Arctic Gas would probably have meant lower average transportation costs to the Lower 48, and therefore, a higher "netback" value at the wellhead. But the effect of this difference on state revenues and economic activity would have been negligible compared to the economic disadvantage of removing the gas from Alaska at its most remote corner, with a minimum of construction activity and resulting capital plant within the state, and the virtual inability of the populated areas of the state to obtain any Prudhoe Bay gas for domestic or industrial use.

The El Paso proposal was remarkable in that -- at least temporarily -- it won the support of both the pro-development interests in Alaska and the environmentalists. For at least two years it has seemed that there was almost complete unanimity in Alaska in support of El Paso's application.

Despite my own role in helping to create this consensus (through the rationale for a Trans-Alaska pipeline, developed in my report to the Task Force), I have not been able to endorse the uncritical and increasingly irrational commitment of State spokesmen to the El Paso application. Firstly, the State has almost certainly been betting on a dead horse. The technical, economic and logistical inferiority of the LNG system from a national standpoint is so overwhelming that Alaska's views or political influence are not likely to carry much weight in the ultimate outcome. Not only is there unanimity in the Midwest and East in favor of a system that would deliver the gas directly into those regions of the United States which face the greatest shortages, but California, the state that would directly receive the LNG, pefers an overland pipeline alternative for economic reasons which seem to me wholly persuasive (and increasingly, it appears, for safety and environmental reasons also).

In view of the growing consternation about the West Coast crude oil "surplus," resulting from the choice of a Trans-Alaska route for the oil pipeline, it seems quite improbable that Congress would compound the imbalance by agreeing to a Trans-Alaska pipeline and LNG tanker system for North Slope natural gas so long as an all-pipeline route is a serious possibility. The imbalance in domestic energy sufficiency between the West Coast and the rest of the United States would of course be further aggravated by any major new oil or gas discoveries in Lower Cook Inlet or the Gulf of Alaska.

To offset the weakness of their economic and logistical arguments from a national standpoint, and their almost non-existent national political base, the supporters of El Paso in Alaska built their case largely on exaggerated and often unreasonable claims about Canadian interests, institutions and intentions. In some cases it seemed as if this rhetoric was deliberately designed to worsen relations between the United Sates and Canada. These claims were advanced, ironically, in support of a company which now imports LNG from Algeria and is presently promoting a project to bring LNG from the Soviet Union.

The case, even from an Alaskan standpoint, for the Trans Alaskan gas pipeline was systematically and increasingly exaggerated, not only by the Anchorage Times and OMAR but by state government spokesmen. Little consideration was given to the possibility that the natural gas available from new discoveries in Southcentral Alaska would exceed any anticipated domestic and industrial demand there, and that El Paso's terminal at Gravina Point was in any case hundreds of miles from the principal gas markets of the state and the logical sites for industrial development in the Cook Inlet-railbelt area. Little attention was given to the fact that the State could make its North Slope royalty gas effectively available in South Central Alaska, by exchange for Cook Inlet gas, even if the Arctic Gas system were built.

Little weight, evidently, was given in the State's strategy to the negative environmental impacts of the additional population growth and the prolonged overheating of Alaska's economy which would result from a second pipeline boom. It was particularly ironic -- and to me disappointing -- that a state Administration which came to office because of public reaction against the excesses of

the oil pipeline boom, and the boomer psychology, should so completely adopt on this issue the outlook of people who vehemently opposed Governor Hammond's election, and who would not support him whatever he did.

By its unconditional support of El Paso, the state gave that company no incentive to accommodate Alaska's interest by, for example, choosing a terminal in Cook Inlet rather than Prince William Sound, or by maximum use of the oil pipeline pad in order to minimize environmental disturbance from the second line. At the same time the State effectively told Arctic Gas -- which was much more likely to prevail ultimately -- that there was no accommodation it could make to the State's interest (like choice of an Alaska Highway route) that would soften the State's position of support for El Paso.

Alaska and the Northwest Pipeline Proposal

Northwest Pipeline, together with Westcoast Transmission and AGTL have this month formally proposed to build a system from Prudhoe Bay along the oil pipeline route to Fairbanks, then following the Alaska Highway to Fort Nelson, British Columbia and Zama Lake, Alberta where the gas would enter existing transmission facilities. These facilities would be expanded where necessary to accommodate the increased volumes. [A description by Northwest is appended to this letter.]

The pipeline concept proposed by Northwest would have several technical and financial advantages over the other two systems. By using a 42 inch pipeline, conventional technology, and a corridor where there has already been highway and/or pipeline construction, for the route segments which require entirely new construction, and by maximum employment of existing facilities, the initial capital cost outlay before any gas or cash could begin to flow might be held to little more than half that anticipated for the Arctic Gas system. The likelihood of large cost overruns, as well, would be much reduced by these features. The system could begin to operate with a flow of as little as a billion cubic feet per day (though I don't see how even this project would be economically viable unless its throughput ultimately reached at least 2 billion). And, in my judgment, the political and regulatory barriers to an Alaska Highway system would be far less formidable than for either of the other two systems.

There is good reason to believe that the announcement by Northwest makes the Alaskan commitment to El Paso obsolete, and that support within the State for that company's proposal may deteriorate rapidly. The Northwest project would avoid most of the environmental objections to the Arctic Gas system; it also makes gas available in the Fairbanks area and involves almost as much pipeline construction within Alaska as would the El Paso system. Because it does not involve an LNG terminal, however, the peak impact of the boom resulting from building an Alaska Highway system would be substantially smaller. This outcome can be seen as either better or worse for Alaska.

According to preliminary estimates from the University of Alaska's Man in the Arctic program, construction of the Arctic Gas system would add $19 million to the State's gross product and three thousand persons to the State's population in the peak year of construction. The El Paso system would increase gross product by $235 million and population by 24 thousand while the Alaska Highway system would increase Alaska gross product by $111 million and population by 15 thousand. These calculations do not take account of the fact that Haines and Skagway would undoubtedly be major ports of entry for materials and equipment destined for construction activities in Yukon Territory.

For these reasons, the Northwest proposal seems at the very worst to be a workable compromise that would be acceptable to almost every important Alaskan interest group. The newly proposed system may, however, be more attractive to Alaskans than as just a fallback position or a workable compromise. Northwest Pipeline's approach to the State contrasts sharply with the "take it or leave it" stance of both of the original applicants. Northwest has at least informally suggested that the State take an equity share in the pipeline system and take part in the planning and in its operation from the inside. The company also has approached or plans to approach Alaska-based corporations including the Arctic Slope Regional Corporation and Doyon, Ltd. for participation, and has suggested that a block of shares in the enterprise be offered to the general public in Alaska. The effect of these innovations would be to assure that the system within Alaska would be closely identified with local interests and be responsive to them.

Another initiative proposed by Northwest (to the Royalty Board) includes acquisition of gas reserves in the Cook Inlet area, which could be provided to the State for intrastate use in exchange for state royalty gas exported by Northewst to the Lower 48. Northwest spokesmen have also talked about advance planning for a possible "Phase II" pipeline spur from Fairbanks to the Cook Inlet area. This addition would be built to serve domestic and industrial customers there when and if existing newly discovered reserves in Southcentral Alaska proved inadequate to the area's requirements. None of these concepts is yet a firm commitment, much less a reality, but if the sponsors of the new system actually proceed along these lines they will quickly rally very significant support in the State.

Regional Interests Outside of Alaska

The Alaska Highway pipeline proposal offers significant advantages over the two other proposed systems to a wide variety of regional and sectoral interests outside of Alaska.

(1) For British Columbia, introduction of Prudhoe Bay gas will more fully utilize the existing facilities of Westcoast Transmission, and thereby reduce the cost of British Columbia gas delivered to consumers in the Province. Construction of a pipeline through the Yukon would provide a stimulus to the development of that Territory, and strengthen its links with market and financial centers in British Columbia. The proposal is now being discussed in the Province as a possible justification for extending the British Columbia Railway to Whitehorse and eventually to Fairbanks. For these reasons, the Provincial Government is considering joining in the pipeline project, perhaps as an equity participant.

(2) The system proposed by Northwest Pipeline is by far the most economical method of moving North Slope gas into the Pacific Northwest, and it is for that reason supported by all the gas distributors of the region. In contrast to the Arctic Gas proposal (which is a second-best gas supply alternative for the Northwestern states), construction of an Alaska Highway system would rely mainly on Seattle-Tacoma and other ports in the region as supply and transportation bases. The Alaska Highway route would

probably not make as large a contribution to Port of Seattle activity and revenues as would El Paso's LNG project. The latter is not in my judgment likely to prevail, however, and the Alaska Highway system offers maritime interests in the Northwest the greatest volume of business they are actually likely to obtain from any Alaska gas transportation system.

(3) For California the Alaska Highway system offers a comparatively economic and (because it utilizes conventional technology) reliable source of incremental gas supply. Unlike the El Paso project it would not raise novel safety issues nor would it displace California's present low price gas from the Permian Basin in favor of high price LNG imports from Alaska.

(4) For the United States Midwest and East the Alaska Highway project (like the Arctic Gas project) would provide an assured supply of natural gas directly into the market areas where the shortages are most acute. Because of its smaller risk of construction delays and cost overruns, however, the Alaska Highway system should on balance be preferable. By preserving Canada's option to develop the Arctic Islands and the Polar Pipeline earlier than the Mackenzie Delta and Beaufort Sea, the Alaska Highway proposal may offer a better possibilty of increasing producible and transportable Canadian reserves to such a quantity that the Canadian Government would be willing to consider new export commitments.

(5) The project would be supported by the crucially important Province of Alberta (which now opposes the Arctic Gas application) because it would contribute to the optimum use of Alberta's own gas transmission system, rather than establishing a competing trunkline through the Province. Unlike Arctic Gas, moreover, the new system would not in the immediate future compete with, and require the shutting in of, Alberta gas now dedicated to markets in Eastern Canada.

(6) For Canada as a whole the Alaska Highway proposal would postpone the necessity of deciding when, how and by whom the Mackenzie Delta-Beaufort Sea region was to be developed, and whether that region or the Arctic Islands should take first priority for development among Canadian frontier regions. By reducing the total amount of new

construction and shifting a substantial part of the construction out of Canada and into Alaska, the Alaska Highway system would reduce the stress on Canadian capital and labor markets and on the nation's foreign exchange position.

There cannot help but be some losers. First, of course, are those gas transmission companies whose projects would be turned down and the construction and service firms who hoped to build a bigger system or a different system from the one which is finally approved. There are Exxon, whose affiliate Imperial Oil is part of the Arctic Gas group, and other producers with interests in the Mackenzie, who would be deprived of an early hookup to their Arctic reserves, however superfluous that hookup may be at the present time from the standpoint of Canada's energy economy. Finally there are those who would expect to build and operate the LNG tankers if the El Paso project prevailed, together with those (in the Port of Seattle, for example) who hope for a larger demand for their transportation and other services than an Alaska highway project can generate.

On balance, however, if we take into account the lower front-end cost, the smaller vulnerability to cost overruns and the widely agreed-upon environmental advantages of the Alaska Highway Route, the system proposed by Northwest seems to be the best practical alternative for almost every region in both Canada and the United States. Together with its broad acceptability to Alaskan's these considerations make the Northwest proposal a possible winner. On its merits it now seems to be distinctly superior to both of the other proposals from a national viewpoint, and at least as good as El Paso's proposal from an Alaskan perspective.

For this reason it was a relief that the Administration was not able to complete arrangement during this session of the legislature to sell Alaska's North Slope royalty gas to pipeline companies who promise in return to give

political support for the El Paso project. It is fortunate that the Royalty Board did not have to vote on any such sale and that the legislature did not have to face the issue in its last days. The choices for Alaska have changed radically -- and so have their political implications. I believe that the State's position will have to move soon to reflect these changes.

Very truly yours,

Arlon R. Tussing

cc: Governor Jay Hammond
Speaker Mike Bradner

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AN INKLING OF THE LONG JOURNEY

Arlon R. Tussing

There are, I believe, serious questions about the viability of the transportation systems proposed by both the Arctic Gas consortium and the El Paso Company for taking Alaska natural gas to U.S. markets. An investigation I conducted in 1975 on the economics of the two proposals for the State of Alaska raised the possibility that the cost of delivering the gas might actually exceed its value to consumers. At best, it appears that both projects, as proposed by their sponsors, are so risky that it may not be possible to finance them privately, even if their political and regulatory problems can be overcome — itself a questionable issue.

Both U.S. projects face the following risks:

Gas supplies: Production from the Alaska North Slope, and in the case of the Arctic Gas proposal, from the Mackenzie Delta, may be substantially less than the design capacity of either transportation system, meaning that each unit actually carried would have to bear a larger portion of the system's fixed costs than projected by its sponsors.

Delays and capital cost overruns: Actual construction costs may exceed estimated costs by substantially more than the effect of general inflation. The Arctic Gas project involves construction and operating technology untested in North America, while its route traverses hundreds of miles of difficult Arctic terrain where there has been no previous construction of either pipelines or roads. El Paso proposes a system of unprecedented pipeline pressures and a huge scale-up of existing liquified natural gas (LNG) technology. New technology, unfamiliar environments, and a large scale — relative to previous projects, are exactly the ingredients of the most spectacular cost overruns. Arctic Gas, for example, envisions a system from Alaska, across Canada, and into the Lower 48 States with an estimated cost in 1975 dollars of about 8½ billion. I would not be surprised to see the total cost of either project exceed $20 billion, including interest on funds used during construction.

Experience in North America with big, custom-engineered construction projects has been that they normally cost two or three times their original projections, even including an allowance for inflation. Cost estimators are like accountants in that they prefer a solid, empirically based figure to a realistic figure. They do attempt to project the increase in anticipated labour rates and in the prices of specific materials but they don't take into account the fact that huge projects, particularly if they involve new technology or a remote construction site, usually don't work the first time around, nor that both the purchaser and the licensing authorities change their minds several times in the course of planning and construction. The cost engineers don't appreciate that



"It's new, man—it's bound to have a few little bugs."

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AGO 913345

such projects are usually clumsily managed and subject to a number of re-organizations during their design and construction. They don't allow for the fact that materials and equipment are always late and often mis-specified or defective, or that enterprises of this sort suffer not normal, but abnormal labour cost increases. Because of their size and urgency, they are especially vulnerable to wage pressure, even more so to featherbedding, and often to racketeering.

The Alaska oil pipeline was initially estimated at something less than one billion dollars in 1969. It will finally come in at a cost between eight and ten billion. This particular project is an especially horrible example because it has suffered from each of the diseases I mentioned. But it isn't unique. Nuclear generating plants in the United States have been coming in at four to five times their projected cost per online kilowatt.

On this basis the cost of the Arctic Gas project *could* easily become twenty billion dollars. Let's assume it *will* cost twenty billion and also that the project is to be paid for in 20 years, that is, a five percent amortization. Let's also assume that the investors should receive a 15 percent pre-tax rate of return on total assets.* Under a conventional utility accounting scheme, the project would need a first year cash flow of four billion dollars just to cover its fixed costs. On a discounted cash flow basis the annual fixed charge would be about $3.2 billion.

With a throughput of something like a trillion cubic feet per year, we are talking of $3.20 to $4.00 per thousand cubic feet (mcf) for the capital plant just to get the gas into the existing distribution systems in the Lower 48 states and eastern Canada. If less gas can be delivered, as is likely, the cost would be even higher. This charge doesn't include the cost of developing the gas fields, any return to the producers, royalties, operating costs or costs of distribution.

Market: Both El Paso and Arctic Gas insist that the natural gas shortage in the United States is an absolute one, and that Lower 48 markets will accept North Slope natural gas at any price. Not everyone agrees; the Federal Energy Administration, for example, estimates that no market for Prudhoe Bay gas would exist in 1985 at a "city gate" price exceeding $2.40 per million BTU (in 1975 dollars). The Interior Department's study reaches a similar conclusion. This price could easily be exceeded even *without* implausibly large cost overruns or shortfalls in gas supplies to the system.

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One assumption of the studies mentioned here is that natural gas field prices are free of Federal Power Commission (FPC) controls, and that the Alaskan gas is priced incrementally. Even relaxing these assumptions, however, it is not at all clear how much customers would be willing to pay on a year-round basis for the quantity of gas that would be carried by this system. The gas delivered through such a pipeline would be a base load supply delivered into southern distribution systems which have typical load factors in their premium markets of less than 40 percent. The seasonal swing in residential and commercial demand is one reason why about half the natural gas produced in the United States is now being burned as a boiler fuel. Some of the gas from the Arctic would have to be "dumped" in the boiler fuel market in competition with heavy fuel oil at an equivalent of about $2.00 or coal at about $1.00. The cost of Arctic gas delivered into the distribution system for premium customers could therefore reach $5.00, $6.00 or even more, per million BTU. Six dollar gas is about equivalent to oil at $30.00 per barrel. It would seem on its surface that there ought to be some question about the economic wisdom of such a project.

Political, regulatory and other institutional issues: Each project would face serious political and legal obstacles, even *after* it received a certificate from the Federal Power Commission. Lack of co-ordination in U.S. and Canadian approvals, for example, could block or delay construction of the Arctic Gas system, while there is some chance that resistance in California to port and terminal facilities would jeopardize completion of the El Paso system. The Arctic Gas system is, significantly, opposed by the governments and the preponderance of public opinion in both Alaska and Alberta, and the El Paso system is widely opposed within the state of California, where the liquified natu gas would be landed. The major envir mental organizations are hostile to b projects. Neither they nor various lo interest groups are likely to aband every attempt to obstruct or delay c struction simply because the system been sanctioned by the Federal Po Commission.

Financing problems: The finan consequences of the risks I have lis are magnified by the fact that neit project can be built in smaller self-s taining stages. Either would be a la integrated system which could not c ry any gas or produce any cash flow til it was completed. Most of the cap invested ($10 to $20 billion or m would therefore be exposed to these factors for at least the entire plann and construction period.

Private leaders simply will not ac risks of this sort, and neither proje sponsors are financially large enoug carry them, even if they were willin do so. They do not in fact seem t willing, as they both propose tariff c ditions which would protect their profits as well as their debt service o gations against "all events". Only federal governments and/or, perh potential gas consumers are in a p tion to carry financial risks of the associated with either of the syste

Accordingly, El Paso proposes t federal loan guarantees (under an e ing programme) for its LNG tan and spokesmen for Arctic Gas have gested that governments inden the sponsors against cost overrun ceeding 40 percent (nearly certai my judgement). But, more importa each applicant proposes to rely on cost of service all-events tariffs" to c their debt service obligations and t sure a return on their equity. Thes riffs provide, in brief, that consu are required to pay the debt servic operating costs of the transport system (plus a profit to the owner matter how great these costs are whether or not the customers re any gas. Arctic Gas's tariff would t to run as soon as gas was first ered; El Paso's would begin 60 m after approval of its project, ever were never completed.

The proposition that consu should bear or share in the risks ciated with a project which be them is not in itself unreasonable vided that the economic expectatio the project are clearly favourable the risks are of a reasonable magn But with these projects there are reasons for doubt on both scores. over, even if the Federal Power mission were to approve "all-ev tariffs, local gas distributors wou

*Cost for example, on 75 percent debt at an average interest rate of 10 percent, a 15 percent after tax return on equity and a 50 percent average tax rate on profits.

AGO 913346

sign contracts containing such tariffs unless they were assured *in advance* by their state regulatory commissions (as well as by their own market analyses) that they would be able to pass these charges through to their own customers. Responses by the state commissions to Federal Power Commission enquiries suggest that there is almost no chance that they would give such advance approval.

These considerations lead inexorably to the conclusion that neither system can be built in the form proposed by their sponsors without either substantial federal financial backing, Federal Power Commission authority to preempt the jurisdiction of state utility commissions over the tariffs of local distributors, or both. No plausible proposals of either sort have yet been made, either by the applicants or by any of the responsible federal agencies.

Perhaps the most chilling prospect is that the Federal Power Commission (and the National Energy Board, in the case of the Arctic Gas project) would license one of the projects on the basis of conventionally estimated costs. The Commission would permit the transmission companies to begin collecting interest on construction debt before the project goes on line, and on that assurance the capital market would provide the sponsors with three or four billion dollars for engineering studies, site preparation and materials acquisition.

At the completion of this first phase, the sponsors will try to borrow the money for actual construction. At this time the cost estimators will have brought the figure up to $13 or $14 billion or more. After some point even all-events tariffs would not assure debt repayment, so that the money just won't be there to finish the system.

But a commitment would have been made. The transmission companies and their customers will come to Congress (and the Canadian government) with figures that show the present benefits will still exceed the present costs, because sunk costs don't matter (except to the investors). They'll talk about the pressing need of consumers who don't have any alternative in sight (because they have been counting on Arctic gas), they'll talk about energy self-sufficiency, and they'll talk employment and the balance of payments. If Congress and the Canadian Parliament have any inkling now about the long journey on which they are about to embark, they may hesitate.

In summary, there seem to be two problems that work together to make questionable the completion of either project as proposed; each of them requires too large an initial capital, and that capital would be exposed to too many large risks. Once these are recognized as the critical problems to be overcome, it is obviously worthwhile to investigate whether there might not be some alternative system (or modification of one of the applicant's systems) which could begin with a smaller investment and perhaps be expanded in stages after gas and income begin to flow, a system with a smaller potential for cost overruns, and one which would raise less opposition on environmental, development or economic nationalist grounds.

The proposition that consumers should bear or share in the risks associated with a project which benefits them is not in itself unreasonable, provided that the economic expectations of the project are clearly favourable and the risks are of a reasonable magnitude. But with these projects there are good reasons for doubt on both scores.

The Fairbanks-Alcan route: One system which seems to have the possibility of meeting some of the criteria mentioned here would be an overland natural gas pipeline along the general route of the Trans-Alaska oil pipeline to a point about 100 miles south of Fairbanks, and along the general route of the Alaska Highway into northern British Columbia or Alberta. Such a route has been suggested as an alternative for the Arctic Gas system by various parties, including the FPC environmental staff.* Simply as an optional way of completing the Arctic Gas proposal, however, the Alaska Highway route would result in higher costs, because an additional separate pipeline leg would be required to bring the Mackenzie Delta gas reserves to market.

Use of the Alaska Highway routing would at first seem to have only two advantages over the system proposed by Arctic Gas: a reduction of the likelihood of major cost overruns because the new system would follow existing transportation corridors, where construction conditions are less extreme and better known, and less intense environmental opposition because this route has far fewer river crossings, would not invade the Arctic Wildlife Range, and follows a corridor already affected by development.

Coupled with two other changes relative to the Arctic Gas proposal, however, an Alaska Highway system would appear to be considerably cheaper in initial capital outlay, and still competitive or even superior in terms of expected transportation tariffs for Prudhoe Bay gas. The first of these two variations is to use, as much as is practical, conventional technology and existing transportation facilities in the United States and Canada. The second is to postpone construction of a transportation system to serve the Mackenzie reserves.

Northwest Pipeline Company, a U.S. company, together with three Canadian companies, Westcoast Transmission, Alberta Gas Trunk (AGTL), and Foothills Pipeline Co. (a joint venture of the other two) has formally proposed to build a system from Prudhoe Bay along the oil pipeline route to Fairbanks, then following the Alaska Highway to Fort Nelson, British Columbia and Zama Lake, Alberta, where the gas would enter existing Canadian transmission facilities. These facilities would be expanded where necessary to accommodate the increased volumes.

The pipeline concept proposed by Northwest and its Canadian partners would have several technical and financial advantages over the other two systems. It uses a 42-inch pipe, conventional technology, a corridor where there has already been highway and/or pipeline construction, and maximum employment of existing facilities. By virtue of these changes, the initial capital cost outlay before any gas or cash could begin to flow might be held considerably lower than the cost officially anticipated for the Arctic Gas system. The likelihood of large cost overruns, as well, would be much reduced by these features. Whereas ultimately, higher volumes would be required to cover the investment, the system could begin to operate with a flow of as little as a billion cubic feet per day. And, in my judgement, the political and regulatory barriers to an Alaska Highway system would be far less formidable than for either of the other two systems.

The system proposed by Northwest, Foothills, *et al*, may not yet be the cheapest way of moving Alaska gas to the United States Midwest and East. The Alcan proposal presented to the FPC and NEB still includes the 1117 mile Northern Border pipeline, which is part of the Arctic Gas system. The sys-

*In September 1976 the FPC staff issued an Alcan system supplement to the Final Environmental Impact Statement on Alaska natural gas transportation systems. The supplement urges "that none of the proposals be approved as proposed." It concludes that the Arctic gas proposal would be environmentally superior to other alternatives if the leg to the Western United States were dropped (and that area were served with Alaska gas by displacement) and the "Fairbanks Corridor" (Alcan Highway) route were adopted. The FPC staff did not endorse the Alcan proposal of Northwest and Foothills "because it lacks the necessary expansion flexibility."

AGO 913347

tem with the lowest initial capital cost, however, seems to be one which would expand the Trans-Canada pipeline and the Great Lakes pipeline, instead of building an entirely new line across the Prairies. Both the U.S. and Canadian partners in the Alcan project understand the advantages of maximizing the use of existing facilities, and I can only speculate on the reason for retaining Northern Border. The Trans-Canada Pipeline Company, which is part of the Canadian Arctic Gas group, may be unwilling to co-operate with a rival proposal at this time, although there is no reason to suppose that Trans-Canada's facilities would not be available to move Alaska gas if the Arctic Gas proposal were to be rejected by the National Energy Board.

There is good reason to believe that the announcement by Northwest makes the State of Alaska's commitment to support El Paso obsolete, and that this support may deteriorate rapidly. The Northwest project would avoid most of the state's environmental objections to the Arctic Gas system; it also makes gas available in the Fairbanks area and involves almost as much pipeline construction within the state as would the El Paso system. Because it does not involve an LNG terminal, however, the boom resulting from building a pipeline along the Alaska Highway would be substantially smaller than the boom that would be generated by the El Paso project.

Alaska and the Alcan proposal: According to preliminary estimates from the University of Alaska's Man in the Arctic Program, construction of the Arctic Gas system would add $19 million to the state's gross product and three thousand persons to the state's population in the peak year of construction. The El Paso system would increase gross product by $235 million and population by 24 thousand, while the Alaska Highway pipeline routing would increase Alaska's gross product by $111 million and population by 15 thousand. These calculations do not take account of the fact that Haines and Skagway would undoubtedly be major ports of entry for materials and equipment destined for construction activities in Yukon Territory.

For these reasons, the Northwest proposal seems at the very worst to be a workable compromise that would be acceptable to almost every important Alaskan interest group. The newly proposed system may, however, be more attractive to Alaskans than as just a fallback position or a workable compromise. Northwest Pipeline's approach to the state contrasts sharply with the "take it or leave it" stance of both of the original applicants. Northwest has at least informally suggested that the state take an equity share in the pipeline system and take part in its planning and operation. The company also has approached, or plans to approach, Alaska-based corporations for participation, including the Inuit-owned Arctic Slope Regional Corporation and the Athabascan-owned Doyon, Ltd., and has suggested that a block of shares in the enterprise be offered to the general public in Alaska. The effect of these innovations would be to ensure that the system within Alaska would be closely identified with local interests and be responsive to them.

Regional interests outside of Alaska: The Alaska Highway pipeline proposal offers significant advantages over the two other proposed systems to a wide variety of regional and sectoral interests outside of Alaska.

British Columbia

For British Columbia, introduction of Prudhoe Bay gas will more fully utilize the existing facilities of Westcoast Transmission, and thereby reduce the cost of British Columbia gas delivered to consumers in the province. Construction of the pipeline would provide a stimulus to the development of northern British Columbia and Yukon Territory, and strengthen the territory's links with market and financial centres in British Columbia. The proposal is now being discussed in the province as a possible justification for extending the British Columbia Railway to Whitehorse and eventually to Fairbanks. For these reasons, the provincial government has endorsed, and is reportedly considering joining in the pipeline project, perhaps as an equity participant.

Alberta

The project could be supported by the crucially important Province of Alberta (which now opposes the Arctic Gas application) because it would contribute to the optimum use of Alberta's own gas transmission system, rather than establishing a competing trunkline through the province. Unlike Arctic Gas, moreover, the new system would not in the immediate future compete with, and require the shutting in of, Alberta gas now dedicated to markets in eastern Canada.

Canada

For Canada as a whole, the Alaska Highway proposal would postpone the necessity of deciding when, how and by whom the Mackenzie Delta — Beaufort Sea region was to be developed, and whether that region or the Arctic Islands should take first priority for development among Canadian frontier regions. By reducing the total amount of new construction and shifting a substantial part of the construction out of Canada and into Alaska, the Alaska Highway system would reduce the stress on Canadian capital and labour markets and on the nation's foreign exchange position.

Pacific Northwest

The system proposed by Northwest Pipeline is by far the most economical method of moving North Slope gas into the Pacific Northwest, and it is for that reason supported by the gas distributors of the region. In contrast to the Arctic Gas proposal (which is a second-best gas supply alternative for the Northwestern states), construction of an Alaska Highway system would rely mainly on Seattle-Tacoma and other ports in the region as supply and transportation bases for the northern half. The Alaska Highway route would not make as large a contribution to Port of Seattle activity and revenues as would El Paso's LNG project but the latter is not in my judgement likely to prevail, and the Alaska Highway system therefore offers maritime interests and construction in the Northwest the greatest volume of business they are actually likely to obtain from any Alaska gas transportation system.

California

For California, the Alaska Highway system offers a comparatively economic and (because it utilizes conventional technology) reliable source of incremental gas supply. Unlike the El Paso project it would not raise novel safety issues nor would it threaten to displace California's present low price gas from the Permian Basin in favour of high price LNG imports from Alaska.

Midwest & East

For the United States' Midwest and East, the Alaska Highway project (like the Arctic Gas project) would provide an assured supply of natural gas directly into the market areas where the shortages are most acute. Because of its smaller risk of construction delays and cost overruns, however, the Alaska Highway system should, on balance, be preferable. By preserving Canada's option to develop the Arctic Islands and the Polar Gas pipeline earlier than the Mackenzie Delta and Beaufort Sea, the Alaska Highway proposal may offer a better possibility (however remote) of increasing producible and transportable Canadian reserves to such a quantity that the Canadian government would be willing to consider new export commitments.

There cannot help but be some losers. First, of course, are those gas transmission companies whose projects would be turned down and the construction and service firms who hoped to build a bigger system or a different system from the one which is finally approved. There is Exxon, whose affiliate Imperial Oil is part of the Canadian Arctic Gas group, and other producers with interests in the Mackenzie, who would be deprived of an early hookup to their Arctic reserves, however superfluous that hookup may be at the present time from the standpoint of Canada's energy economy. Finally, there are those who would expect to build and operate the LNG tankers if the El Paso project prevailed, together with those (in the Port of Seattle, for example) who hope for a larger demand for their transportation and other services than an Alaska Highway project can generate.

For Canada as a whole, the Alaska Highway proposal would postpone the necessity of deciding when, how and by whom the Mackenzie Delta-Beaufort Sea region was to be developed, and whether that region or the Arctic Islands should take first priority for development among Canadian frontier regions.

On balance, however, if we take into account the lower front-end cost, the smaller vulnerability to cost overruns, and the widely agreed-upon environmental advantages of the Alaska Highway route, a system similar to that proposed for the Alcan may be the best practical alternative for almost every region in both Canada and the United States. Together with its broad acceptability to Alaskans these considerations make a system like that proposed by Northwest and Foothills a possible winner despite its late entry into the competition.

Arlon R. Tussing

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What's in it for Canada?

The probable reception of any Alcan proposal by Canadian authorities has been a most difficult issue to forecast. A major appeal of the Arctic Gas project is purportedly its early (if not necessarily more economical) attachment to the Mackenzie reserves. Without this feature, it may be asked, what is the advantage to Canada of accommodating the United States in moving Alaska gas?

The attachment of the Mackenzie reserves may, on the other hand, be seen as a major *disadvantage* of the Arctic Gas system, from at least one Canadian standpoint. There is no particular reason why Canada should *not* accommodate the United States with a transit line across Canadian territory; after all, a substantial portion of Canada's oil and gas supplies transits the United States. There would seem to be little objection in Canada on nationalistic grounds to American gas moving in either an American or a Canadian-owned pipeline across Canada. The Mackenzie project, in contrast, raises the issue of an American-dominated consortium developing an important frontier area of Canada. The fact that an early Mackenzie connection is being justified in the United States by the (doubtful) proposition that it would lead to greater Canadian exports to the United States aggravates its potential difficulties in Canada. Both its timetable and logistics would be dictated by the convenience of the American interests. The native claims and environmental complications of this route are also well known.

If Congress and the Canadian Parliament have any inkling now about the long journey on which they are about to embark, they may hesitate.

The 60 trillion cubic feet of proved reserves in the western provinces are enough to sustain the expected growth of Canadian demand plus present export contracts for about ten years. This would be the case even if there were no further discoveries, but recent exploratory results in Alberta have been rather encouraging, more so in fact than in the delta area. For this reason a decision on an Arctic pipeline carries much less urgency for Canada than it does for the United States.

More importantly, however, a decision today in favour of immediate development of the Mackenzie Delta- Beaufort Sea region can be seen to prejudice whether that region or the Arctic Islands (where recent exploration seems to have been more successful) shall be developed first. Either project could strain the capacity of domestic capital markets so that simultaneous construction of two major pipeline systems under Canadian majority ownership is almost out of the question.

It is not obvious which of several competing considerations is likely to be dominant in the eventual decision by the National Energy Board and the Cabinet, but on balance there now appears to be a favourable climate for a cooperative project with the United States concerning Alaskan gas. If the Alcan project were not a serious contender, this means that the Arctic Gas proposal would be approved. The Maple Leaf project is not timely either in terms of known reserves or in terms of Canadian demand, and it is not a serious contender at this time.

A decision in favour of Arctic Gas would, however, be a reluctant one and would be opposed from many quarters within the Canadian federal government, by several provinces and by a large body of Canadian opinion. These objections rest on a broad range of environmental, economic, nationalistic and native claims considerations, and most decisively perhaps on the fact that the approval of Arctic Gas might effectively preclude or postpone for many years the Polar Gas alternative. For these reasons, my own tentative judgement is that the Canadian government will — once it has had an opportunity to consider the alternative — welcome the opportunity to avoid an early decision one way or another regarding the Mackenzie. This is likely the biggest benefit to Canada from the Alcan proposal.

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AGO 913349

NATURAL GAS SUPPLY OUTLOOK FOR THE WEST

SUMMARY OF COMMENTS

BY

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AT

NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC.

WORKSHOP ON ECONOMIC GROWTH IN THE WEST

AND RELATED ENERGY PROBLEMS

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1. It no longer means much to speak of a gas supply outlook for the Pacific states as distinct from the outlook for the contiguous 48 states as a whole. With a nearly complete nationwide gas transmission network and transmission loads that are stagnant or declining, an abundance or shortage of gas in one region can be shifted to any other region or spread evenly across the country, without major investments in new transportation capacity.

2. The emergence of a single national market for natural gas is of course inhibited by FPC wellhead price controls, which discourage both interstate sales generally and reallocation of gas among interstate purchasers. And existing long term sales contracts together with the need for certification and abandonment procedings before the FPC and state commissions make even the most economically logical exchange and displacement arrangements difficult to put into effect.

3. Nevertheless, if institutional obstacles effectively prevent the smoothing out of gross regional disparities in gas supply, we can expect Congress to give the FPC authority to reach into intrastate markets, to allocate new natural and synthetic gas among regions, and perhaps even to reallocate flowing gas among interstate pipelines.

4. Congress would surely direct the FPC to allocate gas nationally if it were to approve any LNG system for the delivery of North Slope natural gas, which would require large areas of the United States to receive new gas supplies by displacement rather than directly. Approval of a MacKenzie or Alcan system without a western leg would also strengthen the demand that the FPC have direct allocation authority. Such an outcome would be unfortunate because any non-market allocation system would blunt the incentives of transmission companies and gas utilities to solve their own supply problems.

5. It is possible to make some broad generalizations about both the commodity value and the cost of gas on a national scale. The demand for gas can be separated into three main components: (a) a premium market in which only electricity is a competitive energy source, (b) an intermediate market in which refined petroleum products (distillate fuel oil, naphtha, propane, etc.) are effective substitutes, and (c) the "black fuels" market in which natural gas can displace coal and residual fuel oil only when it is cheaper.

6. The intermediate market, which is composed of household and small commercial space heating, and use for crop drying, in combustion turbines and for chemical feedstocks

(plus utility boiler fuel in times and places with severe air quality problems), is by far the major part of total consumption, so that all plausible projections of United States natural gas supplies through 1990 fall into this intermediate segment of the demand function. For this reason the long-term commodity value of gas will be equivalent, more or less, to the cost of refined petroleum products. Assuming that the real price of imported crude oil remains about the same as it is today, we can anticipate a long-term demand price for gas of $2.50 to $3.00 in 1976 dollars.

7. The demand price for gas will be somewhat higher than that of distillate fuel oil if total gas supplies continue to decline over the period, because the alternative to gas for many consumers will not be simply the substitution of a petroleum product but will also include the cost of converting or replacing existing gas-burning equipment.

8. The average (rolled in) cost of gas will be just about equivalent to this commodity value or demand price. Pipelines and distributors will continue to get some quantity of gas purchased on long term contracts or controlled at less than its commodity value. They will therefore be able to augment these low price conventional supplies with just enough high cost gas "supplements" at $4, $5, $6 or more per Mcf, to bring their average price up to the demand price.

9. For this reason deregulation (or the level of regulated gas prices) can not be expected to have a great effect on the average price consumers pay for gas. It might, however, have a powerful influence on how much gas is available at that price (although the direction of this influence is not obvious -- see footnote), and upon the economic cost to the nation as a whole of its gas supply. (The national economic cost would be lowest under deregulation, but the larger part of the net benefit would be captured by gas producers rather than by consumers.).

10. The most certain and economical source of additional gas for premium and intermediate markets are the volumes now being burned under industrial and electric utility boilers and as refinery fuel. End use controls

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The question hinges on the responsiveness of conventional gas supplies to price. If supply is relatively price-inelastic, the main impact of deregulation or higher wellhead prices would be to transfer revenue to gas producers and royalty owners at the expense of the pipelines and distributors. Since the latter would otherwise have used this revenue to finance the purchase or production of high-cost gas supplements, total gas supply would be less than it would be at the old regulated prices. On the other hand, if the supply of new reserves of conventional gas is highly responsive to price (as I believe is more likely), an additional dollar paid to the gas producers will elicit a greater volume of gas than the same dollar spent on such projects importing LNG or manufacturing SNG from coal or oil.

by the FPC and state authorities are already encouraging such a shift. But in order to employ existing reserves most efficiently around the year, elimination of interruptible sales for low-priority use must go together with investments in storage facilities and in increased peak deliverability in the field. Incentives for the latter adaptation are now blunted by price controls, but added storage is probably a worthwhile investment for almost every gas transmission company or utility.

11. The main supplemental sources of gas appear to be Canadian pipeline imports, LNG imports, Alaskan natural gas and SNG from coal and petroleum.

12. The price of future Canadian imports is reasonably predictable, but their volume is not. The Canadian federal government and Alberta have adopted an explicit commodity value standard for gas pricing in both domestic and export markets (though it is being implemented more slowly for Canadian consumers), and there is little reason to believe that this policy will be changed.

13. The approximately 60 TCF of presently proved reserves in the Western Provinces are sufficient to serve projected Canadian demand plus existing export commitments for about 10 years without creating deliverability problems. A continuation of recent Alberta discovery

trends may be sufficient to assure that existing export contracts will in fact be honored. But there is no development, short of huge discoveries (perhaps another 60 TCF) in the Arctic that would be likely to induce the Canadian government to approve new export commitments.

13. The sufficiency of present supplies to Canada for about ten years, means that any Mackenzie or Polar pipeline will be superfluous to Canada's needs for at least that period, unless reserve volumes justifying exports are developed. This implies that there is no urgency for Canada in an early determination regarding the desirability, scale or timing of a Mackenzie Valley pipeline.

14. Large LNG import projects, coal gasification, and facilities to deliver gas from the Alaskan (and/or Canadian) Arctic to Lower 48 markets share several features which raise serious questions about their economic viability or practical feasiblity. Each of them requires large, "lumpy" investments -- in the billions or tens of billions of dollars -- and involves unproved technology or a substantial scale-up of proved technology. Some proposals involve a unique physical or institutional environment (e.g., the Arctic Gas proposal and Indonesian LNG) in which no engineering projects of their magnitude has ever been attempted. Each of them involves numerous regulatory jurisdictions, including more than one sovereignty or quasi-

sovereignty (states and provinces). Each of them involves major environmental and safety issues, real or imagined, usually in more than one regulatory jurisdiction.

15. The construction and operating cost projections offered by the proponents of each of these gigantic capital-intensive projects are already near the margin of economic feasibility, even assuming the absence of major delays, technological or engineering false starts, or cost overruns.

16. Recent experience with military procurement, nuclear power plants, the Trans-Alaska pipeline and other large custom-engineered construction projects indicates that all the large supplemental gas projects are exceptionally vulnerable to delay and cost-overruns, if not to non-completion.

17. The scale of these projects typically exceeds the net worth of their sponsors, precluding conventional secured financing. Uncertainty about construction costs and completion dates, aggravated by political and licensing uncertainty make no-recourse debt financing equally improbable. Each project therefore probably requires government loan guarantees (increasing their vulnerability to political opposition) and/or all-events tariffs, which state commissions are unlikely to approve.

18. In short, I believe that the odds are against any supplemental gas supply facility with a total projected capital cost of greater than $1 billion. The chances that all the supplemental gas projects considered necessary to provide an adequate gas supply to any region (e.g., California) will be actually completed, is nil.

19. Of the three proposals for transporting North Slope gas, the Alcan project is in my judgment the most credible, even though the comparison of pro-forma cash flow projections would seem to favor Arctic Gas. By using conventional pressures, pipeline size and construction technology, already developed transportation corridors, and existing pipeline routes and systems in Western Canada, Northwest Pipeline's Alcan proposal avoids or mitigates the major sources of cost overruns. Moreover, Alcan is the only proposal of the three which does not depend for its feasibility on larger volumes of gas than can be assured from presently proved reserves.

20. The Alcan proposal is probably the least vulnerable of the three to political opposition on regional or sectoral grounds. It does not involve the siting and safety issues of the LNG system, but unlike Arctic Gas, it is favored or at least is not vehemently opposed by any of the states or provinces (including Alaska and Alberta) which it must transit. The Alcan concept is the one favored by the major U.S. environmental organizations. Native claims issues, moreover, seem to be closer to resolution in the Yukon than in

the Northwest Territories.

21. The synthesis of pipeline quality gas from petroleum does not suffer from most of the handicaps of coal gasification or of the other capital-intensive sources of natural gas supplements. Here again, as in the case of the alternatives for transportation of Alaska gas, a priori cost comparisons may be deceptive. SNG from oil appears to be more costly than SNG from coal, but this comparison ignores the fact that it is a proved technology on a commercial scale, that its optimum economic scale of plant is an order of magnitude smaller, and that the feedstock is (barring a new embargo) available in unlimited quantities.

22. The smaller scale and general abundance of feedstocks for SNG plants using petroleum fractions (naphtha or LPG) means that each plant can be located within the consuming state, (freeing it from FPC jurisdiction), within the service area of the pipeline or utility which distributes it (reducing local opposition), and in a site chosen for environmental acceptability (rather than one dictated by location of the resource or by proximity of a deep water harbor). For all of these reasons, I suspect that the West Coast gas industry's ultimate recourse when almost everything fails (as it probably will) is the construction of decentralized SNG plants using naphtha feedstocks from overseas (or even Alaskan) topping plants which ship their residual crude oil fractions to Japanese or Atlantic customers.

23. The best bets for new pipeline gas supplies, I believe, come from state-of-the-art technologies and scales of effort, not from ten year leaps into the future and tenfold leaps in size. The source of gas that best meets this standard is conventional natural gas conventionally extracted. Exploration for gas (and for oil, which is found in similar environments by the same techniques) is an entirely different kind of business from producing synthetic fuels or building major gas transmission projects or the maximum scale electrical generating plants. The minimum unit of physical capital, a single wildcat well for instance, ranges in cost from tens of thousands of dollars to several millions -- a scale on the order of one thousand times less than the investment thresholds for coal gasification, oil shale, nuclear power or Arctic gas transmission.

24. There are literally thousands of enterprises in the oil and gas producing industry, with perhaps hundreds that are large enough and progressive enough to stand on the cutting edge of new technology. The journey to new frontiers of gas exploration and recovery, whether they are technological frontiers, deeper or stormier water, permafrost or deep rocks, can be taken in small steps, with part of the industry consolidating information and techniques from the last step while other firms take the pioneering risk.

Onshore, the payoff to exploration investment can be a matter of weeks, and is seldom more than two years. Offshore and in the Arctic, it may be three, five or seven years, but seven years is probably the minimum lead time for the big-ticket gas supply projects.

25. Regarding the potential price-responsiveness of natural gas supply, there are an incredible number of different opinions. It is obvious, however, that FPC price controls are not a major obstacle to exploration and development in any state large enough to have a significant intrastate gas market: these include present net exporters of gas like Texas and Louisiana as well as net importers like California. It has now been three years since the Arab embargo and the energy price revolution, so that some evidence one way or another on the price responsiveness of conventional onshore gas supply ought to be available before long.

26. Price controls on gas may or may not be an effective deterrent to development of new gas resources on the Outer Continental Shelf, but they are not the major deterrent. It is unfortunate that environmentalist opposition to energy development has been most effective here, because OCS oil and gas will be in my judgment/the least environmentally harmful source of large new supplies of primary energy for the United States, as well as the least costly in terms of real economic resources.

27. In summary, small seems indeed to be beautiful in energy supply alternatives. Or, at least, small is practical given today's political and financial realities. At the same time, I would urge along with the ecologists that diversity is stable, and so is decentralization. Diversified and decentralized systems are also more predictable in the aggregate. For this reason, a strategy for gas supply which depends mainly on a few large coal gasification and Eastern Hemisphere LNG projects and on the Arctic Gas pipeline stands a large risk of total failure. A strategy which puts even half of the capital projected for these projects into storage and increased peak deliverability, into conventional and modestly innovative onshore and offshore gas exploration, into SNG from naphtha facilities, into small LNG projects (as in Cook Inlet), and into a minimum scale transportation system for North Slope gas (like the Alcan system) may not yield the grandiosely optimistic projections for 1985 or 1990 gas supply which industry and government agencies like to put on their charts. Such a strategy will, however, surely and predictably produce enough gas at acceptable prices to serve the premium markets, and will continue to make some contribution to satisfy the intermediate market.

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ECONOMIC ANALYSIS OF ALASKAN ROYALTY GAS CONTRACTS

a report to

STATE OF ALASKA: THE LEGISLATURE

JENSEN ASSOCIATES, INC.
Boston, Massachusetts
Washington, D.C.

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January 1977

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TABLE OF CONTENTS

		Page
I.	INTRODUCTION AND SUMMARY	1
	INTRODUCTION	1
	SUMMARY	1
	CONCLUSIONS	4
II.	SUMMARY OF CONTRACT	6
	PROMOTE TRANS-ALASKAN PIPELINE ROUTE	6
	ESTABLISH FAVORABLE GAS PRICING STRUCTURE	6
	PROTECT ALASKA'S FUTURE GAS NEEDS	8
III.	SALE OF PRUDHOE BAY NATURAL GAS	9
	ENERGY MARKETS IN THE UNITED STATES AND THE WORLD, 1980-1990	10
	OPEC Production and Pricing	10
	U.S. Price Controls	13
	U.S. Energy Conservation	13
	Conclusion	14
	MARKET BASED VALUES OF NATURAL GAS	15
	Number Two Fuel Oil	15
	SNG From Coal	16
	Netback Value	16
	Contracts	
	COST-BASED REGULATION OF ALASKA GAS PRICES	21
	The National Rate and Alaska Gas	21
	An Area Price Ceiling for Alaska	22
	Estimation of Alaskan Natural Gas Ceiling Price	24
	F.P.C. Jurisdiction Over Alaska Royalty Gas	25

		Page
	VINTAGING	27
	Vintaging Under the Uniform National Rate	27
	Other Vintaging Methodologies	28
	Conclusions	30
	Vintaging Under Proposed Gas Legislation	31
	SEVERANCE TAXES ON ROYALTY GAS	32
IV.	USE OF GAS WITHIN ALASKA	33
	AMMONIA PRODUCTION	35
V.	CONCERNS ABOUT CONTRACT AMBIGUITIES	39
	ARTICLE III (QUANTITY); SECTION 3.7(a)	39
	ARTICLE VI (PRICE); SECTIONS 6.3 - 6.5	39
	ARTICLE VI (PRICE)	40
	ARTICLE III (QUANTITY); SECTION 3.5	40

LIST OF TABLES

No.		Page
I-1	RANGE OF POSSIBLE WELLHEAD PRICES FOR PRUDHOE BAY NATURAL GAS, 1980	3
III-1	WORLD OIL TRADE	11
III-2	NETBACK VALUATION OF ALASKAN NORTH SLOPE GAS BASED ON NO. 2 OIL, 1980	17
III-3	NETBACK VALUATION OF ALASKAN NORTH SLOPE GAS BASED ON NO. 2 OIL, 1985	18
III-4	NETBACK VALUATION OF ALASKAN NORTH SLOPE GAS BASED ON SNG FROM COAL, 1980	19
III-5	SUMMARY OF NATURAL GAS VINTAGING APPROACHES RELATED TO INTERSTATE PRICE REGULATION	29
IV-1	NATURAL GAS CONSUMPTION IN ALASKA, 1975	34
IV-2	GROWTH OF NATURAL GAS CONSUMPTION ALASKA 1971-1975	36
IV-3	UNITED STATES NITROGEN FERTILIZER CONSUMPTION BY GEOGRAPHIC AREA, 1974	38

APPENDICES

APPENDIX A

Table 1 F.P.C. NATIONAL RATE RULINGS 41-44

I. INTRODUCTION AND SUMMARY

INTRODUCTION

Three contracts for the sale of the State of Alaska's royalty gas from the leases on the Prudhoe Bay oil and gas field have been negotiated by the State of Alaska with Tenneco Alaska, Inc., El Paso Natural Gas Company, and Southern Natural Gas Company. These contracts must be approved by a majority of each House of the Alaska State Legislature. The Legislative Affairs Agency, acting on behalf of the Alaska State Legislature, has retained Jensen Associates, Inc. to perform an economic analysis of the State of Alaska's Proposed Royalty Gas Sales Agreements. The economic analysis of these proposed agreements is presented in this report.

The purpose of our analysis is to determine if the contracts protect the interests of the State of Alaska. In this analysis, we were asked to examine two questions:

1. Is Alaska protected if the El Paso project is not the one selected? and
2. If the El Paso project is approved, does the contract provide favorable value to Alaska?

SUMMARY

Alaska will receive favorable benefits from royalty gas either by obtaining the highest possible price from the sale of gas into interstate markets or for soundly based use in Alaska. Because of the large volumes of royalty gas available and because of the possibility of additional gas discoveries near Alaskan markets for natural gas, the more important question for this analysis appears to be the price that Alaska can receive in interstate markets. Second, it is necessary to analyze the flexibility built into the contract to allow Alaska to use the gas for its own needs.

There is significant uncertainty about the price of the Prudhoe Bay royalty gas. Table I-1 illustrates this range where it shows the possibility of prices ranging from $0.20 to above $2.00 per Mcf. The uncertainties in the value of the gas and thus risks to Alaska are caused in part by uncertainties in energy markets, but much more importantly are caused by the uncertainties surrounding the legislation and regulation of natural gas.

The initial deliveries of Prudhoe Bay natural gas will occur at a time when--in our view--significantly increasing prices for energy world-wide are likely. Between now and 1985, we believe that the Organization of the Petroleum Exporting Countries (OPEC) is not likely to lose control of international oil pricing despite occasional periods of surplus and some degree of internal dissention within the organization. Beyond 1985, however, the possibility exists for sharply higher real world oil prices. This would result from continued growth of world oil demand combined with growing producing capacity limitations in many OPEC countries, thereby creating the conditions for shortage pricing by those few national oil suppliers who can still respond to world demand growth.

Between now and 1985, U.S. energy prices should rise because of (1) OPEC oil prices rising to keep pace with inflation in industrialized countries, (2) a rise in U.S. oil prices to approximate world oil levels as the current domestic price controls are relaxed or eroded, and (3) the U.S. beings to use higher energy prices to foster energy conservation as do Japan and the countries of Western Europe. Beyond 1985, much greater price uncertainty exists, but in our view, rising real prices are the most likely possibility.

The value of Prudhoe Bay gas netted back to the wellhead from No. 2 oil market values in California and the Midwest are shown in Table I-1 for 1980. Because the market price of No. 2 oil is expected to increase, and perhaps sharply, over the

TABLE I-1

RANGE OF POSSIBLE WELLHEAD PRICES FOR PRUDHOE BAY NATURAL GAS

1980

Market Values via El Paso Project*	Dollars per million Btu
Competing with No. 2 oil**	
Mid West	0.94
California	1.22
Competing with coal based synthetic natural gas	
Mid West	2.71 - 3.05
Regulated Values	
Opinion No. 770 National Rate on new gas	
$1.42 plus $0.01 per quarter from October 1, 1976	1.56***
Possible Alaska Area Rate****	0.20 - 0.45

*Assuming F.P.C. staff estimate of gas capital transportation costs and netback value for fuel cost.

**Equivalent Btu value with No. 2 oil giving natural gas a 10 percent form value premium.

***If the prices are regulated using more recent drilling costs and discovery data, the cost based price should rise above that shown here.

****Computed with only Alaska data including associated gas.

twenty-year contract life, the netback market values will be higher than the 1980 wellhead price shown.

The greatest uncertainty about price is caused by uncertainty over legislation and regulation. If new gas is deregulated and Prudhoe Bay gas qualifies as new gas, as it will under some bills, then market value pricing will prevail. If wellhead prices continue to be regulated, Prudhoe Bay prices remain uncertain. Recent national rate opinions by the Federal Power Commission (F.P.C.) have specifically excluded Alaska and Hawaii from both the rates and the cost calculations that underlie the rates. If Alaska is included in the national rates as currently computed based only on non-associated gas, the prices will change little from current calculations because of the small amount of Alaska non-associated gas. However, if the vintaging formula under the most recent national rate decision, (Opinion 770-A), were to prevail, in which well spud-date determined the vintage, then some gas would not qualify for the new gas rate. However, vintaging is not the source of great price uncertainty. If regulation does not include Alaska in the national rate and an area rate is set for Alaskan reserves as the associated gas of Prudhoe Bay sets the possibility for lower wellhead prices. Since some of the costs of exploration and development will be allocated to oil for an associated gas discovery, and the Prudhoe Bay field is large, the costs per Mcf of gas is low as shown in the sample calculation in Table I-1. However, such a calculation assumes that the F.P.C. will depart from its recent tradition of excluding associated gas from its national rate calculations as had been done earlier in F.P.C. history. In any case, regulatory decisions can have great impact upon the value to Alaska of the Prudhoe Bay royalty gas.

CONCLUSIONS

The termination clauses built into the contracts protect Alaska in the event that the El Paso project is not approved or that there is excessive delay in approvals.

If the El Paso project is approved or if the terms of the contract prevail under another pipeline route, then the pricing provisions and the reservation clauses become important. The most important question is how does the contract protect Alaska's interest in the face of considerable price, regulatory, and legislative uncertainty. Our conclusions are:

- Future wellhead prices of Alaskan natural gas will be determined either through regulatory processes as they are now, or through price negotiation should Congress deregulate natural gas.
- In the event of deregulation, the contract will play a significant part in price determination. The pricing clauses with periodic redetermination, assuming a proper clarification of the ambiguity of redetermination relative to Section 6.3, are sound.
- If wellhead price regulation remains in force, the role of price determination will remain with the Federal Power Commission, or possibly with Congress and the contract itself can do little to influence the price. It is important to recognize that the contract has adopted a passive stance, having tied itself to the efforts of the producers in obtaining a ceiling price. Since no real precedent for price setting of Alaskan associated gas exists at present within the F.P.C., and since the strength of the producers' gas is not known, the state might have a stronger future position by setting its own price precedent now in this contract under Section 6.2.
- In addition, there is ambiguity in the interpretation of the price including severance taxes on royalty gas under regulation. This may keep severance taxes or their equivalent from being collected on the royalty gas at a loss of $50-$150 million dollars. The ambiguity needs clarification either in the contract or through Alaskan severance tax legislation.

The clauses reserving gas for Alaska are very good and provide significant flexibility. The State can make both time and location exchanges when they provide a better value for natural gas to Alaska than by selling interstate.

Finally, favorable value of the gas will be brought to Alaska more by action outside the contract in legislation and regulation than by the contract itself.

II. SUMMARY OF CONTRACT

The proposed sales by the State of Alaska of 2.6 trillion cubic feet of Prudhoe Bay royalty gas to Tenneco Alaska, Inc., El Paso Natural Gas Company, and Southern Natural Gas Company are designed to help Alaska in three ways:

1. Promote the construction of a trans-Alaska gas pipeline system, with the associated benefit of making gas available close to people and industry;
2. Establish a gas pricing structure favorable to Alaska for sale of royalty gas outside the State; and
3. Protect future needs for gas within Alaska.

A brief review of the contract mechanisms designed to implement the above goals follows.

PROMOTE TRANS-ALASKAN PIPELINE ROUTE

Article I of the contracts (entitled Support for Trans-Alaska Pipeline) requires both the State of Alaska and the royalty gas purchasers to work actively for the selection of a trans-Alaska gas pipeline system. The provision in Article XI (Conditions Precedent) that the royalty gas contracts may be terminated by directive of the Governor of Alaska if another route is approved appears to give sufficient motivation to the buyer to work hard in its endeavors to seek passage of a trans-Alaska pipeline route. Alaska's interests are adequately protected on this point. Alaska may choose to support any trans-Alaska pipeline route, although the State has indicated a preference for that proposed by El Paso Alaska Company. Alaska may also terminate the contract if pipeline route approvals are not forthcoming by December 31, 1978 or if a route other than El Paso's is approved.

ESTABLISH FAVORABLE GAS PRICING STRUCTURE

In order to obtain favorable prices for Alaskan royalty gas, the contracts establish different pricing mechanisms depending upon the regulatory or non-regulatory status of the gas. Article VI (Price) identifies three regulatory situations which might occur:

Section 6.2: Federal Power Commission has jurisdiction at the time of first deliveries over royalty gas resale rates in interstate commerce;

Section 6.3: No Federal Power Commission rate-regulation exists for royalty gas for interstate resale at the time of first deliveries; and

Section 6.4: Federal Power Commission deregulation occurs after first deliveries of royalty gas have begun.

If Federal Power Commission jurisdiction applies, the initial price of the royalty gas is to be the highest applicable rate allowed and never less than the price paid producers for their gas from the same reservoir for comparable interstate sales. If regulation does not apply, then the initial price is to be the highest interstate price being paid producers for similar sales from the applicable Prudhoe Bay leases.

If deregulation occurs after first deliveries, the price is subject to redetermination with a provision for arbitration in the event that price accord can not be reached. Annual redetermination may occur thereafter at the request of either buyer or seller. In all cases, the gas price is adjustable up or down if the gross heating value is more or less than 1,000 British Thermal Units (Btu's) per cubic foot.

Since no specific prices are established in the contracts, our analysis focusses on three issues:

1. The likely U.S. and world energy marketing context facing Alaskan royalty gas in the period 1980 and beyond. Chapter III examines energy economic trends in the U.S. and world pressures on energy prices in that period;
2. The market value of Alaskan royalty gas at the time of actual deliveries (Chapter III); and
3. Possible pricing formulas that may apply in the event of price regulation existing at the time of royalty gas deliveries (Chapter III).

Two additional aspects of natural gas pricing--vintaging and severance taxes--are considered in our analysis.

Vintaging refers to the date assigned to an interstate gas sale to determine the applicable regulatory price. Severance taxes are state-imposed producer taxes on gas extraction. The implications of vintaging and severance taxes to the contracts are discussed in Chapter III also.

PROTECT ALASKA'S FUTURE GAS NEEDS

Alaska clearly desires to retain future access to Prudhoe Bay gas for internal requirements. Under Article III (Quantity), the State has the right to reduce the quantity of royalty gas for interstate sale by varying percentages throughout the life of the contract. Alaska may retain 25% of the royalty gas for the first five years and increase this amount by 25% in each subsequent five-year period over the life of the contract. Alaska also has the right to change the percentages of royalty gas taken for internal needs upon a 24-month written notice as well as to export products, such as ammonia, manufactured from its retained gas. While the three contracts also contain "take-back" provisions enabling the buyer to recoup the quantities retained by the State to meet internal needs, this applies only if additional surplus royalty gas is available. Chapter IV of this report considers possible situations in which Alaska retains royalty gas for internal usage.

Finally, in reviewing the royalty gas contracts, some concerns arose regarding specific contract language. While relatively minor, these points are outlined in Chapter V. It is also recognized that in the process of negotiating a contract, both parties must "give and take" on the various issues. Since Jensen Associates, Inc. was not involved in the negotiating process, we acknowledge that some of the matters on which we comment here may have been dealt with in the negotiations themselves. Nevertheless, the issues are outlined in the report in accordance with our obligation as consultants.

III. SALE OF PRUDHOE BAY NATURAL GAS

Alaska wants the most favorable price it can obtain for its royalty gas sold into interstate commerce. As we look ahead, we see considerable uncertainty about the price of energy in general and specifically about the price of natural gas in Alaska which may prevail when initial deliveries of royalty gas occur and for the subsequent twenty years over the term of the contracts. These uncertainties were apparently understood in the negotiation of the royalty gas contract. The contract pricing clauses simply state that the price shall be set at the highest price determined for comparable contracts, and if deregulation occurs, periodic price redetermination is established.

The uncertainty in price and thus risks in the payments to Alaska are created by forces outside the contract. These forces are markets and the course of natural gas regulation and/or legislation at the Federal level. This contract can influence the course of markets, regulation or legislation only slightly. However, the Legislature of the State of Alaska needs to be aware of and understand the causes behind these very real uncertainties about the price of Alaskan gas and their economic risk as it evaluates these contracts. Consequently, our evaluation of the contracts focusses more on contractual ability to adapt to changing price circumstances than upon the ability of the contracts to influence the prices.

In order to understand the extent and cause of the uncertainty about price of Alaskan royalty gas, we describe below the movement of energy markets in the United States and the world from 1975 to 1990, market value pricing of Alaskan gas which would prevail if deregulation of the wellhead price of gas were to apply to Prudhoe Bay gas, costs of alternate forms of energy for natural gas pipelines, and the impact and differences in pricing which regulation by a body such as the Federal Power Commission could bring to the price of Alaskan royalty gas.

ENERGY MARKETS IN THE UNITED STATES AND THE WORLD, 1975-1990

The Organization of Petroleum Exporting Countries (OPEC) has demonstrated since late in 1973 that it has considerable power to set the price of crude oil unilaterally in world markets. Western Europe, Japan, and increasingly the United States, as natural gas production declines, are dependent upon this imported oil which is the incremental source of energy in the industrialized nations and tends to set the price of all forms of energy. Consuming nations can influence price through controls or taxes to be more or less than the world market crude oil price. But controlling price below world market levels requires the nation to have its own energy production, as is true of the United States.

OPEC Production and Pricing

Table III-1 is the estimate of the world oil trade to 1985. The growing demands for OPEC oil production make a break-up of the cartel unlikely. We expect the United States to continue to rely upon imported oil, and, thus, be heavily subject to the world price of oil. The production of oil from OPEC nations should increase steadily but within productive capacities. In particular, Saudi Arabia, a country with the largest oil reserves in the world, should be able to accommodate increases in demand without strain to the mid-1980's.

The price of OPEC oil is not expected to decline, rather we expect the oil producing nations to attempt to maintain the value of their oil. As inflation continues in the industrial nations, the price of oil should increase apace to the mid-1980's.

Forecasts of oil, supply, demand and price are subject to an increasing range of error the further into the future the forecast is made. However, the contracts for royalty gas are scheduled to run for twenty years beyond the initial deliveries of gas which should occur sometime between 1980 and 1985.

TABLE III-1

WORLD OIL TRADE

(Million barrels per day)

	1975	1980	1985
IMPORTS			
United States	5.8	11.5	11.5
Western Europe	12.4	12.0	14.0
Japan	4.9	6.0	8.0
Net to Balance[1/]	4.3	6.5	9.5
OPEC PRODUCTION			
Total	27.4	36.0	43.0
Saudi Arabia[2/]	7.1	10.0	12.0

1/ Includes net imports (exports) of the Non-OPEC developing countries, the Sino-Soviet countries, OPEC internal consumption, stock changes, and adjustments.

2/ Includes 50% of Neutral Zone.

Source: Jensen Associates, Inc.

Thus, most of the gas under these contracts will be delivered after 1985, the time horizon to which most international oil forecasters have recently chosen to limit their estimates. In order to understand how energy prices will behave in the latter part of the 1980's and beyond, it is important to review the likely trends in world oil consumption compared with the development of both non-OPEC and OPEC supply.

Oil will be a major source of energy into the 1990's and beyond. Even though non-traditional energy sources may begin to grow rapidly, they do so from a small base so that continued economic growth needs to be, for some years after 1985, fueled by oil. But as oil demand on OPEC production increases, production capacity limits for most of the OPEC countries could very likely be strained. It is not hard to see oil demand bumping up against capacity constraints most everywhere except in Saudi Arabia after 1985. If this were to happen, the conditions would be set for another dramatic upward shift in the price of oil. It is also possible to envision very effective conservation efforts and accelerated alternate energy supply programs being developed, in which case the strains on OPEC production capacity would not be severe and oil price increases would be moderated. However, it is difficult to envision a decline in OPEC production in the decade following 1985 which would place downward pressure on world oil prices unless the industrialized nations of the world were to sink into depression.

As the time of initial deliveries of royalty gas nears, the post-1985 energy supply and demand balances will become clearer. These forecasts should begin to have a significant impact upon domestic U.S. energy prices and government policy. The post-1985 conditions are unclear today and the range of uncertainty about energy prices is high. However, forces that would create sharply higher prices seem more likely than a worldwide depression that might force oil prices downward.

U.S. Price Controls

At the current time, the price of oil in the United States is controlled by the Federal government at levels below the world price. However, the price for "new" oil is higher than for "old" oil in order to encourage further exploration and the development of additional supplies. The stated intention of the Energy Policy and Conservation Act is to allow the price of oil to increase and eventually for it to be decontrolled. Either as "new" oil becomes an increasing share of supply or oil price is decontrolled, the price of oil will increase more rapidly in the United States than in world markets as the U.S. prices catch up to the world prices.

U.S. Energy Conservation

There is a developing consensus in the United States that the conservation of energy is an important national objective. Currently, there is no equivalent consensus on how this objective is to be reached. There have been some attempts to use engineering standards mandated by regulation or legislation to promote energy conservation such as mileage requirements for new cars. Meanwhile, government policy has concentrated on keeping the price of energy low.

Other countries, such as Japan and those in Western Europe who have a longer history of oil imports than the United States, have relied upon the price system to bring about energy conservation. These nations increase the cost of energy to the consumer above world oil prices by taxation. Energy consumption in Japan and Western Europe is below that of the United States by more than can be explained by a difference in the standard of living. The use of the price system to bring about energy conservation has proven to be successful in other nations.

As the United States develops an energy conservation program, an increasing reliance upon higher energy prices to bring about conservation is to be expected. This, too,

should reinforce both the OPEC determined price increases, the price increases of oil and other energy forms in the United States as oil market levels are approached, to bring about an even greater increase in the price of energy for the United States.

Conclusion

OPEC oil pricing, the phase-out of oil price control in the United States or an increasing proportion of "new" oil, and greater reliance upon higher prices to foster energy conservation all point to increased energy prices in the U.S. The extent of these increases is uncertain. However, the greatest uncertainty is about prices in the mid-1980's. The potential for oil demand running hard against world productive capacity exists. Sharply increased prices would result. But, if the industrialized nations can aggressively conserve energy and develop sources other than oil, or if economic growth falters, then OPEC oil production capacity will not be under the same stress.

MARKET BASED VALUES OF NATURAL GAS

In the event of deregulation, market forces would determine the field price of Alaskan North Slope gas. One way to anticipate this price is to forecast the market price of alternate fuels and to netback to the North Slope using the costs of transporting the gas to market. The theory is that the price of natural gas at the market (e.g., Los Angeles) would tend toward a level related to the price of alternate fuels, and that the field price resulting would be the market price less the cost of transmission.

We have computed the netback value of Alaskan North Slope gas based on the market prices of competing alternate fuels in Los Angeles and Chicago. This section describes the method and the results of this analysis.

Number Two Fuel Oil

The calculations which compare natural gas with fuel oil are based on the projected prices of No. 2 oil in Los Angeles and Chicago. In the case of Los Angeles, it was assumed that No. 2 oil would be refined primarily from Alaskan crude, priced to be competitive with Saudi Arabian light landed in Houston. The present price of Saudi Arabian light is $12.09 F.O.B. Ras Tanura. This price can be inflated at 5% per year to 1980 and, with the addition of transportation costs, terminal costs and refinery margins, yields a projected price for No. 2 oil in Houston in 1980. Netting back to Los Angeles via crude pipeline results in a price for No. 2 oil refined from Alaskan crude and delivered in Los Angeles. A 10% premium must then be added to account for the fact that natural gas is often preferrable on a Btu basis to No. 2 oil.

To compute a price for No. 2 oil in Chicago, we added to the price of No. 2 in Houston the cost of transporting the fuel by product pipeline to Chicago. Again we added 10% to reflect a premium for clean-burning natural gas.

In both Chicago and Los Angeles, it was assumed that the relevant price comparison was between No. 2 oil at the refinery

rack and natural gas at the city gate. The cost of local delivery to large volume industrial users was assumed to be small and approximately equal for either fuel.

SNG from Coal

Current estimates for the cost of producing gas from coal form a range of between $3.00 and $4.00 per million Btu. To obtain a 1980 price for coal-based SNG, we selected $3.50 as a middle-range figure, inflated it at 8% per year for five years, and added projected transportation costs.

Netback Value

The netback value is computed in the following way. Suppose the projected market price of No. 2 in Los Angeles is $3.50 per MMBtu. Adding 10% results in a market value for natural gas of $3.85 per MMBtu, competing against No. 2 oil. In other words, pipelines could charge gas distributors in Los Angeles up to $3.85 per MMBtu, the price of the competing incremental fuel source. The field price in Alaska is then determined by subtracting from $3.85 the cost of transporting the gas from the field to Los Angeles. If the transport costs were $2.00 per MMBtu, then the price that Alaska could charge for its royalty gas in the field would be $3.85 minus $2.00 equals $1.85 per MMBtu.

It should be noted that transportation costs include the cost of gas used and lost along the respective routes. Consequently, transportation costs vary with the netback value which in turn varies with the projected market price of the competing fuel. In short, the higher the value of Alaskan North Slope gas, the more expensive it is to transport.

Tables III-2, III-3, and III-4 show netback values computed for the El Paso project and the Arctic Gas project separately.

Strictly speaking, netback values show what price would prevail for natural gas (regardless of source) in each market, assuming insufficient gas is available to replace the alternate

TABLE III-2

NETBACK VALUATION OF ALASKAN NORTH SLOPE GAS

BASED ON NO. 2 OIL

1980

(Dollars per million Btu)

El Paso Route

	Price of No. 2 Oil (Incl. Premium)*	- El Paso Transportation Costs**	= Netback Value
Chicago	$3.34	$2.40	$ .94
Los Angeles	$3.10	$1.88	$1.22

Arctic Route

	Price of No. 2 Oil (Incl. Premium)*	- Arctic Transportation Costs**	= Netback Value
Chicago	$3.34	$1.68	$1.66
Los Angeles	$3.10	$1.40	$1.71

*Assumes that the current price of Saudi Arabian light ($12.09) will rise at the rate of 5% per year to 1980 and 7.4% per year from 1980 to 1985. These estimates are representative and merely reflect current expectations.

**Based on average fifth-year cost to the Mid West and California as published by the F.P.C. staff (12/7/76). Estimates assume 2.4 and 2.25 Bcf/d capacity for the El Paso and Arctic systems respectively. Gas lost or used as fuel in transit is valued at the netback value.

NETBACK VALUATION OF ALASKAN NORTH SLOPE GAS
BASED ON NO. 2 OIL
1985
(Dollars per million Btu)

El Paso Route

	Price of No. 2 Oil (Incl. Premium)*	- El Paso Transportation Costs**	= Netback Value
Chicago	$4.59	$2.61	$1.98
Los Angeles	$4.27	$2.08	$2.19

Arctic Route

	Price of No. 2 Oil (Incl. Premium)*	- Arctic Transportation Costs**	= Netback Value
Chicago	$4.59	$1.79	$2.80
Los Angeles	$4.27	$1.50	$2.77

*Assumes that the current price of Saudi Arabian light ($12.09) will rise at the rate of 5% per year to 1980 and 7.4% per year from 1980 to 1985. These estimates are representative and merely reflect current expectations.

**Based on average fifth-year cost to the Mid West and California as published by the F.P.C. staff (12/7/76). Estimates assume 2.4 and 2.25 Bcf/d capacity for the El Paso and Arctic systems respectively. Gas lost or used as fuel in transit is valued at the netback value.

TABLE III-4

NETBACK VALUATION OF ALASKAN NORTH SLOPE GAS BASED ON SNG FROM COAL 1980

(Dollars per million Btu)

El Paso Route

	Price of SNG Delivered*	- El Paso Transportation Costs**	= Netback Value
Chicago	$5.46	$2.75	$2.71
Chicago	$5.46	$2.41***	$3.05

Arctic Route

	Price of SNG Delivered*	- Arctic Transportation Costs**	= Netback Value
Chicago	$5.46	$1.87	$3.59
Chicago	$5.46	$1.61***	$3.85

*Current estimates place the cost of producing SNG from coal of between $3 and $4 per MMBtu in 1975 dollars. We have used $3.50/MMBtu and inflated at 8% per year to 1980. Cost of transporting SNG assumed to be 32¢/MMBtu.

**Based on average fifth-year cost to the Mid West and California as published by the F.P.C. staff (12/7/76). Estimates assume 2.4 and 2.25 Bcf/d capacity for the El Paso and Arctic systems respectively. Gas lost or used as fuel in transit is valued at the netback value.

***Assumes gas lost or used as fuel in transit is valued at $1.00/MMBtu.

fuels. Of course, if all Alaskan gas were channeled into Los Angeles, saturation would occur and Los Angeles' market price of gas would fall. However, in the broader context of the national market, (which size is currently on the order of 55 billion cubic feet per day), the additional 3.5 billion cubic feet per day anticipated from Alaska may not be sufficient to render uneconomical even the most expensive alternate fuel sources now being contemplated.

Contracts

Section 6.3 of the contracts states that in the event of deregulation, prior to first deliveries of Alaskan North Slope gas, "the initial price for gas delivered hereunder shall be the highest price being paid by any interstate gas purchaser for gas under contracts. . . ." This provision appears adequate to insure that Alaska receives the full netback value based on the appropriate competing alternate fuel source, providing that the North Slope producers have marketed their gas judiciously; and with the price incentives inherent under deregulation, there is every reason to believe that they would do so.

Section 6.4 provides, moreover, for price redetermination in the event that the price of gas is regulated at the time of first deliveries and subsequently deregulated.

These two sections together provide that Alaska receives full market value for its royalty gas under deregulation, providing vintaging allows, whether or not deregulation occurs before or after the date of first deliveries. Moreover, inasmuch as Alaska contemplates taking royalty gas in kind, and selling it in the field, netback pricing serves to illustrate the market price potentially available to Alaska for its royalty gas.

COST-BASED REGULATION OF ALASKA GAS PRICES

In the event the sales of Prudhoe Bay gas contemplated in the contracts are found to be jurisdictional by the F.P.C., the price clause (Section 6.2) provides that

1. ". . . The initial price . . . shall be the highest area, national or ceiling rate allowed to be paid by any interstate gas purchaser to any working interest owner . . ."
2. "The price to be paid thereafter shall be subject to all periodic changes permitted in accordance with the . . . Rules and Regulations of the Federal Power Commission . . . or such other changes in price as may be permitted by any new area, national or ceiling rates . . . which may subsequently be established."

Thus, the value of the contracts depends upon the ceiling price which may be established by the Federal Power Commission. The contracts do not specify or assume that the nationwide rate established by the F.P.C. will apply to the contract sales. On the contrary, the contracts accept in advance, whatever rate-making method the F.P.C. might apply to sales of Prudhoe Bay gas. Moreover, the contracts tie the interests of the State of Alaska to the interests of the private companies producing Prudhoe Bay gas. The State will not receive a price for its royalty gas any higher than the cost-based price which the companies can justify to the F.P.C.

The National Rate and Alaska Gas

The current nationwide wellhead ceiling price for "new" natural gas in the United States is $1.42/Mcf (plus 1¢/quarter beginning October 1, 1976), established in F.P.C. Opinions 770 and 770-A. However, these Opinions and the earlier nationwide rate Opinion 699-H all explicitly excluded the States of Alaska and Hawaii.[1] A simple decision could be made by the Commission to delete the exclusion and thus bring Alaskan gas under the

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[1] Title 18, U.S.C., paragraph 2.56a (f).

nationwide ceiling. The difficulty with this approach is that the $1.42/Mcf is a cost-based ceiling price, calculated using cost data from only the lower-48 states. That is, the exclusion of Alaska from the $1.42/Mcf ceiling is not only a legal or procedural fact but also a computational fact. If the F.P.C. were to attempt to establish a single uniform national rate including Alaskan gas, the Commission would likely bring data on the cost of gas production in Alaska into the computation process.

One fundamental assumption underlying Opinions 699-H, 770 and 770-A is that most natural gas produced in the U.S. is from non-associated gas wells (wells which produce gas from reservoirs which do not also contain crude oil). For this reason the Opinions consider data on the drilling costs and drilling footage of gas wells only. All data on oil wells (many of which also produce gas) are excluded. If the F.P.C. were to revise the national rate to incorporate data on non-associated gas wells in Alaska, the national rate would not be much affected. The number of Alaskan non-associated gas wells and the quantity of Alaskan non-associated gas reserves are not large enough (relative to the national total) to have a significant impact upon the calculation of the national rate.

However, the inclusion of Alaska within the national uniform rate may be difficult precisely because of the fundamental assumption stated above, i.e. that most U.S. natural gas is produced from non-associated wells. Such an assumption, some may argue, is inapplicable to Alaska, where over four-fifths of natural gas reserves exist in conjunction with oil. For this reason, there is a reasonable possibility that the Commission will establish a separate area rate for all gas in Alaska or for casinghead gas from oil wells in Alaska.

An Area Price Ceiling for Alaska

The calculation of a wellhead ceiling price for all natural gas in Alaska, or for casinghead (associated-dissolved) gas alone, requires the allocation of costs between oil and gas. During the

long history of F.P.C. wellhead price regulation, many methods have been proposed for making such an allocation. Most of these methods have been based upon a combination of two principles:

- That oil and gas may be substituted for each other as sources of energy and are valuable because of their energy content as measured in Btu's, and
- That oil, which has traditionally sold at a higher wellhead price per Btu than gas, should receive a premium value over gas.

A brief review of F.P.C. wellhead price regulation uncovered no instance in which the Commission had actually allocated costs between oil and gas in order to set an areawide ceiling price on associated gas (called "casinghead gas" in the area rate opinions). In setting area price ceilings between 1961 and 1974, the Commission established various categories of gas according to vintage date. The calculation of the price applicable to each vintage category was based entirely upon the costs of non-associated gas production. Newer vintages of gas received higher ceilings than did older vintages, due to inflation of drilling costs and declining sizes of gas discoveries. Casinghead gas was included in the older vintage and was not vintaged in its own right. Thus, "new" casinghead gas received a lower ceiling price than did new non-associated gas.

The most recent case in which the Commission allocated costs to arrive at a separate cost of service for casinghead gas was in the Phillips Petroleum opinion of September 1960, the last of the individual producer rate cases. In the Phillips opinion, the Commission used separate methods for allocating production costs and for allocating exploration costs. Production costs on leases producing both oil and gas were allocated in proportion to the relative costs of producing oil from oil-producing leases and of producing gas from gas-producing leases. Exploration costs (which were viewed as joint costs because, at that time, the F.P.C. did not accept the concept of directional exploration) were allocated first among oil-only leases, gas-only leases and joint-product

leases on the basis of net investment in each of these three categories of leases. Then the exploration outlays assigned to joint product leaseholds were divided between oil and gas using a modified Btu method. The number of Btu's contained in crude oil produced from the joint-product leases in the test year was multiplied by 4 as an "economic factor" reflecting the then-prevailing higher market value of oil than of gas. Thus, the following fraction of joint-lease exploration costs was assigned to gas:

$$\frac{\text{Btu's of gas produced}}{(4 \times \text{Btu's of oil produced}) + (\text{Btu's of gas produced})}$$

The Commission stated that "we are of the opinion that the proper economic factor to be applied to the straight Btu content of oil to allocate Phillips' test year exploration costs is 4, so that the cost relationship of finding one Mcf of gas to one barrel of oil will be about 1 to 24."

Estimation of Alaskan Natural Gas Ceiling Price

Keeping in mind the long span of time which has lapsed since the Phillips precedent for separating oil from gas costs, we have, nevertheless, calculated several hypothetical ceiling prices for Alaska natural gas. These were calculated under the assumption that the F.P.C. would set an area ceiling price for the State of Alaska as a whole, with no differentiation within the State. It was also assumed that the Commission would follow a method roughly analogous to the present method used in setting the nationwide rate (that is, the method used in Opinion No. 770-A) with the following modifications:

- Data pertaining to drilling cost, drilling footage and reserve additions would be drawn from Alaska's experience only. Successful drilling cost and footage would include both oil and gas wells.
- Lead times between capital outlays and start-up of production could be considerably greater than those used in calculating the Lower-48 ceiling, and
- Unit costs would be divided between oil and gas on a Btu basis, or a value-modified Btu basis.

Working entirely from published data (the same sources used by the F.P.C. in setting the nationwide ceiling price), we calculated wellhead ceiling prices which ranged from under 20¢/Mcf to about 45¢/Mcf. The higher end of this range was calculated assuming a straight Btu division of oil and gas, which is the most favorable calculation from the gas producer's standpoint. No allowance was made in these calculations for any special capital outlay for waterflood or other enhanced oil recovery operation necessitated by the removal of the natural gas drive mechanism in the reservoir.

F.P.C. Jurisdiction Over Alaska Royalty Gas

The basic presumption of government regulation of an exhaustible resource is that economic rents should be captured by the private consumers of the resource rather than by the private firms or individuals who own and produce the resource. This presumption reflects the present distribution of political power and influence between the two groups, the consumers and the producers. The purpose of setting a ceiling price based upon cost calculations is to carry out this allocation of rents.

The State of Alaska, as a public rather than a private producer and owner of resources, may not be subject to the same political arrangement which underlies cost of service regulation. That is, in addition to the legal argument that a State is not a "person" within the meaning of the Natural Gas Act, there is also an economic and philosophical argument that a State is vested with quite different and much broader social responsibilities than is a private firm. For this reason, the State may be entitled to capture a greater share of the resource rents than has been awarded by the political process to private resource producers. The contracts for the sale of Alaska royalty gas, as they are currently formulated, establish price by reference to a ceiling price established for private producers. Such pricing by reference appears to abdicate the position that the State, even if subject to regulation, should not be subject to cost-based regulation. It would

also appear to place the State in the position of accepting a regulated ceiling price established for private producers even if the State is not found subject to regulation.

As the representative of a diverse social group, the State may not wish to bind itself to prices received by private producers, because these prices may be determined without reference to the public nature of the State of Alaska.

VINTAGING

As presently written, the contracts for the sale of Alaskan royalty gas do not mention the possibility that several ceiling prices might simultaneously apply to gas from the Prudhoe Bay area. Such a circumstance could arise from whatever "vintaging" policy is chosen by the F.P.C. to apply to Alaska gas, and could have a significant impact on the value of Alaskan gas.

"Vintaging" refers to the establishment of a date--such as the date of discovery of the reservoir or date of commencement of the well--which separates the produced gas into two (or more) categories for pricing purposes. For example, the current national rate for interstate natural gas is $1.42 (plus 1¢ per quarter) for gas produced from wells commenced on or after January 1, 1975. Gas from wells commenced between January 1, 1973 and December 31, 1974 qualifies for a price of $.93 (plus 1¢ per annum). In this example, the date of well commencement ("spud date") is the vintaging criterion.

At the present time, Alaska is in a unique position. No existing vintaging basis clearly applies to Alaskan gas. Thus, Alaska is limited in its ability to address future vintaging treatment of royalty gas through the terms of the sales contracts. Alaska can, however, strengthen its future position by clearly understanding the implications of vintaging and being prepared to act through regulatory intervention or otherwise at a future date. This chapter attempts to clarify the vintaging issues pertinent to royalty gas contracts.

Vintaging Under the Uniform National Rate

For Alaskan royalty gas tc qualify for the highest national rate, under present vintaging methods, the gas must be produced from wells spudded in after January 1, 1975.

The "spud-in" date is the moment of drilling the first foot of a well regardless of the date of completion or recompletion. Well completion refers to the installation of permanent equipment for the production of oil or gas. The date of completion of an oil well or gas well is the date on which the installation of permanent equipment has been completed for the production of oil or gas as reported to the appropriate regulatory agency.

Depending upon the gas field or reservoir drilling development pattern, spud-in date may or may not be a vintaging basis favorable to Alaska. If most gas is produced from wells spudded-in after January 1, 1975, then Alaska may qualify for the highest available national rate for most of its gas if the national rate applies to Alaska. If the royalty share comes from wells spudded-in at a considerably earlier date than the January 1, 1975 cut-off, then Alaska clearly is in a less favorable position vis-a-vis the national rate. At the present time, wells spudded-in on or after January 1, 1973 and before January 1, 1975 receive separate national rate treatment from the F.P.C. while gas from wells commenced prior to January 1. 1973 receive rate treatment under F.P.C. Opinion No. 749 which has established a price of 29.5¢/Mcf nationally for "old" gas. Clearly, the maximization of Alaskan royalty gas revenues will depend on the type of vintaging mechanism allowed under regulation.

Other Vintaging Methodologies

In the evolution of gas pricing regulations, the Federal Power Commission has used various methods for determining the vintage of gas. Other regulatory vintaging methodologies have used contract date, type of gas, date of dedication to interstate commerce, and reservoir discovery date. Table III-5 details the vintaging mechanisms in national and area rate regulation as well as in two proposed 1975-76 deregulation bills.

TABLE III-5

SUMMARY OF NATURAL GAS VINTAGING APPROACHES RELATED TO INTERSTATE PRICE REGULATION

	ALLOWED HIGHEST APPLICABLE RATE FOR:							
	Type of Gas		Qualifying Date for "New" Gas Vintage					
VINTAGING APPROACH	Associated or Oil Well Gas	Non-Associated or Gas Well Gas	Spud-In Date	Recompletion Date	Date of Initial Interstate Dedication	Date of Contract	Date of Reservoir Discovery	RATE ESCALATION
1. National Rate								
a. Opinion 770-A (November 1976)	yes	yes	yes	no	no	no	no	yes
b. Opinion 770 (June 1976)	yes	yes	yes	yes	yes	no	no*	yes
c. Opinion 699-H (December 1974)	yes	yes	yes	yes	yes	no	no*	yes
2. Area Rate								
Permian Basin Opinion 468 (August 1965)	no	yes	no	no	no	yes	no	no
3. 1975-1976 Proposed Deregulation								
HR 10480 Krueger-Broyhill Bill (October 31, 1975)	yes**	yes**	yes	no	yes	no	no	As Per Contract
S-3422 Pearson-Hollings Bill (May 12, 1976)	yes	yes	yes	yes	yes	no	yes	yes

*Date of discovery of a new gas reservoir on acreage previously dedicated to the interstate market was a vintaging criterion.

**If producer is not affiliated with a pipeline.

Jensen Associates, Inc.

Contract date and type of gas were used together in the first area rate vintaging methodology (Opinion No. 468 issued August 5, 1965). In this case, an established date (January 1, 1961) was the dividing date between old and new gas with new gas being that which was sold through a contract dated after the January 1, 1961 date. However, this system also vintaged gas on the basis of whether it was gas well gas or oil well gas. All casinghead gas (or oil well gas) was categorized as old gas; only post-January 1, 1961 gas well gas received new gas treatment. Similar vintaging methodologies were used in other area rates established by the F.P.C. with some variations as to the applicable contract vintaging date. The pricing implications for Alaskan royalty gas if vintaging occurs on a basis comparable to area rate regulation are considered elsewhere in this chapter. Alaska should understand, however, that by stating a contractual willingness to accept an area rate with its inferred vintaging mechanism, it may face future rate rulings that are either unanticipated or clearly less favorable than more recent pricing regulations.

Vintaging on the basis of first sales into interstate commerce (under contracts executed after a specified date) has also been used by the F.P.C. in the first uniform national rate (June 1974). This methodology has been superceded by well commencement date vintaging. Date of first sales into interstate commerce appears to be an attractive vintaging basis. It has a clear disadvantage, however, if the market value of gas is expected to rise over the term of the contract by committing all the gas to a price set when market value was lower.

Conclusions

1. No single vintaging method yet applies to Alaskan royalty gas and Federal Power Commission actions on this are uncertain.

2. **Revenues to Alaska for royalty gas sold interstate are highly dependent upon the vintaging method selected.**

3. **No single vintaging system is clearly superior to all others, although in general, the more gas that falls into the "new gas" category or vintage, the greater are Alaska's opportunities to maximize royalty revenues.**

Vintaging Under Proposed Gas Legislation

Numerous proposals to deregulate or reregulate natural gas pricing were introduced into the 1975-76 Congressional Session, and already in the current Congress eleven bills as of this writing have been proposed. Passage of a particular bill at this time is unclear. However, based on 1975-1976 bills, vintaging is likely to remain an issue in current proposed legislation of great economic significance to Alaska.

The importance of future deregulation or reregulation to Alaska's royalty gas contracts is the possibility that there may be multiple vintages applicable to the Prudhoe Bay gas. That is, depending upon the vintage method, there may be a deregulated and a regulated price in effect at the time of first deliveries.

SEVERANCE TAXES ON ROYALTY GAS

It is possible that $50 - $150 million[1/] in revenue might be lost to Alaska from an interpretation of price in Section 6.2, 6.3, and 6.4. While the Alaskan severance tax legislation currently does not apply to state-owned royalty interests, the price clause should not preclude by omission the collection of a severance tax or revenue in lieu of severance taxes on Alaskan royalty gas in addition to the base price. Under F.P.C. regulation, the price paid to a producer by a pipeline for the working interest share will be adjusted upwards from the ceiling rate to cover severance tax. This payment for severance tax is in turn fully recovered by the pipeline. If a severance tax on the Alaskan royalty interest is not charged in addition to the highest allowable area, national or ceiling rate under some interpretations of the gas contract pricing clauses, the price for royalty interest gas will be less than the price paid by pipelines for the working interest portion. In the condition that Alaska is not subject to F.P.C. jurisdiction, the royalty gas will be sold at the highest price paid by a purchaser which appears to be wording that would cover severance taxes paid by the working interest holder. Given the amount of money involved, we suggest legal review on the point of collecting severance taxes. The possibility for a low price differential on Alaskan royalty gas may be eliminated in one of two ways:

(1) legislative action to include the royalty interests taken in kind with that production which is subject to a severance tax, or

(2) a change in the contract which sets the price of Alaskan royalty gas at the highest allowable price plus an adjustment in lieu of a severance tax.

1/ For sale of 2.6 tcf at $0.50 to $1.50 per million Btu assuming one million Btu per Mcf and a 4% severance tax.

IV. USE OF GAS WITHIN ALASKA

The State of Alaska is permitted to reduce the volumes of gas sold under the contracts. Any reduction may be made on twenty-four months' notice, or up to specified limits on twelve months' notice, provided the gas is to be used for "domestic or industrial" purposes in Alaska.

As presently written, the contracts do not specify whether the withdrawn gas must be for current or anticipated domestic or industrial needs. It is possible that Alaska might predict or foresee a need for natural gas within the State which extends beyond the term of the contract, or an increasing demand for intrastate gas which will eventually exceed the total volume of royalty gas during the term of the contract. We see no contract impediment to a time exchange of royalty gas which might be worked out with the owners of the working interests.

For example, the province of Alberta follows a rule of protecting provincial requirements for a forecast 30-year period before permitting additional interprovincial sales. A similar rule could be applied by Alaska.

As shown in Table IV-1, natural gas consumption in Alaska during 1975 was 66.8 billion cubic feet, none of which came from the North Slope. If the total contracted amount of royalty gas (2.6 trillion cubic feet) were produced uniformly over a 20-year period, the annual volume of royalty gas would be 130 billion cubic feet. Thus, if all additions to intrastate natural gas consumption had to be drawn from the royalty gas in the contracts, then Alaskan gas consumption would have to triple over present levels before all the royalty gas would be withdrawn from the contracts.

Gas utility sales in Alaska grew at an average rate of 12.7% per annum from 1965 to 1975 and at a rate of 12.1% from 1974 to 1975. Total consumption of gas in Alaska rose from

TABLE IV-1

NATURAL GAS CONSUMPTION IN ALASKA

1975

User	Sales by Gas Utilities Bcf 1/	Total Consumption Bcf
Residential	5.6	10.4
Commercial	6.4	8.5
Industrial	-	22.4
Electric Utilities	12.8	19.6
Other	5.9	5.9
Total	30.7	66.8

1/ Bcf = Billions of cubic feet

Sources: U.S. Bureau of Mines, Mineral Industry Surveys; American Gas Association, Gas Facts 1975

42.0 Bcf in 1971 to 66.8 Bcf in 1975 or at an annual rate of 11.6%, as shown in Table IV-2. Growth of the natural gas industry has been from a fairly small base figure, so that a projection of recent rapid growth rates may be unrealistic, at least in areas already well served by gas. However, even if it is assumed that growth continues at the somewhat reduced rate of 6% per annum, Alaska's internal gas consumption would triple in about 18 years. If the slightly faster rate of growth of 10% occurs, consumption will triple in about 11 years. In either case, internal consumption would outstrip the annual volume of royalty gas before the end of the term of the 20-year contract. Moreover, the level of intrastate demand achieved by the end of the contract term could not be sustained by royalty gas from Prudhoe Bay beyond the productive life of that area. However, areas closer to Alaskan gas markets such as the lower Cook inlet may be the source of future growth in natural gas supply.

AMMONIA PRODUCTION

As a part of our economic analysis of the contracts for the sale of royalty gas, we have considered the possibility that Alaska might prefer to export manufactured products which use gas as a feedstock rather than exporting the natural gas itself. The principle argument would be that the value added (wages, salaries, profit) would thereby be retained for the Alaskan economy.

We considered, in particular, industries which are heavily dependent upon natural gas, such as ammonia manufacture. We determined that, if all of the Alaskan royalty gas were devoted to ammonia production, Alaska would then produce about 30% of the present U.S. level of ammonia output. Ammonia production in the U.S., although it is one of the most intensive industrial uses of natural gas, nevertheless consumes only a small fraction (a little over two percent) of total

TABLE IV-2

GROWTH OF NATURAL GAS CONSUMPTION

ALASKA 1971-1975

Use	1971 Bcf[1/]	1975 Bcf	Average Annual Rate of Growth
Residential	6.9	10.4	10.3%
Commercial	7.5	8.5	3.1
Industrial	10.6	22.4	18.7
Electric Generation	10.3	19.6	16.1
Other	6.7	5.9	-3.2
Total	42.0	66.8	11.6%

[1/] Bcf = Billions of cubic feet

Source: U.S. Bureau of Mines, Mineral Industry Surveys

U.S. natural gas production. The U.S. ammonia market simply could not absorb such a large increment in supply.

Moreover, planned additions to ammonia capacity in the lower 48 states are already quite large, amounting to 3.2 million metric tons per year, or a 22% increase over present capacity. As shown in Table IV-3, principal U.S. markets for ammonia fertilizers are in the Midwest, an area more accessible to ammonia plants in Texas, Louisiana or Alberta than to ammonia plants in Alaska. European markets for nitrogen fertilizer probably could be served more economically from the Persian/Arabian Gulf, and thus may not be a prospective long-run market for ammonia from Alaska.

TABLE IV-3

UNITED STATES NITROGEN FERTILIZER CONSUMPTION

BY GEOGRAPHIC AREA

1974

(In 10^6 Pounds)

	Quantity	Percent of Total
West Coast [1/]	1,301	7.8
Upper Midwest	10,096	60.8
Lower Midwest	3,111	18.8
Atlantic Seaboard	2,084	12.6
Total United States	16,592	100.0

[1/] Includes Washington, Oregon, and California

Source: U.S. Department of Agriculture

V. CONCERNS ABOUT CONTRACT AMBIGUITIES

This chapter comments on several specific details in the royalty gas contracts which appear to need clarification. Each point below is keyed to the section of the contract pertinent to the issue. We have suggested possible remedial actions in each case.

1. ARTICLE III (QUANTITY); SECTION 3.7(a):

This section refers to the terms under which the buyer may purchase additional quantities of surplus Alaskan royalty gas in the event that Alaska has previously implemented its option to remove contract gas for intrastate use. Section 3.7(a) continues to be applicable for a period of five years after expiration of the term of the contracts.

The governing price of surplus royalty gas offered to buyer after expiration of the contract and in the event of no other interstate bona fide purchasers is unclear. This section states only that,

> "In the event there are no other interstate bona fide purchasers, the price shall be the price then being paid by Buyer for gas purchased under this Agreement." (Underscoring inserted.)

Contract clarification of the applicable price is needed in the event deliveries have already been completed under the contract and no outside interstate purchasers exist.

2. ARTICLE VI (PRICE); SECTIONS 6.3 - 6.5:

Section 6.4 (deregulation after commencement of first gas deliveries) clearly provides for a price redetermination to occur as outlined in Section 6.5. Section 6.3, however, which provides for an initial price in the event of non-regulation existing at the time of first deliveries does not contain a price redetermination clause. Since Section 6.5 makes specific reference only to Section 6.4, it is unclear that price redetermination will also

occur in the event Section 6.3 is operative. Insertion of a clause in the contracts indicating that a price redetermination will occur in the event Section 6.3 applies is suggested.

3. ARTICLE VI (PRICE):

This Article of the contracts does not address a pricing situation in which the initial gas sales are not subject to F.P.C. regulation but, later in the contract term, become jurisdictional. Such a scenario could occur as a result of (1) judicial appeal of an initial F.P.C. ruling; (2) deregulation of gas prices conducted on a temporary or experimental basis, such as was proposed by President Carter during the election campaign; or (3) Federal action overriding the F.P.C. (e.g., creation of a general price and wage control policy).

APPENDIX A

TABLE 1

F.P.C. NATIONAL RATE RULINGS

F.P.C. Opinion No.: 699

Date Issued: June 21, 1974

Definitions of "new" gas:

(1) Sales of natural gas in interstate commerce made from wells commenced on or after January 1, 1973.

(2) Sales of natural gas in interstate commerce made pursuant to contracts executed on or after January 1, 1973 for

(a) gas not previously sold in interstate commerce (except under specified F.P.C. certificates); or

(b) where the sales were formerly made pursuant to permanent certificates of unlimited duration under contracts which expired by their own terms on or after January 1, 1973.

Applicable Rate: 42¢/Mcf with 1¢/annual escalation beginning January 1, 1974

F.P.C. Opinion No.: 699-H

Date Issued: December 4, 1974

Definitions of "new" gas:

(1) Sales of natural gas in interstate commerce from a well or wells commenced on or after January 1, 1973.

(2) Sales made pursuant to contracts for the sale of natural gas in interstate commerce

(a) for gas not previously sold in interstate commerce prior to January 1, 1973 (except under specified F.P.C. certificates); or

F.P.C. NATIONAL RATE RULINGS

(b) where such sales are initiated on or after January 1, 1973 provided the sale has not been certificated under the F.P.C.'s optional procedure.

(3) Sales made pursuant to contracts executed prior to or subsequent to the expiration of the term of the prior contract where the sales were formerly made pursuant to permanent certificates of unlimited duration under such prior contracts which expired of their own terms on or after January 1, 1973, or pursuant to contracts executed on or after January 1, 1973, where the prior contract expired by its own terms prior to January 1, 1973.

(4) Gas produced from newly discovered reservoirs located upon acreage previously dedicated to interstate commerce under a contract dated prior to January 1, 1973, shall have the rate determined by the date of reservoir discovery in lieu of the contract date.

Applicable Rate: 50¢/Mcf and 1¢/annual escalation beginning January 1, 1975

F.P.C. Opinion No.: 749

Date Issued: December 31, 1975

Definitions of "old" gas: Sales of natural gas in interstate commerce for resale from a well or wells commenced prior to January 1, 1973.

Applicable Rate: 23.5¢/Mcf prior to July 1, 1976; 29.5¢/Mcf on and after July 1, 1976. (This rate does not supercede existing higher area rates nor other specified F.P.C. established rates.)

TABLE 1 (continued)

F.P.C. NATIONAL RATE RULINGS

F.P.C. Opinion No.: 770

Date Issued: July 27, 1976

Definitions of "new" gas:

(1) Sales of natural gas in interstate commerce for resale from a well or wells commenced on or after January 1, 1975.

(2) The sale is made pursuant to a contract for the sale of natural gas in interstate commerce for gas not previously sold in interstate commerce prior to January 1, 1975 (except under specified F.P.C. certificates), where the sale is initiated on or after January 1, 1975, provided that no certificate for the subject sale has been issued under the optional procedure.

Applicable Rate: $1.42/Mcf and 1¢/Mcf per quarter commencing October 1, 1976

Definitions of 1973-1974 gas:

(1) Sales of natural gas in interstate commerce for resale made from a well or wells commenced on or after January 1, 1973 and on or before January 1, 1975.

(2) The sale is made pursuant to a contract for the sale of natural gas in interstate commerce for gas not previously sold in interstate commerce on or after January 1, 1973 (except under specified F.P.C. certificates), where the sale is initiated before January 1, 1975.

Applicable Rate: $1.01/Mcf

TABLE 1 (continued)

F.P.C. NATIONAL RATE RULINGS

F.P.C. Opinion No.:	770-A
Date Issued:	November 5, 1976
Definitions of "new" gas:	Sales of natural gas in interstate commerce for resale from a well commenced on or after January 1, 1975.
Applicable Rate:	$1.42/Mcf and 1¢/Mcf per quarter escalation beginning October 1, 1976.
Definitions of 1973-1974 gas:	Sales of natural gas in interstate commerce for resale made from a well commenced on or after January 1, 1973 and prior to January 1, 1975.
Applicable Rate:	93¢/Mcf and 1¢/Mcf annual escalation beginning January 1, 1977

(NOTE: IN BOTH OF THE ABOVE DEFINITIONS, WELL DATE IS DEFINED AS COMMENCEMENT OR SPUD-IN DATE REGARDLESS OF DATE OF COMPLETION OR RECOMPLETION.)

M E M O R A N D U M

TO: Mr. John Rader

FROM: Carl Swanson

SUBJECT: QUESTIONS FOR PURCHASERS

DATE: February 1, 1977

1. Do you (purchaser) agree that Section (6.5) which provides for annual redetermination of the price under deregulation, applies to Section 6.3 when deregulation occurs before first deliveries of gas, as well as to Section 6.4, which applies when deregulation occurs after first deliveries?

2. Do you (purchaser) agree under Section 6.2, that if the price is regulated, the price paid by you (purchaser) to the State shall include an amount equal to severance taxes, if the regulation allows an amount equal to revenue taxes to be paid to working interest owners?

CS:bvd

SCOMM

#21:14

House

STATE OF ALASKA

OFFICE OF THE GOVERNOR
JUNEAU

JAY S. HAMMOND
GOVERNOR

NEWS RELEASE

FOR INFORMATION CONTACT:
Scott Foster, Press Secretary
Office of the Governor
Pouch A Juneau, Alaska 99811

OR PHONE: 907-465-3500

GOVERNOR JAY HAMMOND STATEMENT:
February 9, 1977

"Months ago my Department of Revenue began researching various financial alternatives that might assist in the eventual selection of a trans-Alaska gas line route and which would also be sound financial policy for the State. Some of those alternatives have included possible loan guarantees to aid in financing need by the builders of the trans-Alaska route since that might lower the cost of service on that line. I want to stress that no action is going to be taken in this area until the Legislature has decided on the royalty gas contracts now before them. Unless they approve those contracts it makes no sense to even explore further means of promoting the trans-Alaska route, since a rejection of the contracts will unquestionably be interpreted by many as a lack of support for that route choice. I want it clearly understood that the State would not and could not under present law enter into contracts with one of the competing gas line companies to pay for the building of the line. I also want it clearly understood that I would not support an investment of State funds in this project, even a loan guarantee, if it did not provide a rate of return equal to what we could receive elsewhere. Finally, any involvement by the State even in loan guarantees will require a legislative decision and all that we can do at this time is to develop the information on which the Legislture can act in the future should it desire to do so."



DEEP IN THOUGHT—Alaska Senate President John Rader, D. Anchorage, listens to testimony presented before the joint House-Senate committee probing the terms of the proposed sale of Alaska's royalty gas. Hearings into the sale continued this afternoon with members of the Senate Review panel now set to hear rebuttal testimony on Monday at 10 a.m. House members of the panel shown are Rep. Charles Parr, D-Fairbanks; Rep. Joe McKinnon, D-Anchorage; and Rep. Joe Hayes, R-Anchorage.

Conflicting Testimony Marks Royalty Gas Contract Hearings

By CHUCK KLEESCHULTE
Empire Staff Reporter

More heat than light was shed onto the provisions of the state's proposed royalty gas contracts Thursday.

Conflicting and widely differing testimony ballooned the record of the Joint House Senate Gasline Review Committee hearings which dragged into the fifth day this morning.

Lawmakers, still attempting to determine if approval of the administration-negotiated contracts might backfire and force the state to settle for a substantially reduced price for its one-eighth share of Prudhoe Bay reserves—heard testimony from Alcan Vice President Morris Thompson.

Thompson argued approval of the royalty gas pact could "substantially" reduce royalty payments to the state, a diametrically differing position than taken by El Paso Alaska representative Michael Holland during his testimony Wednesday.

Under the proposed sale agreement the state is guaranteed the same price for gas as the highest paid producer at Prudhoe Bay is receiving, producers of the other seven-eighths of the reserves.

Thompson argued the state could lose as much as $800 million from its royalty gas under the present contracts since he said the price of transportation of the gas to market would be deducted from the wellhead price under a deregulated market.

Holland in his testimony Wednesday and again Thursday said under no proposed deregulation scheme would the FPC give up its power to set gas transportation system tariffs. He said that means there is no necessary relationship between transportation and wellhead prices, the gas distribution firms simply absorbing the costs of differences in transportation passing them onto consumers in their rate bases.

"There just isn't any necessary reason for Alcan's contention to be correct. We strongly dispute that assumption," Holland said.

The issue, other sources say, is much more complex given the difference in ingredients which go into determining the actual market price of gas. Lawmakers were expected to attempt to sort out the confusion through expert legislative testimony scheduled for today.

Thompson, speaking for Alcan which wants to bid on the state's gas competitively, pointed out a list of what he called deficiencies in the proposed sale contracts. Thompson argued that a provision in the contract which guaranteed the state would gain the highest price paid to any producer was too "narrowly limited" and should be rewritten to apply to the entire contract and not just to certain sections.

Thompson complained the contracts precluded the state from ever gaining "premium" advance payments for its gas, a provision not allowed at present under FPC regulations, but possible under deregulation. The contention that the state could ever expect to gain advance payments was refuted Wednesday by Holland. Advance payments were outlawed by the FPC in late 1975.

Thompson in a new charge said the contract did not insulate the state against "carrying charges" which the FPC might levy against Alaska, making the state pay for the cost of constructing part of the pipeline, the capacity needed to carry Alaska gas which would be withdrawn from the line in the case of future in-state uses for the gas.

The Alcan representative also charged the contract forced the state to pay for gas processing facilities on the North Slope rather than allowing the state to simply rent the facilities.

"The proposed contracts aren't necessarily deficient in what they provide, but in what they fail to provide," Thompson said.

Three conservation groups, the Wilderness Society, Friends of the Earth and the Alaska Conservation Society, all opponents of the El Paso project on environmental grounds, asked the pact be denied to prevent the state from being locked in to future support of the El Paso line. Their favorite route is the Alcan route.

Robert Ward, president of Arctic Gas of Alaska, said the royalty pacts would definitely have "some impact" on the line decision, but he still confidently predicted, barring an unfavorable Canadian decision, that the Arctic project will be approved by the President and Congress.

Teamsters Want State To Share Line

The state of Alaska should pull the biggest rabbit of all from its hat to secure approval for the $7.8 billion trans-Alaska gas pipeline project—by agreeing to finance half the cost of the El Paso proposal, a senior representative of Alaska's powerful Teamsters Local 959 said Thursday.

Jeff Barry, Sr., business manager of Local 959 offices in Anchorage and director of the teamsters' political action arm ALIVE, said the state could earn a substantial return on its investment by using low-interest, tax-free state obligation bonds to fund the pipeline project. Barry made his proposal before the Joint House-Senate Gasline Review Committee.

"I think it will take a miracle to win approval of an all-Alaska pipeline route, but I've seen two miracles occur before in the state—there's no reason to believe the legislature couldn't help a third one along a bit," said Barry, referring to Alaska statehood and the state's recovery from the 1964 Anchorage earthquake.

Barry, in arguing for rejection of the Hammond administration's proposed royalty contract, called the pact "too faint-hearted." He proposed the state show a true measure of support for the line by acquiring an equity interest in the project, the value being determined by the savings to El Paso from the lower interest rate the state might be eligible to obtain.

Barry said the interest savings to El Paso over the life of a 20-year loan would amount to billions of dollars, the difference between roughly a 6 per cent and 10 per cent interest rate.

Barry argued that in England close government-business cooperation is not uncommon. "I just don't believe there'll be any other way for us to get the jobs we need unless we change the ballgame and go to the FPC and show them we are vitally interested in the route issue, interested enough to use our own money," Barry said.

Lawmakers largely were speechless after the proposal. "Thank you for the distinctly different solution to our deliberations," Senate President John Rader, D-Anchorage, said.

Hammond Defends Royalty Gas Sale

By The Associated Press

Gov. Jay Hammond Thursday said he cannot accept the premise that Alaskans are "helpless pawns in a federal decision" on a route for a North Slope natural gas pipeline.

Hammond made the comment in response to testimony Wednesday by a prominent economist that administration-negotiated contracts for the sale of Alaska's Prudhoe Bay royalty gas to three firms in return for their political support for an all-Alaska pipeline, represents a meaningless political exercise.

"There is nothing the state can do to advance a trans-Alaska gasline," Arlon Tussing told the joint House-Senate Gasline Review Committee. He added the contracts were made solely to advance "internal" political interests.

But Hammond said "to suggest that the royalty gas sale will have no effect ignores the fact that those who oppose the state position are strenuously resisting the sale proposal.

"I will not accept and I doubt any Alaskan governor would accept the premise that we are simply helpless pawns in a federal decision," Hammond said.

"The effect of this decision on the environment, social and economic structure and character of our state is immense and I will not accept a passive or defeatist attitude toward the route decision," he said.

Udall fears battle over Alaska gas

By Al McConagha
Staff Correspondent

Washington, D.C.

Rep. Morris Udall, who will become House Interior Committee chairman, predicted Wednesday a congressional battle if President-elect Jimmy Carter does not recommend a land delivery route for Alaskan natural gas.

The Arizona Democrat did not specifically endorse one of the competing overland delivery systems but declared opposition to piping gas across Alaska for liquefaction and shipment by tanker to California.

Udall's comments at a breakfast with reporters were seen as an initial warning to the incoming administration that a decision in favor of the Alaskan proposal could result in a serious fight with Congress.

The congressman also said he would warn the administration to "go slow" in consolidating federal energy activities under James Schlesinger, who will direct a department of energy.

For instance, he had reservations whether Schlesinger ought to control federal lands used for a variety of purposes simply because they contain coal, Udall continued.

Schlesinger has assured Udall that he is open-minded on energy development and does not have a bias toward nuclear generation, Udall said. He added Schlesinger would work hard for energy conservation.

In speaking of delivery of Alaskan natural gas, Udall noted the need for Canadian approval if the Mackenzie Valley pipeline route to Minnesota and other Midwestern states is to be undertaken.

He added that perhaps the proposal to bring the pipeline to the United States along the Alcan Highway would be the best plan for environmental and other reasons.

Arctic Gas Pipeline Co. is seeking federal permission for a MacKenzie River pipeline route. El Paso Alaska Co. is asking for a trans-Alaska line. Alcan Pipeline Co. wants certification for an Alcan route.

The Federal Power Commission staff has filed a brief asserting that the "evidence is overwhelming" that the Arctic Gas proposal is "vastly superior" to the other two projects.

The commission must make a route recommendation to the president by May 1. The president has until Sept. 1 to make a decision. That decision is subject to congressional veto under a measure passed in the last session.

Minneapolis, MN Star or Tribune

ded that his loan proprosal would not be without strings.

"I'm certain that if the legislature has to take this course, they will want key budget and management people from both the administration and legislature to go in there and straighten out the financial mess," Kerttula said.

Kerttula also said he would insist that the UA repay the loan within five years.

Hammond said the state's Department of Revenue is researching several financial alternatives which might assist the El Paso Pipeline Co. in finding financing at lower costs for its proposed $7.8 billion land-sea pipeline route.

"I want to stress that no action is going to be taken in this area until the legislature has decided on the royalty gas contracts now

financing. State financing would then lower the cost of deliveries of gas to the lower-48 states making the El Paso project more attractive to the Federal Power Commission (FPC) and to Congress which must make the final decision on the route of the proposed gasline.

Hammond said, however, he would not

all-Alaska route.

In the House, Rep. Russ Meekins Jr., D-Anchorage, announced this morning he will be introducing a resolution Friday calling for House Speaker Hugh Malone to set up a special panel to consider types of financing legislation which could influence selection of the all-Alaska route.

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tion.

Huber said the
method is that the
be funded at interest
below what could be

Veiled Threats?

Stevens Challenges Canadians On G

By MARK PANITCH
Washington Correspondent

WASHINGTON—Alaska Senator Ted Stevens today challenged Canada to speed up its gas pipeline decision-making process in order to conform to the expedited U.S. schedule passed by Congress last year.

Stevens told a well-attended press conference in the Capitol that "A gas pipeline route through Canada, although facilitated through 195 miles in Alaska, could be delayed for 2,035 miles of construction on Canadian soil."

At the same time, Stevens issued a veiled threat to the rest of the country that if Alaska does not get a favorable pipeline settlement it could reduce the flow of Prudhoe Bay gas.

"Alaska could follow the procedure of the Texas Railroad Commission," he said in response to a question about Alaska's options from a Canadian reporter.

Q. What does that mean?

A. We could cut the flow of gas to make a pipeline uneconomical.

He then noted that federal pre-emption of Alaskan control over gas flow would require that the same preemption be extended to Texas, Louisiana, Oklahoma and other gas-producing states. "But I'm not threatening," he said.

Stevens said the press conference was called "to send a message to the White House" in time for a planned visit by Canadian Prime Minister Pierre Elliot Trudeau next week. He said he was trying to arrange a Capitol Hill meeting between members of Congress and Trudeau to discuss the gas line.

An informal poll of Canadian reporters immediately after the news conference yielded two major themes:

—If Canada were to accept Steven's challenge and expedite its pipeline process that would virtually guarantee the approval of the Arctic Gas project.

—In the words of one reporter, "We don't need Ted Stevens telling us what to do in Canada."

A third Canadian reporter combined the two with the comment that, "He is obviously trying to make somebody in Ottawa mad, hoping they'll dig in their heels and do nothing in response to him and this kind of assault."

In a prepared statement, Stevens described the Canadian decision-making process, noting there "is no specific time frame upon which to rely regarding eventual approval of a pipeline. We simply cannot assume Canadian approval in time to integrate construction with our expedited decision-making process."

Stevens also questioned whether the recently-signed hydrocarbon treaty between the U.S. and Canada will prevent discriminatory taxation of U.S. gas. "There is a real difference of opinion on this issue," he said.

"That issue is up to the Canadians, not the FPC, our President or the Congress," he said.

Stevens indicated he thought the biggest single problem facing Canadian approval of a gas pipeline through the Mackenzie Valley—the route proposed by Arctic Gas—is the settlement of native land claims in that region.

"The United States had its own land claims settlement," he said, "which culminated a 15-year process with the passage of the Alaska Native Claims Settlement Act in 1971. Every indication leads me to believe that the Canadian land claims problem is at least as complicated and will take at least as long to settle."

Canadian priorities, he said, would be "Canada's national interest, which is logical." But this could mean construction of the Polar Gas pipeline from the high Arctic Islands north of central Canada "where exploration has been much more successful than in the Mackenzie Delta."

Federal Power Commission Administrative Law Judge Nahum Litt came under attack also. "The FPC has its head in the ground as far as the decision affected Canada. What sense does it make to expedite the decision here in the U.S. when there is no similar sense of urgency in Canada?" he asked.

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Hammond said, however, he would not

House Speaker Hugh Malone to set up a special panel to consider types of financing legislation which could influence selection of the all-Alaska route.

Huber said the advantage of the latter method is that the entire project would then be funded at interest rates 3 to 4 per cent below what could be obtained through

decision on the pipeline financing concept.

"I'm not pushing the concept just yet, but I do want us to look at it along with the Hammond administration," Meekins said.

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On other issues Stevens:

—Defended the proposed El Paso Gas liquefied natural gas system as the "most flexible" proposal. "When the Prudhoe Bay fields are exhausted the tankers will still be useful to move gas from offshore deposits to lower-48 markets."

—Pointed out that gas moving from the West Coast to the East Coast under the recently-passed natural gas act is a demonstration of the displacement principle that El Paso plans to use to get Alaska gas benefits to Eastern customers.

—Linked problems getting offloading facilities for Alaskan oil in California to that state's desire to get Alaskan gas. "They're holding up the oil off-loading facilities to get more of our gas." He said that California laws could be preempted by the federal government if they put a "plug in the pass" that Alaskan gas must go through.

—Defended the Arctic National Wildlife Range as a place "Alaska is trying to save." The range, he said, was the brainchild of "the ladies of the Fairbanks garden club" during the 1950's.

Stevens also made what appeared to be an unusual conciliatory gesture toward the conservation organizations that are fighting the Arctic pipeline. He blamed delay in construction in the trans Alaska oil pipeline on "lack of authority to approve right of way wider than 50 feet" instead of the conservationists.

OIL, GAS TAXES GO TO CUSTOMERS

A tax imposed on oil and gas reserves by the Alaska Legislature has come back to haunt Anchorage consumers.

The Alaska Public Utilities Commission has ruled the reserve tax payable by a local gas company may be charged to customers in billings.

Anchorage Gas and Service Co. may pass on to its customers the cost of the reserve tax as a separate surcharge on its bills, the commission ruled.

And, the commission said, if the severance tax on gas is increased above the amount payable on July 1, 1976, the company may increase its rates correspondingly.

The commission rulings came in response to a request by the gas company to pass price increases to customers automatically. The commission limited those increases to severance taxes, the reserve tax, price escalations because of existing contracts, and royalty gas purchases from the state.

"The provisions proposed by the company were so broad that nearly all increases in any tax or cost of purchased gas could be flowed through" to customers, the commission said in limiting flow-throughs.

In allowing partial flow-through of cost increases, the commission relented from an earlier suspension of all flow-throughs by Alaska Gas and Service Co.

"When a flow through will not result in AGAS maintaining or receiving more than a reasonable rate of return on its investment it is the opinion of this commission that the flow through should be permitted," the commission ruled.

Stevens: Delay Needed

AOT 12-17-75

Special To The Times

WASHINGTON — U.S. Sen. Ted Stevens, R-Alaska has told the Interior department that more environmental information is necessary before oil and gas development begins in the northern Gulf of Alaska.

The senator also said there should be a special study on the possible adverse effect on Alaska's fisheries before development begins. Public comment based largely on the discoveries made in the exploration stage should be invited as well, he said.

"I am extremely concerned about the possible adverse effect the development of oil and gas from the northern Gulf could have on Alaska's fisheries industry," Stevens said in a letter to Interior Secretary Thomas Kleppe.

The senator said that he is convinced after recent talks with Alaskan fishermen that those groups would take legal action, perhaps along with the State of Alaska, if development were begun without an additional stage of environmental assessment including public hearings.

The Interior Department recently published the final environmental impact statement for the proposed oil and gas leasing in the gulf. Stevens told Kleppe that he is in complete agreement with the Interior department's goal of increasing our domestic supply of oil and gas to decrease our reliance on foreign sources of energy supplies, but that the time should be taken between the exploratory and development stages to get more data.

The senator stressed the difference between the exploratory and development stages.

"After a particular exploratory stage is successfully completed, the location and size of the oil and gas reserve will be better understood. At that time it is in my opinion necessary to pause and consider the effects of development," he said.

Arco Asks State For Flare Okay

AOT 12/18/75

Atlantic Richfield Co. is seeking the state's permission to flare up to six million cubic feet of natural gas a day at its crude oil topping plant at Prudhoe Bay.

Gas is produced when crude oil is converted into diesel fuel, which is needed for development of the Prudhoe Bay oil field and for construction of the trans-Alaska oil pipeline. However, there is currently a need for only four million cubic feet of the estimated 10 million cubic feet of gas which will be produced when the topping plant goes to its allowed throughput of 13,000 barrels of crude oil a day.

The Alaska Oil and Gas Conservation Committee published notice of Arco's request last week and has received several protests. Consequently, a public hearing will be held at 9 a.m. Tuesday at the state division of oil and gas headquarters, 3001 Porcupine Drive in Mountain View.

Written objections have been received from the Alaska Center for the Environment and Jerry McCutcheon.

Arco had received permission from the conservation committee in September to increase the throughput at its topping plant from 7,200 to 13,000 barrels of oil a day. A new addition was built to the topping plant, to handle the increased volume.

At that time Arco had anticipated that of the estimated 10 million cubic feet of casinghead gas that would be produced from the 13,000 barrels of oil, it could use all but four million cubic feet, which would have to be flared. The state gave permission to flare that amount.

However, Arco's plans to double its base camp in time for Christmas had to be shelved. The modular living units weren't able to make it in to Prudhoe Bay in the summer barge run because of abnormal ice conditions.

That meant that additional gas will have to be flared — an estimated two million cubic feet more a day — if Arco is to increase the topping plant throughput to 13,000 barrels a day. The throughput now is 11,000 to 12,000 barrels, according to Len Williams, Arco's operations manager.

"We made a whole series of projections last August," Williams explained. "Now we're trying to accommodate changes we couldn't foresee. In other words, we blew our projections."

In addition to delays in arrival of equipment, Arco has found that in converting two drilling rigs from diesel to gas fuel, the rigs are using less gas than they had anticipated.

And their projections also were too high in the amount of natural gas which would be required to fuel the main construction camp, Arco said in a letter to the state.

About two-thirds of the diesel fuel produced at the topping plant is used by Arco and BP Alaska to operate drilling rigs and trucks and other equipment at Prudhoe Bay.

The remaining third is sold to Alyeska Pipeline Service Co., for use in construction of the trans-Alaska pipeline. About 35,000 gallons a day is being supplied to Alyeska, Williams said.

He said that when Fairbanks' Golden Valley Electric ran out of fuel about a month ago, Alyeska loaned them fuel, as did the military, "so we (Arco) tried to provide more to Alyeska."

Arco is asking permission to run an average of 13,000 barrels a day through the topping plant through Dec. 31, 1976.

New Gas Line Bill Next On Agenda

12/14/75

Sen. Ted Stevens yesterday said he hopes to have hearings on his new approach to the gas pipeline question scheduled as soon as work on the 200-mile limit fishing bill is completed by the Senate Commerce Committee.

The gas pipeline bill, introduced Friday, would require that any pipeline bringing natural gas from Alaska's North Slope be totally under U.S. control.

The bill would effectively eliminate the Arctic Gas Consortium from the competition to construct a line to transport the gas.

Stevens' proposal does not say the pipeline builder would be Arctic's main competitor, El Paso Natural Gas, but as a practical matter, El Paso is the only other applicant before the Federal Power Commission.

Midwestern senators, who have favored a line which would bring the gas to their areas, are now distributing and studying his bill, he said.

The senator, in a visit to Anchorage yesterday, said he had been disturbed recently by developments in Canada, through which Arctic's line would run. These developments would surely delay the Federal Power Commission's decision on who would build

See Page A3, Col. 7

Work On Gas Line Bill To Follow Fish Limit

(Continued From Page 1)

the line, he said.

By removing a Canadian line from consideration, the decision could be made sooner, he said.

He referred to a resolution recently adopted by the Canadian National Liberal Party calling for the federal government to "Canadianize the industry," and the likelihood that Canadian native land claims settlement is many months away.

The Republican senator was in Alaska for the weekend, mainly to explain his new bill to the Organization for the Management of Alaskan Resources, which was having a board meeting yesterday morning.

Stevens also said:

—The extension of tax cuts, which is up for consideration in Congress now, is of more importance to Alaskans than most places because of its young population.

"I think it is incumbent upon Congress to dedicate itself to reduce expenditures to the maximum extent possible, because if we reduce revenues and increase expenditures, it means increased debt and an increased cost of borrowing," he said.

—He will spend the Christmas holidays in the Florida Keys with his family.

—He is disturbed by the Environmental Protection Agency decision regarding the Ketchikan Pulp Mill. The decision was that the mill's system to protect water quality was not acceptable, and it could force the closure of the mill.

U of A to study gas routes

FAIRBANKS (AP) — As decisions near on the routing of a natural gas pipeline from Prudhoe Bay to the south, the University of Alaska says it has received a grant to study alternatives to the Arctic Gas proposal.

The director of the Institute of Social, Economic and Government Research, Vic Fischer, has confirmed that his department has received a $15,000 contract from the Bureau of Land Management to study alternatives to the Arctic Gas pipeline proposal. The study is a follow up on Arctic Gas Company's draft environmental impact statement.

Nine alternatives are being considered in addition to the Arctic Gas proposal, which would see the line cross the Arctic Wildlife Range:

— An offshore route, which would go offshore in the Arctic Ocean from the Beaufort Sea to Canada.

— An onshore route, which would skirt the south edge of the Arctic Wildlife Range.

— Also being considered is the route known as the Fort Yukon route, which would take the gasline right through Fort Yukon, along the north side of the Yukon River through Canada.

— A route proposed through Fairbanks then along the Alaska Highway to Edmonton, Alberta.

— Another route through Fairbanks would go along the Alaska Highway, and then to a gas liquefication plant at Haines.

Three other routes involve turning the gas to a liquid before shipping it by tanker, they include —

— The Point Gravina route, which is favored by the El Paso company.

— The Cook Inlet route, which takes the gas from Prudhoe through Fairbanks, down the rail belt, to the existing petrochemical complex at Nikiski beach, north of Kenai and from their by LNG tanker.

— The last alternative is the Golovin route, which would take the gas from Prudhoe by pipeline to the Seward Peninsula, and then by tanker across the Bering Sea.

The institute is using computers to study the economic and social impact of the nine routes. Factors that will be considered are the Alaska economy, employment, population, income, and other economic factors.

Gas Bill Introduction Delayed

12/15/75

Times Washington Bureau

WASHINGTON — Once again, introduction of the Arctic gas bill into the House has been delayed.

Michigan Republican Rep. Philip Ruppe had planned to put the legislation in the hopper Monday, but "is still collecting cosponsors," according to a staff aide.

Ruppe is expected to submit the bill before Congress recesses for Christmas on Friday.

Ruppe announced his plans to introduce the legislation last month in a news release. The bill mandates the Arctic Gas consortium project.

Meanwhile, Rep. Don Young, R-Alaska, has canceled plans to introduce a gas line bill submitted in the Senate Friday by Republican Ted Stevens.

Instead, the Republican congressman, is drafting legislation that will be "the best of both worlds," according to Young.

The bill will combine features of the Stevens' measure as well as items in the legislation offered by Alaskan Democrat Mike Gravel.

Stevens' legislation forbids the Federal power Commission to approve a certificate for any pipeline route that is not entirely within the United States. The legislation thus would preclude the power commission from acting on the Arctic Gas application now before it.

The Stevens' bill is a calculated effort to win the support of those congressmen and senators who have traditionally favored the Arctic Gas approach.

Gravel's bill, submitted several months ago, would mandate a power board decision in the gas line case by June 30, 1976. However, the Democratic senator indicated recently that he will amend the bill to push the date back to Dec. 1, the target the commission has set for itself in reaching a final decision.

Asked in an interview if he expects the Alaskan delegation to get together on the gas line issue, Young smiled and said, "Well we agree on the fundamental position that the route should go through Alaska."

Bill Backs Plan For Canada Line

ADT 12/16/75

Times Washington Bureau

WASHINGTON — Rep. Philip E. Ruppe, R-Mich., today introduced his long - awaited bill to mandate the Arctic Gas route for bringing natural gas from the north slope of Alaska to the Lower 48 states.

But Ruppe put the bill in without the list of "heavyweight" co-sponsors.

The only other name on the bill as it went into the hopper of the House is Rep. Bob Bergland, D-Minn.

Other congressmen whom Ruppe has sought for co-sponsorship, including House Assistant Minority Leader John Anderson, R-Ill.; energy subcommittee chairman John Dingell, D-Mich.; and Democratic presidential candidate Morris K. Udall of Arizona, did not join with the northern Michigan representative.

"We really want co-sponsors," Ruppe said in an interview yesterday. "The more the merrier. But I really haven't had time to circulate it. By introducing it now, it will be in the Record (the Congressional Record) and people can study it."

Ruppe said in the interview that he considered submitting the bill by himself, but the decision was made to balance the bill with a Democrat's name.

"We feel we have to get it in before the Christmas recess to maintain our credibility," an aide to the congressman said yesterday.

Ruppe announced his plans to submit the bill several weeks ago with a news release.

Arctic Gas lobbyists have been circulating on Capitol Hill for some time in an effort to gain co - sponsors for the measure, which would establish their proposal for a Canadian route as the only one

Opposing Recommendations

ADT 11/6/75

LET'S NOT BE too picky about the draft environmental impact statement prepared by the staff of the Federal Power Commission on proposed routes and termination points for the proposed natural gas pipeline from the North Slope.

But the commission's staff report does raise an interesting point, because in the case of both the Arctic Gas and the El Paso Natural Gas Co. proposals it recommends routing quite different from what either firm has in mind.

How far, it might fairly be asked, should a study of the environmental consequences of any commercial project go in telling a private company what is best for its business?

The Arctic Gas consortium has spent millions of dollars in its study of possible routes. It has concluded the best way to go is eastward through Alaska toward the Mackenzie Delta region of Canada and then south to the continental United States and eastward to market.

El Paso has spent its dollars determining that its all-American route should be via the oil pipeline corridor almost to the coast, but turning off to terminate at Gravina Point, near Cordova. And it is proposing a regasification facility at Point Conception, Calif.

THE STAFF OF the FPC sees things differently.

It believes the Arctic Gas pipeline, if that project is approved, should run south from Prudhoe Bay to Fairbanks and then eastward to Canada somewhat along the Alaska Highway route. It thinks the El Paso project should run south to Livengood and then branch off to a terminal at Nikiski, on the west side of Cook Inlet. And it recommends a receiving facility for tanker shipments at Oxnard, Calif., instead of Point Conception.

That's interesting stuff, to be sure.

There are many reasons to support a pipeline to Fairbanks. And the Nikiski proposal makes a lot of sense to a good many people.

THESE ALTERNATIVES, however, have been studied before by the respective companies. They looked at the environmental hazards, presumably, and came to quite different conclusions than those reached by the FPC staff. No doubt some economic considerations were cranked into the companies' final proposals — but that's not necessarily bad.

If the decision for route authority rests with the FPC, will the nod go to the company which first acquiesces to the recommendations of the commission's environmental impact statement?

Petroleum Economist Analyzes Gas Line Benefits

Anchorage Daily Times

Dave Knudsen, the state's petroleum economist, says he expects North Slope gas will sell for 65 to 70 cents per thousand cubic feet.

He said he has seen no studies to back up other's estimates that the gas may have a zero value because of high transportation costs. And he said that his best estimate indicated that the state's income would be 100 to 200 million greater from an Alaskan gas pipeline as opposed to a Canadian route.

"A trans-Alaska gas line will bring significantly higher income to the state than the Arctic (Canadian line," he said. "And in addition, a trans-Alaska line is more important to the nation."

Knudsen pointed out in testimony this week to the legislature's Gas Pipeline Impact Committees, however, that a trans-Alaska routing, while offering more revenue, at the same time presents more costs to the state.

"It's important to compare the two," he said.

The $100 million to $200 million represents his present best estimate of the comparison between costs and revenues of an Alaskan routing over a Canadian route.

Knudsen said he isn't sure that the state should plan to "bank" its royalty gas from the Prudhoe Bay reservoir by leaving it in the reservoir until some future time.

"It will depend on how good is the bank," he said. "Once that gas enters an interstate pipeline controlled by the Federal Power Commission, your share may be foregone unless you take it at that time."

The commission then has control, he pointed out, "which will supersede any banking agreements the state may have. The success of such a plan (to bank the gas) will depend on who are the bankers? What are their interests? What are ours?"

When Knudsen started his testimony, he was at first reluctant to answer legislators' questions about revenue estimates from North Slope gas and comparison of pipeline routings.

"Alaska is preparing testimony to be presented to the Federal Power Commission in January," he said. "I feel it's not wise to discuss this in public."

Committee chairman John Rader challenged Knudsen on this, asking "How would public disclosure affect the pipeline routing? If it's some kind of surprise tactic, I don't fancy that as a tactic the state should be taking. It's our job to get the facts out."

Rader has been named chairman of the committee, succeeding the late state Rep. Willard Bowman, who died last week of cancer.

(An Anchorage Democrat, Rader will be assisted by state Rep. Clark Gruening, D-Anchorage, who was named vice chairman.)

Knudsen responded, "I feel it's inappropriate to present numbers and conclusions that may change a day or a week or a month from now. I have no desire at this point in time to give information our commissioners will be traveling to Wshington, D.C., to give a month from now."

Rader insisted that he wanted Knudsen's "best estimate" now. "This state legislature and this state you are a part of may be as important as that hearing," he declared. "Most of the decisions we make are based on less than perfect knowledge."

Sen. Clem Tillion (R-Halibut Cove) took Knudsen's side. "I don't think that information should be given in public," he said. "It will end up in print as the gospel truth. He added, "I can call Dave (Knudsen) later," to ask some questions.

Tillion also said, "I learned a long time ago never to tell anyone anything you don't have to because when you change your mind, you get a reputation for being indecisive."

Rader appeared to back down at this time, commenting, "I can understand maybe there might be reasons for your reluctance to give that informaton." He asked Knudsen to supply the answers "for our private use."

"I'm impressed with your intellectual and professional accomplishments," Rader told Knudsen, "and we're glad you are aboard. I don't want you to think my disagreement was anything personal."

Rader said his committee is faced with a critical time problem, "if we are going to affect the outcome of the route" for a gas pipeline from the North Slope.

Gas Line Delay

THE HAMMOND administration's move to delay a natural gas pipeline from Prudhoe Bay is astonishing.

In testimony last week before the legislature's Gas Pipeline Impact Committee, Natural Resources Commissioner Guy Martin and other representatives of the administration raised the spectre that gas production would be managed in such a way that it would result in a giant loss in the recovery possibilities of crude oil from the same area.

State efforts will be concentrated on stopping natural gas production, Mr. Martin said, until the state is convinced such production will not impair oil production.

If that's to be the state's position, the prospect is frightening.

The testimony was offered under the guise of representing the views of the state's Royalty Oil and Gas Advisory Board. But it looked suspiciously more like the political viewpoints of Mr. Martin and Arlon Tussing, an economist whose involvement in energy affairs demands scrutiny.

THERE ARE many things wrong with the state's position, not the least of which is the fact that the testimony before the legislative committee presumably dealt with oil and gas conservation matters.

Since that's the case, the topic at hand was not even within the purview of the royalty board. That board is supposed to be dealing with dollars. When the subject is proper management of oil and gas fields through rules and regulations that are designed to obtain maximum yield of natural resources, the authority which should be doing the talking is the state's Oil and Gas Conservation Commission.

Mr. Martin's pitch to the legislative committee was based on an assumption that state experts, if that's the word, fear that putting a natural gas pipeline on stream will impair the Prudhoe Bay oil production.

This testimony was offered despite statements by the heads of Atlantic Richfield and British Petroleum operations here that proper management of the fields would do no such thing. Further, statements from the local heads of both El Paso and Arctic Gas rejected contentions by Mr. Martin that their companies' planned production would do anything like what the state contends will happen.

ONE CLEAR and immediate result of a threat by the state to delay approval of a natural gas pipeline will be to confound efforts to achieve federal approval for an all-Alaska route.

The action plays into the hands of those who advocate a Canadian pipeline to transport Alaska's oil, because any delay works to the advantage of a time frame which anticipates long years before there is any resolution of Canadian environmental considerations and native land claims.

Thrown onto the table again at the hearings was Mr. Tussing's long stated, and often discredited, contention that Alaska's natural gas would be "valueless" at the time of production because of the high cost of building the pipeline.

MR. TUSSING apparently speaks from several platforms when he addresses this subject, notwithstanding the fact that serious conflict of interest may be involved. He reportedly remains on the payroll of the University of Alaska's office of economic study, even though he is a staff member of Sen. Henry Jackson's energy commission in Washington, while at the same time he serves as a member of the state's royalty advisory board.

His repetitious claim that the state's natural gas will be valueless has been rebuffed by industry and government officials every time it has been raised, on grounds that by the time the gas goes on stream it will command a price the market will be more than willing to pay.

Sen. John Rader, an Anchorage Democrat who is a member of the legislative committee looking into this, asked the real question the other day when Mr. Martin and his team outlined the state's position: "Haven't we effectively destroyed a pipeline?"

"No," said Mr. Martin, "only delayed it."

The cost of that delay, if it comes about, could be incalculable.

To Omar, The Trans Alaska Route Is The Better

Sunday Times 12/14/75

By JUDY SHULER
Times Staff Writer

Still in the process of sending warm holiday greetings to friends and business associates outside of Alaska?

The Organization for the Management of Alaska's Resource hopes you'll consider enclosing some information on an all-Alaska gas pipeline.

They have leaflets and maps and balloons and bumper stickers, and will even help you compose a letter outlinging its importance, according to Beverly Isenson, executive director.

The organization, commonly referred to as Omar, was incorporated in April to promote approval of a route passing entirely through Alaska, rather than the alternative which would go through Canada.

And while its members and representatives are busy button-holing around the nation's capital, "it's much more meaningful it you contact people around the country and let them contact their own congressmen," Mrs. Isenson said.

Members of the non-profit group headquartered in Anchorage are encouraging individuals and organizations within Alaska to become well-versed on the gas line. Then in turn to contact national organizations, friends, relatives, business associates, suppliers and the like in other states to seek their support.

"We think if people understand the alternatives they'll be more inclined to support the Alaska route," Mrs. Isenson added.

In the view of the Organization for the Management of Alaska's Resources, the alternatives involve time, money and national security.

If the route proposed by Arctic Gas is approved, it will take much longer to get North Slope gas to the United States consumers, she said. Mrs. Isenson cites the still-pending land claims of Canada's Natives, and strong, even radical opposition to the line from some of the native leaders.

The Canadian National Energy Commission has just begun hearings that will probably take a year before recommendations can be passed on to the cabinet and then the parliament for a final decision, she continued.

And the proposed Canadian route faces possible delay by law suits from environmental organizations because it would pass through Alaska's Arctic National Wildlife Range or through proposed extensions to the range.

"There's no doubt in my mind the Alaska route will be a quicker one, and less costly ultimately," Mrs. Isenson said.

Other economic advantages, according to the organization, are more jobs for Americans on the all-Alaska route; use of steel pipe from United States steel mills rather than foreign ones; increased tax revenues on the state and federal level; consumer rates set by the United States government, and no drain in the balance of payments.

They are trying to play down the phobia about national security within this state because many Alaskans were born in Canada and still retain their citizenship, according to Mrs. Isenson, Nevertheless, the organization points out in its literature that one advantage of the trans-Alaska route would be its complete control and protection by the United States government.

And furthermore, "within Canada there's as much or more ferment over which line would be better for Canadians as there is in the United States," she said.

Although the organization has never specifically endorsed the proposal of El Paso Natural Gas Co., it is unlikely that another company would submit an application for an Alaskan pipeline at this time.

A few weeks ago El Paso's president, John Bennett, offered them a monthly contribution of $10,000.

The offer was discussed with members in Fairbanks and with their Washington counsel before it was accepted, according to Mrs. Isenson.

"Omar had raised more than $110,000 before they offered to contribute any money and we continue to get private contributions, so we feel we can continue to work independently," she says.

El Paso's offer was made without strings, according to the executive director, and "we welcome any money without strings attached, and we won't take any money with strings attached."

"We announce any sizable donation," she added. "We do nothing secretly. We're basically a public organization so we welcome everybody."

Since this spring the organization has been operating out of a rent-free office in the lower level of the Alaska National Bank of the North at Fourth Avenue and E Street. But they have been asked to move by the first of the year, and are hoping to find more free or inexpensive space.

"Everything we do is made possible by people donating money and services," she said. "It's really gratifying so many people realize the gas line is going to make a big difference economically, and they're willing to contribute."

There are four paid staff members in the Anchorage office of the Organization for the Management of Alaska's Resources: Mrs. Isenson; Liz Robbins, an administrative assistant and office manager who supervises volunteers: Paula Easley, community relations director; and high school student who acts as messenger.

The Fairbanks office functions with two paid staff members, and the rest of the work is done by volunteers in both cities.

During its first few months of existence, $5,000 was the monthly limit on expenditures, Mrs. Isenson said. Then a Washington office was opened in October, and expenses went up to $20,000 per month.

The organization's representative in Washington, D.C., is Gary Frank, a lawyer and lobbyist who advises them on personal contacts, works with the congressional delegation and contacts news media.

Any monetary support that comes from other organizations will be funneled into the Washington office, according to Mrs. Isenson, who said that office accounts for about one-third of their budget. A lot of that is printing costs, she added.

An umbrella organization, the National Coalition for the All-American, All-Alaskan Gas Pipeline, was recently formed to encompass all groups endorsing the trans-Alaska gas line.

An outgrowth of the Organization for the Management of Alaska's Resources, it will be headquartered in Washington.

"We felt it would be useful to have an umbrella under which all groups endorsing the gas line could work," she explained. "We're hoping that people in Alaska who have gotten their clubs to endorse the line will also get their national organizations to endorse it. The coalition would be a spot from which we could all work instead of having separate efforts."

Staff members of the Organization for the Management of Alaska's Resources are also "trying to see that the state government does everything possible to get the line through Alaska," according to Mrs. Isenson. Lt. Gov. Lowell Thomas Jr.'s speaking trip back east was a help because it took information to areas where most people haven't been concerned with the issue, she said.

And her organization is looking to the legislature's gas impact committee to come up with helpful legislation.

Royalty gas can be an effective tool in getting the line through the state and establishing a gas processing industry here, Mrs. Isenson said, adding that gas made into fertilizer and other products is more valuable than gas that goes out of the state as gas.

Gas processing is a highly automated industry that does not require a large labor force, she continued.

She is also hoping for some quick action from the state's Royalty Oil and Gas Development Advisory Board in determining how much gas can be used within Alaska. Royalty gas is a highly sought-after commodity, and the board has proposals from all over the country, she said.

Not all Alaskans are sold on a gas pipeline through their state, Mrs. Isenson conceded.

"Some people are so sour on the Alyeska line and the impact that they don't want anything more of anything."

Others favor the Arctic Gas proposal because it will get the pipeline out of Alaska in the shortest possible distance.

Then there is a strong contingent who don't want the line going through the Arctic Wildlife Refuge or proposed additions, and who oppose the liquified natural gas tankers. They would prefer to see the line move south from Prudhoe Bay to Fairbanks, then follow the Alaska Highway into Canada.

Support for the all-Alaska gas line will never be unanimous, but Mrs. Isenson, an 11-year resident of the state, believes the outcome will favor El Paso's proposal.

"Would I be here if I didn't?" she asked, adding "remember the little Dutch boy on the dike? I need about 400 fingers plugging all the holes."

Ironically, when she and her husband, Ed, lived in Switzerland in 1962, she worked in the economic section of the Canadian Embassy. They moved to Alaska in 1964, and he now owns Alaska Film Studio. They have two daughters, Linda, 11, and Nancy, five.

The founders committee for the Organization for the Management of Alaska's Resources consists of 49 members from throughout the state.

Anchorage members include Robert Fleming and Robert Penney, co-chairmen, and Elaine Atwood, Al Bramstedt, Homer Burrell, Bud Dye, Paula Easley, Tom Fink, Lee Fisher, Henry Hedberg, Robert Hartig, Bruce Kendall, Audrey Lee, Charles LeViege, Kay Linton, Richard McMillian, Jackie Palmier, Robert Richards, Charles Sells, Bart Vernon and Dennis Waldock.

Weekly breakfast meetings are scheduled at 7:30 a.m. Thursdays in the Holiday Inn. Anyone may come, but the office should be notified in advance.

The honorary advisory committee consists of Robert Atwood, William Egan, Walter J. Hickel, M.R. "Muktuk" Marston and Bob Reeve, all of Anchorage; Frederick O. Eastaugh, Juneau; and C.W. Snedden, Fairbanks.

Ex officio members include Gov. Jay Hammond; Commissioner of Commerce Tony Motley; Anchorage Mayor George Sullivan; Mayor James Poor of Cordova; U.S. Rep. Don Young, R-Alaska; U.S. Sen. Ted Stevens, R-Alaska, and U.S. Sen. Mike Gravel, D-Alaska.

Another vast reserve lies idle in the Mackenzie Delta of Canada's Northwest Territory.

But while the gas lies idle, consortiums of energetic businessmen are vying for the rights to tap and move the gas to energy-hungry consumers.

The controversy broils yet today as decisions are made and studies compiled. Today's Crossroads section reviews the controversy to date, studying the proposals offered by the two major gas competitors,

Also queried are politicians, leaders of local governments that will mostly be affected by the proposed gas lines, and officials of the firms involved.

Which Gas Pipeline: A Ba

Alaska's North Slope is saturated with oil and gas, and there are several corporate sponges that would like to soak up the gas and sell the squeezins'.

But until someone decides which sponge will tap the gas reserve, 26 trillion cubic feet of energy lies in the Prudhoe Bay sink.

El Paso Alaska and Arctic Gas are chomping at the bit, bidding for the right to tap and transport North Slope gas to energy-hungry Lower 48 and Canadian markets. And yet many unanswered questions are simmering.

Arctic Gas Systems' plan began with a corsortium of U.S. and Canadian firms in September 1971. In September 1973, the group proposed a $1.5 billion gas pipeline of 1,550 miles from Prudhoe Bay to Grand Prairie, just north of Edmonton, Alta.

From there it would link with existing Canadian trunk lines and ultimately deliver as much as three billion cubic feet of natural gas daily.

The purpose behind a trans-Canadian line was to tap Prudhoe Bay reserves as well as gas supplies in the Mackenzie Delta area, which is believed to hold even more resources than the Prudhoe fields.

The reason Canadians did not go ahead with an independent development of the Mackenzie fields is that it is not economically feasible to do so without the additional supply of North Slope gas. This economic fact of life is but one of the complications of the proposal.

On the other hand, El Paso Natural Gas Co. on Dec. 4, 1972, announced a feasibility study that was expected to prove an Alaskan pipeline, liquefaction plant and refrigerated gas tankers could move North Slope gas to West Coast markets more cheaply than the proposed trans-Canadian natural gas line.

The plan called for 800 miles of 42-inch pipe from Prudhoe to a Southern Alaska port to be named later, a gas liquefaction plant to chill the gas, and about six refrigerator tanker ships to carry the gas south.

At that point, the El Paso proposal appeared to have or at least alleged to have an economic edge over the Arctic Gas plan which originally was billed at $5 billion. When the Arctic Gas Pipeline Co. on March 21, 1974, filed its application with the Federal Power Commission to build the trans-Canadian route, it listed the cost of the 2,600-mile pipeline at $5.7 billion. El Paso's original cost estimate was pegged at $3 billion, a conservative figure.

Since the original proposals were made public, however, the Interior Department's economic studies indicate that there is little extra wieght on either firm's side to throw the decision into one lap or the other.

Speaking of scales, the blindfolded lady of Justice surely was made dizzy by the go-arounds as the two concerns expounded the merits of their proposals.

On its scales El Paso tossed these weights.

— A trans-Alaska line would create a tax base that would contribute toward Alaska's economy throughout the estimated 50 to 75 years of the pipeline's life.

— It would provide natural gas service to the state's major population centers.

— Gas would be available along the route to power mines and other developments now impossible for lack of power.

— It would help eliminate a United States balance of payments deficit that federal agencies estimate will reach $15 billion a year by 1980, based at that time solely on the growing demand for imported oil and natural gas.

— As many as 5,000 men would be needed to build the pipeline, while another 2,000 would be needed to fabricate the liquefaction plant. Some 350 persons would be employed at jobs at the plant and 300 more for pipeline operation and maintenance.

— The refrigerated tankers, worth $100 million apiece, would be built in U.S. shipyards.

And El Paso lightened the scales on the Arctic Gas side by listing its alleged shortcomings.

— Much of the Canadian lands over which the proposed Arctic Gas route would be built were tied up in native land claims settlement negotiations.

— The Canadian plan allegedly involved 5,400 miles of new pipe, the supplying of which would supposedly tie up the entire large-diameter pipe maufacturing capacity of the United States for three years. El Paso said it needed only 800 miles of new pipe; the transmission lines it would need when the gas reached western ports was already in existence.

— The Canadian route supposedly would traverse essentially untouched wilderness areas that were hunting and trapping grounds for natives. The El Paso line would follow the Alyeska oil pipeline as much as possible.

Aside from that, El Paso strummed a patriotic chord, saying the gas flow should flush an All-American line, that such a valuable energy source should not be put in jeopardy by running through a foreign nation.

El Paso added that it was doubtful that sufficient funds to back building of a trans-Canadian line were available although the El Paso plan would make it. Incentive for developing Alaskan minerals and potential energy sources also was noted.



Arctic Gas officials strained on the other scale with their arguments in support of the trans-Canadian line.

— A Mackenzie Delta line would bring necessary gas into the energy-hungry Midwestern and Eastern states of the U.S. faster and cheaper than the El Paso system could.

— A connection with the Prudhoe Bay supplies would make the tapping of the Mackenzie field more economical for Canadians.

That, in a nutshell, was that. Throughout the history of the pipeline battle, public relations pushes have carried the campaigns through public and governmental scrutiny. In reviewing the years of debate, it appears that at times the only indication of who was ahead depended on whose advertising call was the loudest or whose soap box was the tallest.

While environmental, political and economic studies were tied up in the Federal Power Commission and the Interior Department, the El Paso team made strong use of the All-American plea.

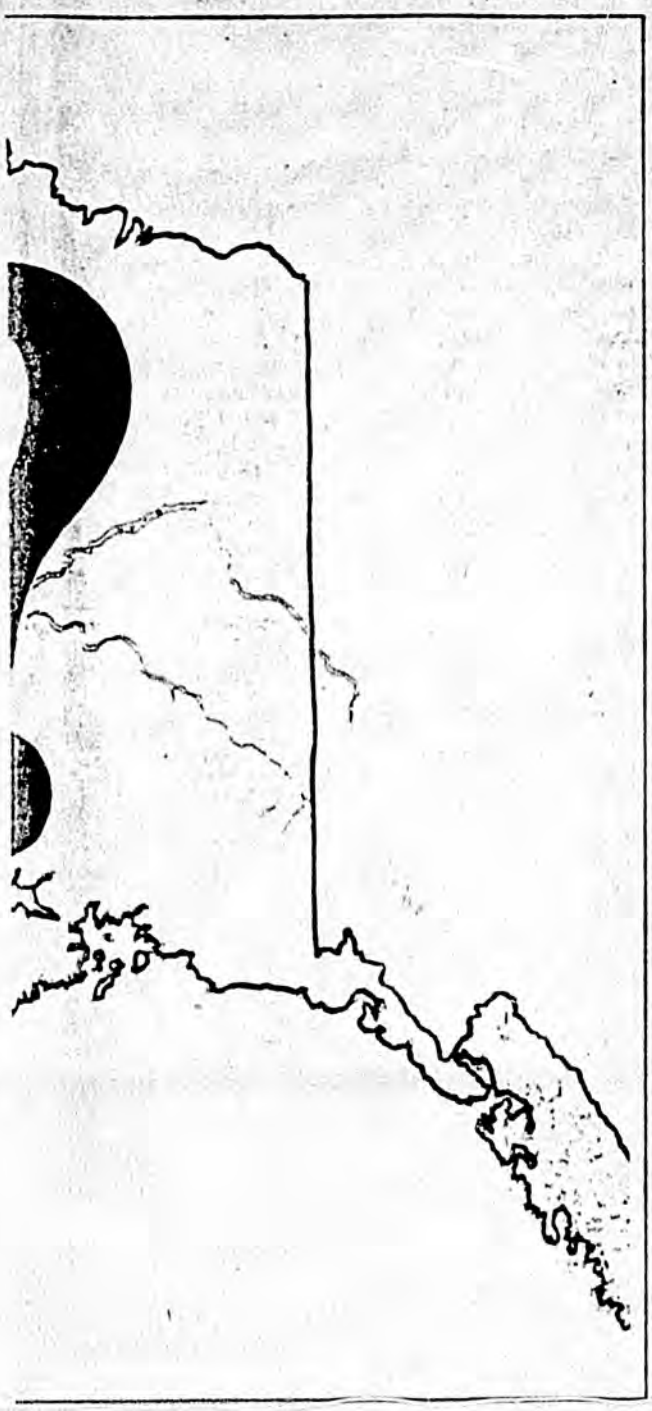
Talk rose quickly that American gas flowing through Canadian pipes was at the mercy of a foreign government. On Nov. 27, 1973, John Poyen, then chief executive of Canadian Petroleum Association, said the Alaskan route was an "odds-on favorite." He said an American backlash over recent increases in Canada's export tax on crude oil could doom the Canadian pipeline.

On Feb. 19, 1974, Howard Boyd, board chairman of El Paso Natural Gas, denounced Canada for allegedly threatening to cut off Canadian natural gas supplies to the Western United States because El Paso protested alleged contract violations and price gouging by West Coast Transmission Co.

Boyd told the state House Energy Committee that the threat, if carried out, would have meant economic tragedy to western states.

"What assurances can be given," he asked the commit-

ttle By No Means Over



tee, "that we won't be at the mercy of these people again, or that the Canadian philosophy of charging all that the traffic will bear will not be repeated. They have already increased the price of their Alberta natural gas by nearly 100 per cent, and are now threatening to raise the price of the gas exported to the American West Coast four times the original contract price."

By July 1975, however, backers of the trans-Canadian line could point to negotiations then under way for a transit hydrocarbon pipeline treaty between the two nations. It was to cover reciprocal assurances on security of throughput of fuels and on non-descriminatory treatment between the countries.

Such a treaty, if adopted, would be a boon to the Arctic Gas proposal. That treaty is yet to come.

All along the way, the political footabll of who would be given the checkered flag to build a natural gas peiplein has been tossed from team to tam. El Paso knew that if it were to score, it would have to bring the fans to their feet in favor of the home state proposal.

Early in December 1973, executive vice president of El Paso Natural Gas Co. George Carameros said unless that firm heard unqualified enthusiastic support for its proposal, it would be forced to abandon its plans for a trans-Alaska pipeline. The firm saw that economics would not tip the scales enough for a clear-cut decision.

That same month the Anchorage City council called for a resolution for them to consider to support the state line.

By January 1974, Gov. William A. Egan announced in favor of the trans-Alaska line and directed then-Attorney General Norman Gorsuch to prepare the state's position on the issue for the power commission.

That same month El Paso executive laid it on the line before Gorsuch and National Resources Commissioner Charles F. Herbert.

El Paso asked for a legislative resolution in support of their plan, and a contract between the state and El Paso assuring the gas company access to the state's royalty gas plus the right to move alaskan gas through their proposed pipeline to the vicinity of Valdez.

No commitments were made by the state at that time.

In February 1974, El Paso announced it had selected the Gravina Point area for its Southern Alaska terminal.

Support for an All-American line — although not necessarily the El Paso proposition — began to gain yardage. Anchorage Republican Robert Hartig voiced strong support of such a plan. He would eventually become the attorney representing the Organization for the Management of Alaska's Resources (Omar) which banded together in April 1975 to promote the trans-Alaska route.

Councils and local governing bodies around the state resolved to support a trans-Alaska line, as did countless organizations of businessmen.

Although one of the state's Washington delegates long ago foresaw the approval going to a trans-Alaska line, others left options open, including the possibility of a joint effort and two distinct lines.

Arctic Gas Pipeline Co., on March 21, 1974, filed application with the Federal Power Commission and the Interior Department for permission to build the $5.7 billion, 2,600-mile natural gas line across Canada.

The consortium filed identical papers with the Canadian Natural Energy Board, and Department of Indian Affairs and Northern Development for Canada's permission to construct right-of-way.

In response to the ArcticGas filing, then-Secretary of the Interior Rogers C. B Morton spoke faborably of the propsal, but he withheld a decision saying he would have to review a similar proposal from El Paso to "give even-handed consideration" to both.

That same day, the Alaska House, in a voice vote, supported an all-Alaska route. By late April, the state Senate would come out in favor of the El Paso plan.

On April 29, El Paso asked to intervene in the Commission's proceedings concerning the Arctic Gas application, saying its intervention would allow it to participate fully in the proceedings, receive all filed documents and present its side of the story.

Although the El Paso bid to intervene was one of more than 100, Arctic Gas officials and counsel would single it out during commissiion hearing to begin in May in Washington.

Interior and the commission decided to conduct a joint environmental impact study on the plans to avoid duplication of efforts.

Pressure was being asserted throughout by powerful Midwestern congressmen who favored the Canadian line. Rep. Les Aspin, D-Wis., wanted a decision quickly and urged that the U.S. and Canada speed up negotiations on a bi-lateral treaty that could assure construction of the trans-Canada line; he wanted a decision by the end of the year.

In mid-July, Alaska Arctic Gas Pipeline Co. president Robert Ward predicted that Alaska natural gas could be made available to 122 million American by 1979. He promised the plan included burial of pipe, revegetation along the route, refrigeration of pipe to prevent melting of permafrost areas, winter construction, and transportation of supplies and work done on "snow roads."

The Alberta Gas Trunk Line Ltd., on Aug. 2, 1974, called for an all-Canadian line to move Mackenzie Delta gas to Canadian markets as a "contingency plan" to Arctic Gas proposal.

It was not until Sept. 24, 1974, that El Paso Natural Gas Co. applied to the Federal Power Commission for permission to construct its Alaska line.

A new twist, however, was that the firm did not intend to file an application with the Interior Department for right-of-way permission to cross federal boundaries until the commission gave the nod to one or the other firm.

Angered by the El Paso move, Undersecretray of Interior John Whitaker wrote the commission, asking it to dismiss the El Paso application because it hadn't applied to the interior.

With this possible threat looming over El Paso, the project was jolted by a Project Independence report that said costs of liquefying natural gas to transport from Alaska to the Pacific Coast could bring the price tag of the all-Alaskan route to more than that of the trans-Canadian route.

It put the cost of the Canadian route at $6.3 billion; cost of the Alaskan route was figured at $5.2 billion. However, adding costs of construction of liquefaction plants and regasification plants, that cost could rise to an additional $3.5 billion.

Arctic Gas set the cost of its project of building 2,600 miles of trans-Canadian line and 3,000 miles of companion lines in the U.S. at $10 billion.

El Paso countered that it could provide an 800-miles line, liquefaction and regasification plant for $6 billion.

El Paso added that an application to the Interior would require an environmental impact study, at a cost ranging from $3 to $20 million. El Paso officials said they

(See Page C2, Col. 1)

The Battle For North Slope Gas Is Still Raging

(Continued From Page C1)

didn't want to pay for such a study if their firm was not a successful applicant before the commission. However, the firm said it would file an impact study and application with Interior if not doing so would hold up building of the pipeline.

The following January the commission refused to reject the El Paso proposal, citing expediency and a possible threat of a national natural gas shortage.

By mid-February of this year, nearly one-half of the natural gas at Prudhoe Bay was committed to U.S. pipeline firms, with two Midwest firms holding exclusive rights to negotiate for half of Exxon USA's 8.7 trillion cubic feet.

All commitments to date to Arctic Gas members.

On March 3, the Interior Department backed out of the joint environmental impact study with the commission. Interior proceeded to study only the Arctic Gas route proposal; the commission reviewed both Arctic Gas and El Paso projects.

Examination of witnesses by a lawyer for Foothills Pipe Lines Ltd., probed the move by Arctic Gas to alter its points of delivery of gas from Emerson, Man. to Caroline, Alta. The lawyer alleged that the move would coast eastern Canadians more to buy natural gas which was being carried closer to U.S. markets.

Foothills wants to build a pipeline to tap Mackenzie gas also, but wants only to move Canadian gas.

Arctic Gas apparently planned to cut expenses by routing supply pipe through the Mackenzie Delta, long considered to be too delicate environmentally for such a project. It also is a favorite hunting and fishing area enjoyed by natives.

The Canadian government alleged that Arctic Gas was more concerned with cutting costs than with environmental impact.

Environmentalists from the Washington Chapter of the Sierra Club to the Audubon Society raised their voices in opposition to the altered route. Environmentalists also opposed a line cutting through the Arctic National Wildlife Refuge in Alaska.

As fast as the commission's hearings began in Washington this spring, bickering and balking slowed them down.

Arctic Gas alleged that El Paso wanted Arctic Gas's information to "put their case together, because they don't know how to do it." The consortium agreed to give some information "as a matter of courtesy."

Hartig, representing Omar, filed a petition to intervene into the proceedings on May 14.

In testimony on May 28, El Paso's Howard Boyd suggested that an "innovative financing plan" was needed to back that firm's project. He said El Paso couldn't get equity capital unless investors were guaranteed they'd get their money back. He also suggested an "all-events tariff."

The Federal Power Commission hearings recessed while the presiding administrative law judge and a lawyer for one of the parties involved tied up other commitments.

In the interim, the legislative Gas Pipeline impact committee selected Rep. Willard Bowman, D-Anchorage, as chairman and decided they as a panel would push for an all-Alaska gas line. They were in favor of stressing that the major portion of gas line construction be done by Alaskan firms.

Former director of the state's oil and gas division Homer Burrell, wrote Attorney General Avrum Gross suggesting that the state commit its royalty share of gas to the trans-Alaska route. He said a trans-Canadian line would mean lower values of royalty and tax purposes, little employment for Alaskans, almost no ad valorem tax base on transportation and other facilities.

"What we'll get," Burrell wrote, "is about 197 miles of pipeline from Prudhoe Bay to Demarcation Point, mostly across the Arctic National Wildlife Refuge.

"Regardless of the proposed treaty between the United States and Canada, the Canadian provinces can exercise considerable control over pipeline tariff rates (and therefore Alaska's revenues) through taxation and other means. Why can't the administration fight for the trans-Alaska line? Some of us are."

Bev Isenson, spokesman for Omar, said politics, not environmental issues, will decide pipeline route. At that time Omar had donations of $5,000 from each the city and borough of Anchorage, plus $15,000 from individuals.

She added that Omar would step up an informational campaign in the lower 48 and intended to take their case for an all-Alaskan line to tourists in Alaska.

The step-up was said to combat possible moves by the Ford administration to circumvent lengthy commission procedures. She also listed possible uses for piped natural gas, including conversion to fertilizer, tapping it for communities along the way and outright selling it.

Arctic consortium and backers "distorted information about an all-Alaska line... lobbied and advertised that our gas would not be available to users in the Eastern U.S. That's not true. A few interconnecting sections of pipeline in the Lower 48 would have to be built to get the gas on line to anywhere in the U.S. It still would be less distance to build than the trans-Canadian route."

Upon further urgings of Omar and others in favor of an all-Alaska route, Commissioner of Revenue Sterling Gallagher said, "the gas will be committed to whatever pipeline is built."

It was reported in August that the Council on Yukon Indians would oppose use of any northern corridor for a natural gas line and wants Yukon Indian land claims settled before permits are given for a line.

Menawhile, out on the gas line campaign trail were top officials from the state. Lt. Gov. Lowell Thomas Jr. went east to stump and expound on the benefits of an all-Alaskan gas line. Various associations of lawmakers across the country have shifted closer to his way of thinking, at least to some extent, including some of the Midwestern officials.

A Sept. 16 El Paso impact study showed a boost in the state's population of 47,000 by 1983 — if construction were begun in two years. The boom would focus primarily in Anchorage and Cordova. The Cordova population was predicted to triple between 1977 and 1983, to peak at 9,000.

In mid-September, both the North American Indian Women's Association and the Alaska Federation of Natives' Board of Directors endorsed an Alaskan gas line.

The federation board action reaffirmed resolution passed by the federation last year.

At the same time, federation President Sam Kito was in Washington, D. C., with a team of Omar representatives holding meetings on the gas line proposals.

By now evidence was building that the costs of transporting North Slope natural gas might be so high the project might not be economically justifiable, according to a consultant to the legislature's Joint Gas Pipeline Impact Committee. Perhaps the final decision will be based on a move for energy independence.

Hearings held in Washington, D. C., as well as in Alaska dragged on and on. Finally, in October, El Paso and Arctic Gas officials agreed to suspend the public comment and final drafting phases of the environmental impact statement by the commission staff.

Instead, the staff would present draft statements at hearings and then be cross-examined by lawyers of all parties.

An so the issue of how natural gas from the North Slope will reach American homes is still tied up in committee, and the corporate and governmental bickering and wheeling and dealing continues.

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Bennett Pilots Gas Line Plan From Second Hot Seat

By FLIP TODD
Times Staff Writer

John Bennett, a retired Army two-star general and now vice president of the El Paso Alaska Company, has a habit of being where some of the hottest controversies of the day are going on.

After he retired from the military, he became a vice president of Era Helicopters in Anchorage, but was called back to the White House during the heat of the Watergate scandal by his old friend Gen. Alexander Haig, principal adviser to President Nixon.

After trying to cool down that hot political situation (by, among other things, taking custody of a bunch of White House tapes that were loosely-wrapped in a brown paper bag) and eventually helping with the downfall of Richard Nixon, Bennett is trying to help warm the homes of Americans by bringing them natural gas.

Named a vice president of El Paso Alaska after his White House stint that saw him the legal custodian of those tapes while the Congress and the courts decided who should have custody of them, Bennett now is conducting his own form of shuttle diplomacy between Washington D.C. and Alaska.

Again in a hot seat, he is responsible for educating and influencing political and financial leaders in both Washington and Alaska of the benefits of the proposed El Paso plan to move Prudhoe Bay gas to market via a trans-Alaska gas line.

From Point Gravina, between Valdez and Cordova, the gas would move in a liquid state, 600 times as dense as a gas, in tankers to California. From a regasification terminal at Point Conception not far from Lompoc, Calif., the gas would be moved by a 42-inch pipeline the gas transappealing to consumers, many of whom cannot buy all the gas they want now.



JOHN BENNETT
Shuttle Diplomat

Actually El Paso believes if it receives permission by the Federal Power Commission's target decision date of December 1976, it can begin delivering gas to the West Coast in 1980. With four of the dozen contemplated compresser plants operational in 1980 it will be able to move half the 3.3 billion cubic feet of gas that will flow through the line by the end of 1981. Because of the increasing difficulty of moving the gas as it becomes more dense under pressure, it takes eight additional compresser stations to double the flow through the line.

Normally in matters involving interstate commerce, regulatory agencies make the important decisions. In the case of interstate natural gas pipelines, the Federal Power Commmission is responsible for making the decisions. But in some very important cases with major political or judicial implications, the Congress may take the decision away from the regulatory agencies or the courts.

A move by Sen. Mike Gravel several years ago made the Congress decide on the crude oil line's route to the Lower 48 and the trans-Alaska line won out over a Canadian route. But a deal was reportedly made by Midwestern congressmen at the time that they would not oppose the trans-Alaska oil line if their gas-poor area would receive the gas line when the time came for it to be built.

"We'd rather have the FPC make the decision," Bennett said.

"If the Congress decides to make this decision, then raw political power on (Capitol Hill) will be important," he said.

El Paso has no partners yet the El Paso proposal, Bennett argued, while the consumer does not with a gas line that passes through thousands of miles of Canada.

"I also believe a major concern is going to be the environmental considerations," he added, "and we're receiving considerable support from the environmental people here in Washington. They are a considerable force."

On each of the issues Bennett mentioned, El Paso appears to have a considerable advantage.

As a result of a pipeline realignment study and some other work done by El Paso, the Texas-based pipeline transmission firm believes it can save close to a year over what it had originally planned, enabling it to deliver gas in 1980. Most of the time could be saved during the preliminary logistic planning before construction actually begins, and a lesser amount during construction, according to El Paso.

the money Arctic Gas has spent (expenditures since Dec. 4, 1972 when the company announced it would try to build the Alaska line are reported to be $15 million by El Paso), Bennett replies, "We are three or four times as financially committed as any member of Arctic Gas."

About $2.5 million of El Paso's expenditures to date have been Federal Power Commission filing fees, which is about the amount the company would have to pay to file similar documents with the Interior Department to cross its land. El Paso's failure to file yet with the Interior Department has been the source of some criticism, but Holland argues the decision saved $2.5 million which would only have gone to duplicate work already performed and save El Paso stockholders $2.5 million should it not receive FPC approval.

El Paso thinks its "raw political power" may be increasing with time.

"Omar (Organization for the Management of Alaska's Resources) and native support is very usable political power," Bennett argued. And the considerable strength of the U.S. steel industry—which would receive an enormous boost from sale of metal for construction of the line, marine berths at both ends and 11 large tankers each capable of carrying 165,000 cubic meters of LNG (liquefied natural gas) — can be assumed to be firmly in the El Paso camp. Much of Arctic Gas's steel would likely come from non-U. S. steel mills, since no mills in this country currently manufacture 48-inch pipe.

Those who support the U.S. steel industry, such as coal firms, are likely doing what they can to encourage the construction of the El Paso line.

"We also have 44 labor unions that will be behind us if it comes to that," Bennett said.

The former White House aide also said he is receiving support from "businessmen who feel our project is in the national interest and are doing some work on our behalf . . . contacting congressmen.

"I think the chances are less and less with time that the decision will go to the Congress though," Bennett said.

Bennett noted that although Rep. Philip Ruppe of Michigan announced more than two weeks ago he was going to introduce legislation that the Congress mandate construction of the Canadian pipeline, none has been introduced so far. Aides of the congressman from Michigan's northernmost district said Ruppe was originally going to introduce the bill without co-sponsors, but has changed his mind and decided to introduce it with several other key members of the House.

It is difficult to make exact comparisons of the two projects because they do not deliver the gas to the same locations. One criticism leveled at the El

(See Page C4, Col. 1)

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Again in a hot seat, he is responsible for educating and influencing political and financial leaders in both Washington and Alaska of the benefits of the proposed El Paso plan to move Prudhoe Bay gas to market via a trans-Alaska gas line.

From Point Gravina, between Valdez and Cordova, the gas would move in a liquid state, 600 times as dense as a gas, in tankers to California. From a regasification terminal at Point Conception not far from Lompoc, Calif., the gas would be moved by a 42-inch pipeline the gas transmission company hopes to build to Arvin, Calif. where it would tie into an existing Pacific Gas and Electric gas line.

El Paso has promised it will use only U.S. - manufactured steel for constructing the pipeline, the gasification terminal and twin berths at Port Gravina and at Point Conception, and for a costly fleet of cryogenic tankers capable of carrying the super-cooled liquid.

One vessel would call at the loading terminal each day, if the gas deliveries are to be maintained on schedule, according to El Paso.

Because of its promise to use all domestic products, and the fact that no jobs on the line would be exported to Canada as the Arctic Gas proposal would require, El Paso has dubbed its project the All-Alaska, All - American pipeline.

Even though the 1,000-foot long, 150-foot wide tankers could be built at less expense outside the U.S., a federal maritime law commonly known as the Jones Act requires that only U.S.-built ships may carry cargo between U.S. ports.

The greater cost of the domestically - built tankers, like the greater cost of the U.S. steel for the 42-inch pipeline, will be passed on to Lower 48 consumers, Bennett said, as part of the rate base for calculating the cost of moving the gas.

On the other hand the project will create thousands more jobs in the United States than would the Arctic Gas pipeline and considerable tax revenue to the state and federal governments.

"It seems to me a major consideration is which system can deliver the gas more quickly," Bennett said during a telephone interview from his Washington D.C. office.

"We're running out of gas (in the Lower 48) and speed is important."

The consumer in the Lower 48 has the protection of the Federal Power Commission (which regulates interstate movement of natural gas) with

On each of the issues Bennett mentioned, El Paso appears to have a considerable advantage.

As a result of a pipeline realignment study and some other work done by El Paso, the Texas-based pipeline transmission firm believes it can save close to a year over what it had originally planned, enabling it to deliver gas in 1980. Most of the time could be saved during the preliminary logistic planning before construction actually begins, and a lesser amount during construction, according to El Paso.

One of El Paso's greatest advantages in construction of the line is that it will probably be able to take advantage of much of the work already done by Alyeska Pipeline Service Co.: environmental studies, moving hundreds of millions of dollars worth of heavy equipment to the work site, construction of a haul road and work pad for laying the pipeline, as well as construction of more than 20 camps for the work force to live in.

Alyeska has not made any commitments to El Paso yet, but the logic of their doing so and selling the gas company much of what it has done is hard to refute.

Because the roads are already built and much of the work in the wilderness has already been done, the trans-Alaska gas line is considerably more attractive to environmentalists who accept the inevitability of moving the gas to market.

The Arctic Gas proposal, on the other hand, proposes to cross the Arctic National Wildlife Refuge in the extreme northeast portion of the state, on its way to pick up gas from the Mackenzie River delta in Canada's Northwest Territories.

El Paso has forged a strong alliance with the Friends of the Earth and the Sierra Club, exchanging information freely with the two groups, both of which have Canadian chapters. Both groups are reportedly using their political influence to encourage the construction of the El Paso line and El Paso executives are on call to the conservationists "24 hours a day," according to Bennett's assistant, Mike Holland. Conservationists are upset with the prospect of an Arctic Gas line crossing the refuge, thousands of miles of virgin lands in Canada and creating the need for constructing thousands of more miles of pipeline in the Lower 48.

If the use of an existing right of way puts El Paso in good stead with the conservationists, then its claim that it can complete its project two to three years sooner than Arctic Gas should make the project

and the trans-Alaska line won out over a Canadian route. But a deal was reportedly made by Midwestern congressmen at the time that they would not oppose the trans-Alaska oil line if their gas-poor area would receive the gas line when the time came for it to be built.

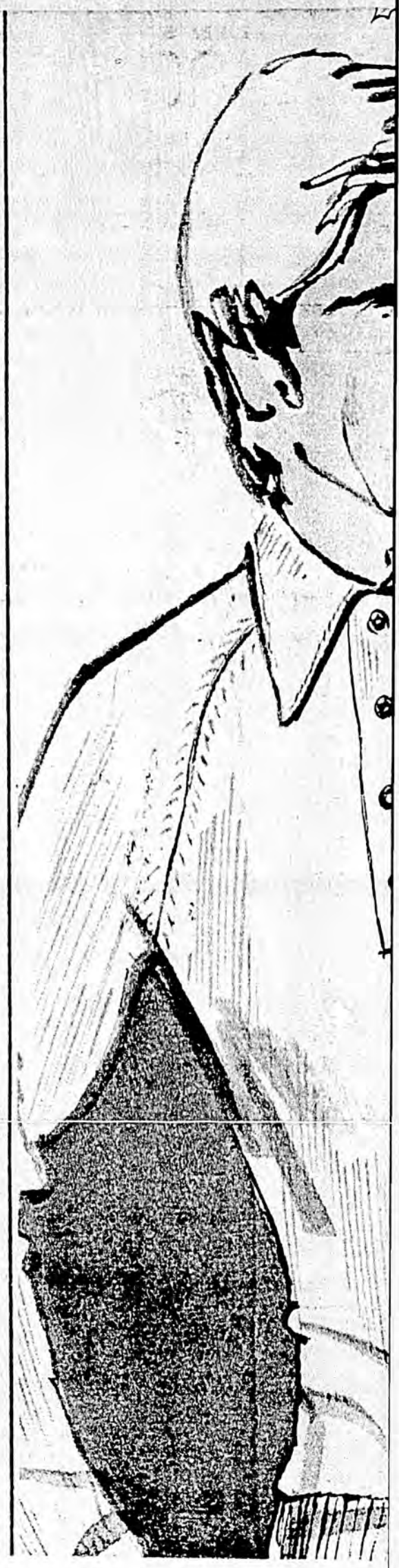
"We'd rather have the FPC make the decision," Bennett said.

"If the Congress decides to make this decision, then raw political power on (Capitol Hill) will be important," he said.

El Paso has no partners yet in constructing the gas line, but Arctic Gas has been backed by a panoply of up to 27 of the largest oil firms and gas transmission companies in the country who have committed close to $100 million for environmental and pre - construction studies for their project. The number has dwindled to 16 now, but still the group undoubtedly has considerable influence in Washington D.C. in comparison to El Paso, frequently described as the nation's largest gas transmission company.

To arguments that El Paso is not spending anywhere near





Alaska's Legislators Support An

By CHERYL PROBST
Times Staff Writer

An all-Alaska gas line appears to have the support of some resource-minded legislators, although they are hedging about supporting El Paso Natural Gas Co's proposal to build it.

To help it formulate a position on a natural gas line, the legislature appropriated $100,000 for a special impact committee which was chaired by Rep. Willard Bowman, D-Anchorage, until his death last week. Bowman also authored legislation setting up the committee.

Six members from each house sit on the committee, with the legislature's presiding officers and resource committees' chairmen on the committee as ex officio members.

"The critical thing is not which route you favor but the terms under which Alaska gas is produced," Senate President Chancy Croft, D-Anchorage, said. "All the talk of which way the line is going to go has obscured all the terms."

Croft, who says he favors an all-Alaska route, said some of the terms which are being obscured by concentration focused on the route include "the more important terms under which Alaska gas will be produced. I think the question is the price that is going to be paid for it, whether it has little or no oil head value, a severance tax, its availability for use in the state."

Croft said he thought the action of the Federal Power Commission in requiring discussion of alternate pipeline routes is "a very good one. I think it again shows the wisdom of thoroughly exploring all of these alternatives rather than just locking yourself into the first approach out of the box. It may be that a different routing may well change the effect of one of the proposals."

Croft said he did not support the state locking itself into one company. "I think its important while supporting an Alaska route to make the distinction between supporting an Alaska route and one company's Alaska route."

He said he thought that an Alaska route at this point offers the most advantages for the state, "but I don't think we should lock our forces with El Paso."

El Paso is the only company to come forward at this time with a proposal to build the gas line through Alaska.

Sen. Kay Poland, D-Kodiak, another ex officio member of the pipeline committee, says her resources committee will be taking another look at the gas line in the upcoming legislative session.

Mrs. Poland said there have been conflicting reports on the costs of the line, "and, of course, we are very much interested in the environmental impact statement. "She said her committee also will be looking into the possibility of being able to take some gas out of the line ourselves to retain here in the state."

Mrs. Poland, too, favors an Alaska route, partly because "even though relations with Canada are friendly, I don't believe our gas line should go through another country." She also says she would like to see the Alaskan economy stimulated.

Like Croft, she is not locking herself in to one company building the line. "We should take a look at all the interested parties before we make a decision," Mrs. Poland said. "I do think El Paso deserves some consideration because they've shown interest all along."

Rep. Clark Gruening, D-Anchorage, said "From the information I've seen, if the state is going to get any benefit out of its royalty gas, it ought to back the all-Alaska route."

He added, "I don't think we have to make the decision now to pull out all stops, but sometime in the future, the state has to make a decision to fully back it."

Gruening, also on the impact committee, is another who is not locking himself into the El Paso proposal. "We have to make a committment to somebody who has the possibility of really doing it. Right now El Paso doesn't have the financial credibility. Frankly, unless they show they have something more going for them, other than the request for our gas, we'd be foolish to commit it to them. There has to be somebody waiting in the wings."

Gruening, a first term representative who sits on the finance committee, suggested that El Paso, if it is to build the line will probably have to have partners, perhaps Tenneco, a name he suggested might also be one of those waiting in the wings.

Rep. Ted Smith, vice chairman of the House resources committee, said he supports a trans-Alaska line "on the assumption that gas from the line will be able to be made available for use inside the state."

The Anchorage Democrat said he saw that as the overriding consideration in either proposal.

Smith said it is essential that the state make its point early that gas must be available for use here. "Once the gas is put in the common carrier, we can't take it out without approval from the FPC. We need to have that point nailed down at the time the certificate is issued."

Sen. Pat Rodey, D-Spenard, also prefers a trans-Alaska route. "We already have the trans-Alaska (oil) pipeline," he pointed out. "Similar routing could be done with little or no environmental consequences, but with considerable economic consequences to the state."

Rodey, a member of the pipeline impact committee, says a trans-Alaska route will stabilize Alaskan employment.

Rodey, also a member of the Senate resources committee, says he is not close-minded about who is to build the line. "As far as my legislative role, I'm managing resources for the benefit of the people of Alaska. Whichever company can offer the best deal for the people of Alaska, I'd be inclined to take it."

Like Gruening, Rodey is concerned about El Paso's financial capabilities.

Another Senate resources committee member, Joe Orsini favors a trans-Alaska route because "it will give us the option of being able to develop a petrochemical industry if we want it and if its economically feasible. We can also use it for our own consumption or sell if outside and derive strictly revenue from it."

The Anchorage Republican said he did not think the state should make committments for the royalty gas at this time, but "should wait until the last possible minute" because there are new options for uses coming up.

He mentioned methanol which could be made from coal here and then sent outside where more money might be obtained from its sale than from straight gas. "It has enough promise, we really ought to look into it," Orsini said.

A special legislative committee on taxation and revenue, of which he is a member, is studying this now, Orsini said.

Rep. Mike Hershberger, a member of the House resources committee, also favors an all Alaska route. "From looking at it practically, since we've got the oil line route, I think it would be just a natural place to put our natural gas pipeline."



CHANCY CROFT
The Terms

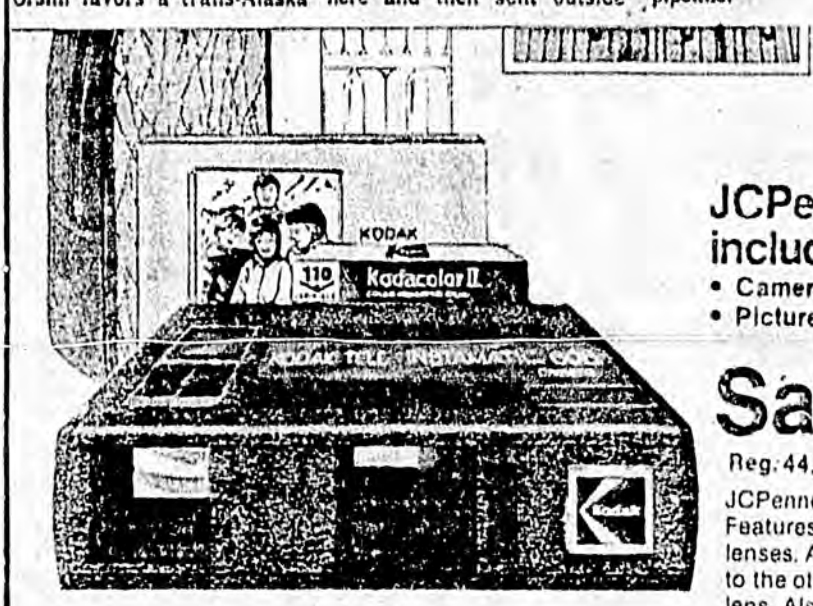


KAY POLAND
Impact



CLARK GRUENING
Credibility

Alaska Pipeline



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Delegates: Watches Aren't Synchronized

It's a matter of time, but Sens. Mike Gravel and Ted Stevens disagree about what time it is, at least as far as the Canadian versus Alaskan gas pipeline debate is concerned.

Gravel, a Democrat, has filed a bill in the Senate which would require the United States Federal Power Commission to decide between the competing proposals by June 30 of next year, although he said in an interview that he plans to amend that to read Dec. 1, 1976. For Gravel, time is of the essence.

"The political principle is simple," Gravel said. "The American public needs the gas, we have the gas and there should be no delay in providing it."

Republican Stevens disagrees with the Gravel hurry-up approach.

"Time is on our side," he said, our side being the one favoring the trans-Alaska, or all-American, gas pipeline.

And Republican Rep. Don Young, the state's only member of the U.S. House of Representatives, falls somewhere in between.

But let's let them tell it.

"My bill in the Senate states that Congress requires the FPC decision by June 30, 1976" Gravel said. "I'm going to change that to Dec. 1 (1976). The FPC said they could meet the June 30 deadline but that they would be able to do a better job by Dec. 1.

"Secondly it mandates that there would be no judicial review. There could be judicial review of the constitutionality of my bill, but not of the FPC decision. There are 120 plus interests involved before the FPC, some 50 of them active. They can, but we cannot demand it."

"Even the opponents (of the trans-Alaska gas pipeline) were trapped into it (supporting his bill,)" Gravel said. "The opponents knew my bill would mean a trans-Alaska line but they could not afford to oppose it" because, he said, it would appear that they were opposing fast transmission of gas to their energy-poor constituencies.

"If Canada cannot meet the time frame," he said, "the FPC might be reluctant to grant permits for a trans-Canada line."

The Gravel strategy, in sum, is to put the heat on those favoring a trans-Canada line by limiting the time they have to make necessary arrangements.

But Stevens said he sees Gravel's bill as untimely and ill-advised, particularly the section that would preclude judicial review.

"I just don't think it accomplishes what we want to accomplish," Stevens said. "The Commerce Committee (of which Stevens is a member) will take up that subject in a reasonable amount of time and I will have my own legislation prepared.

The situation vis a vis the Gravel bill "is not dissimilar to the oil pipeline. Mike had an amendment that would not achieve the goal. My revision of his amendment — now known as the Gravel amendment — was what was finally adopted."

Gravel, Stevens said, "is not a lawyer" and his filling the bill is "like putting in a bill to tell a judge that he can only make one decision."

Times Analysis

Washington Is Mum

By BETTY MILLS
Times Washington Bureau

WASHINGTON — Official Washington is reluctant to comment on the two competing proposals for a route to tap the vast natural gas reserve on Alaska's North Slope.

Energy advisers and White House spokesmen say it would be imprudent to take sides on the issue while it is being considered by the Federal Power Commission.

But a high-ranking administration official has told aides privately that the gas line will go through Alaska.

"There is no way we're going to let that natural gas flow through Canada," he said according to well-informed sources.

Meanwhile, on the congressional front, several forces are working.

Lobbyists representing the interests of the El Paso Natural Gas Co. and the Arctic Gas consortium are practically tripping over each other on Capitol Hill.

Arctic Gas has worked up its own bill, which would mandate its route through Canada.

El Paso has no bill as such, but legislation offered by Sen. Mike Gravel, D-Alaska, is aimed at insuring that an Alaskan route is chosen.

Gravel's bill would require the FPC to reach a decision in the gas line case by June 30, 1976. The Alaskan Democrat believes an early commission ruling means a decision in favor of El Paso.

The Republican members of the Alaskan delegation Sen. Ted Stevens and Rep. Don Young — were unhappy that Gravel leaped ahead with the bill. They believe that if the issue comes up during the long cold winter of natural gas shortages, the Alaskan route will be the loser.

Commission officials, meanwhile, have told Gravel that they could meet his deadline, but could easier make it by the December, 1976 timetable they have set for the case.

A new development that may arouse controversy is the recommendation by the commission staff that both routes be changed.

The recommendation is not dealt with in depth in the commission staff's draft environmental impact statement on the projects, but it is obviously important and will surely be examined closely in the days ahead.

Environmentalists may leap upon the suggestion that El Paso use Nikiski, on Cook Inlet, as the site of its liquefied natural gas terminal, rather than Point Gravina, on Prince William Sound. This would involve a diversion from the firm's proposed pipeline route at Livengood.

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treaty between the U.S. and Canada to allow construction of the Arctic pipeline would preclude such provincial action, Stevens said, and would therefore be likely to stir up a political hornets nest in Canada.

"My advisers in Canada tell me it will be at least one-and-one half years and probably three years" before the Canadians decide just what gas it will transport how, Stevens said.

The matter is before the National Energy Board decision."

To Stevens, the timetable for a gas pipeline is somewhat longer than it is to Gravel.

"We must have a gas pipeline within two years of the time the oil starts to flow," he said, "or else we will have to increase reinjection facilities at substantial cost."

If Gravel wants to push and Stevens wants to hold back, Young wants to do a bit of both.

"Right now, we want to encourage the Federal Power Commission to act very positively and then go to the floor (of Congress)," Young said.

As Young sees it, if there is a commission decision in favor of the All American line — "and I'm very confident that there will be one" — the Ford administration will come down solidly behind that decision in Congress.

"We have so much right on our side, and I don't mean that parochially," he said, "that I don't see how we can lose."

That right includes the administration's committment to Project Independence ("how can you say you have a Project Independence and favor a line across Canada"), the use of American labor and so on.

But, Young said, "I will not submit any legislation deciding which way the line will go" since the matter is before the power commission.

"From what I read — and there has been active lobbying by Arctic — due to lack of knowledge on the matter in Congress, if it went to a vote right now we would lose."

There is, however, a commission we are interested. It has some merit to me when you have your John Andersons and Les Aspins opposing it. It shows me that Canada can't meet such a deadline."

If he were to enter Gravel's bill in the House, Young said, he would do it sometime after the Christmas recess.

"There is a difference of opinion between the two senators and I don't want to get involved in it," he said. "But if I find the Gravel bill has merit I will enter it in the House."

"There has been some talk in the Congress about a bill that will dictate the Arctic line," Gravel said. "In my view this is ridiculous, that Congress should override the FPC before the FPC has made a decision. Any legislation to do so would not pass Congress."

Gravel says the strength of support for a trans-Alaska gas pipeline is greater than that for the trans-Alaska oil pipeline ever was.

"I would say in the Senate we are ahead," he said. "On the oil line we had 49 senators with us and none of the West Coast senators. Now they are with us and I'd guess we have 55 to 60 votes."

"The situation in the Senate is watch and see," Stevens said. "It would be premature to start counting noses."

Midwest senators, Stevens said, want to "be sure to get some of Alaska's gas," and part of the task of the trans-Alaska line forces is to educate them to the fact that a trans-Alaska line could deliver it, he said.

Young agrees.

"Consumers in the Midwest and on the East Coast who

in tactics between Gravel and Stevens, but they, along with Young, are agreed that the pivot point of the entire matter is how far apart the interests of this country and Canada are when it comes to construction of a gas pipeline to deliver the Prudhoe Bay reserves. All three agree that these interests are diverging rather than converging and that the result of this movement will be a trans-Alaska gas line.

Gravel wants to drive the wedge down hard, giving trans-Canadian pipeline backers the minimum of time to draw the two nations' interests together. Stevens, whose opposition to this approach seems to stem from his disagreement with the content of the bill rather than the intent, thinks no wedge — or at least not Gravel's wedge — is necessary right now.

Who is correct?
Only time will tell.

Beer Can Lovers Now Have Guide

CHICAGO (AP) — Not only is the world full of beer lovers, but apparently the world is also full of beer can lovers, if one is to judge by the recent sales here of "World Wide Beer Can Collector's Guide," by Robert Dabbs and David Harris of Independence, Mo.

The book sold 40,000 copies the first three weeks it was available in the Chicago area. It will soon be available nationwide. It lists every conceivable commemorative cans to foreign ones and tells how to

several forces are working.

Lobbyists representing the interests of the El Paso Natural Gas Co. and the Arctic Gas consortium are practically tripping over each other on Capitol Hill.

Arctic Gas has worked up its own bill, which would mandate its route through Canada.

El Paso has no bill as such, but legislation offered by Sen. Mike Gravel, D-Alaska, is aimed at insuring that an Alaskan route is chosen.

Gravel's bill would require the FPC to reach a decision in the gas line case by June 30, 1976. The Alaskan Democrat believes an early commission ruling means a decision in favor of El Paso.

The Republican members of the Alaskan

environmental impact statement on the projects, but it is obviously important and will surely be examined closely in the days ahead.

Environmentalists may leap upon the suggestion that El Paso use Nikiski, on Cook Inlet, as the site of its liquefied natural gas terminal, rather than Point Gravina, on Prince William Sound. This would involve a diversion from the firm's proposed pipeline route at Livengood.

The national news media is waking up to the fact that a new Alaskan pipeline battle is on the horizon.

The fight between the competing proposals is just beginning on all fronts — Congress, the Federal Energy Administration, the Interior Department and the White House.

"Time is on our side," he said, our side being the one favoring the trans-Alaska, or all-American, gas pipeline.

And Republican Rep. Don Young, the state's only member of the U.S. House of Representatives, falls somewhere in between.

But let's let them tell it.

"My bill in the Senate states that Congress requires the FPC decision by June 30, 1976" Gravel said. "I'm going to change that to Dec. 1 (1976). The FPC said they could meet the June 30 deadline but that they would be able to do a better job by Dec. 1.

"Secondly it mandates that there would be no judicial review. There could be judicial review of the constitutionality of my bill, but not of the FPC decision. There are 120 plus interests involved before the FPC, some 50 of them active. Any of them could appeal. That could mean a delay of five to 15 years. It would be ridiculous to retard the transmission of that gas for so long.

"There would be legislative review, but my bill mandates 60 legislative days (after the commission renders a decision".

So Gravel's legislation sets a time limit on the commission, precludes lawsuits against the commission's decision and gives Congress 60 days in which to tinker with the decision.

"I feel my legislation is reasonable and that it could pass Congress in the next 30 days," Gravel said. "The President was impressed and persuaded by it. Omar (the Organization for the Management of Alaska's Resources, a pro-Alaska pipeline lobbying group) was too."

The importance of the bill, in Gravel's opinion, is that it sets a schedule that the United States government must meet.

"It will bring about an Alaska gas line, "Gravel said" because we can mandate that our government meet a schedule but we cannot mandate that the Canadians do

Gravel's bill as untimely and ill-advised, particularly the section that would preclude judicial review.

"I just don't think it accomplishes what we want to accomplish," Stevens said. "The Commerce Committee (of which Stevens is a member) will take up that subject in a reasonable amount of time and I will have my own legislation prepared.

The situation vis a vis the Gravel bill "is not dissimilar to the oil pipeline. Mike had an amendment that would not achieve the goal. My revision of his amendment — now known as the Gravel amendment — was what was finally adopted."

Gravel, Stevens said, "is not a lawyer" and his filling the bill is "like putting in a bill to tell a judge that he can only make one decision."

For Stevens, slow and easy is the best way to a trans-Alaska gas pipeline.

"Forces in Canada are moving to our benefit," he said, saying that "it's premature to make a judgement" of the relative strength of trans-Alaska and trans-Canada gas pipeline forces in Congress.

The key factors involved in obtaining a trans-Alaska gas line are all Canadian, according to Stevens' view.

They are:

— Pressure in Canada for construction of two Canadian gas pipelines, the Maple Leaf from the Mckenzie Valley fields and the Polar from Canada's Arctic Islands.

—The absence of a Canadian native claims settlement.

— The nationalization by the Province of Saskatchewan of the potash industry.

The construction of two Canadian pipelines would preclude the construction of the Arctic Gas line from Prudhoe Bay, Stevens said, because the Canadian economy cannot absorb the money spent on the projects without being warped. And Prime Minister Pierre Trudeau's government is

heavily involved in both Canadian projects.

The ruling Liberal Party has announced in favor of the Maple Leaf line, a 36-inch pipe that would transport Mckenzie gas to trunk lines in Alberta for transport throughout Canada.

The Polar line, another 36-inch pipe, would transport gas from the Arctic Islands west of Hudson's Bay for delivery in Canada. The Canadian government, Stevens said, owns 45 per cent of the stock in the Pan Arctic group, which is conducting gas exploration in the islands, and has been providing a substantial amount of the capital for the exploration. The group, Stevens said, has already proved up about one-third of the gas available at Prudhoe Bay and needs to find only another 15 per cent or so of the Prudhoe reserves to make pipeline construction economically viable.

Secondly, Canadian natives pushing for a settlement of their aboriginal claims are "super nationalistic," Stevens said, and oppose a U.S. pipeline through Canada. The failure of the Canadian government and the natives to reach a settlement further clouds prospects for the Arctic Gas proposal, he said.

Thirdly, the takeover of the potash industry should be a "red flag" to private enterprisers, Stevens said, since the Arctic Gas pipeline would run through Saskatchewan. Any treaty between the U.S. and Canada to allow construction of the Arctic pipeline would preclude such provincial action, Stevens said, and would therefore be likely to stir up a political hornets nest in Canada.

All these factors, plus Canada's insistence that any pipeline built across her territory must be financed by Canadian money to the tune of at least 51 per cent, point toward slow going toward any Canadian decision.

"My advisers in Canada tell me it will be at least one-and-one half years and probably three years" before the Canadians decide just what gas it will transport how, Stevens said.

The matter is before the Canadian National Energy Board, which Stevens characterized as a combination of the U.S. Federal Power Commission and Interior Department. Canadians have told him, Stevens said, that "it will be a long cold wait for a solidly behind that decision in Congress.

"We have so much right on our side, and I don't mean that parochially," he said, "that I don't see how we can lose."

That right includes the administration's committment to Project Independence ("how can you say you have a Project Independence and favor a line across Canada"), the use of American labor and so on.

But, Young said, "I will not submit any legislation deciding which way the line will go" since the matter is before the power commission.

"From what I read — and there has been active lobbying by Arctic — due to lack of knowledge on the matter in Congress, if it went to a vote right now we would lose."

There is, however, a possibility that Young might sponsor Gravel's bill in the House.

"I talked to Sen. Gravel and he has a good point, the bill just tells the commission to make a decision by Dec. 1," Young said. "In my mind it has some merit because it informs the

support for a trans-Alaska gas pipeline is greater than that for the trans-Alaska oil pipeline ever was.

"I would say in the Senate we are ahead," he said. "On the oil line we had 49 senators with us and none of the West Coast senators. Now they are with us and I'd guess we have 55 to 60 votes."

"The situation in the Senate is watch and see," Stevens said. "It would be premature to start counting noses."

Midwest senators, Stevens said, want to "be sure to get some of Alaska's gas," and part of the task of the trans-Alaska line forces is to educate them to the fact that a trans-Alaska line could deliver it, he said.

Young agrees.

"Consumers in the Midwest and on the East Coast who oppose us are not being given the facts," he said.

He too said that there was a possibility that a bill mandating a trans-Canadian route might be entered in Congress, "but realistically that's not going anywhere."

In sum, there is a difference

necessary right now.

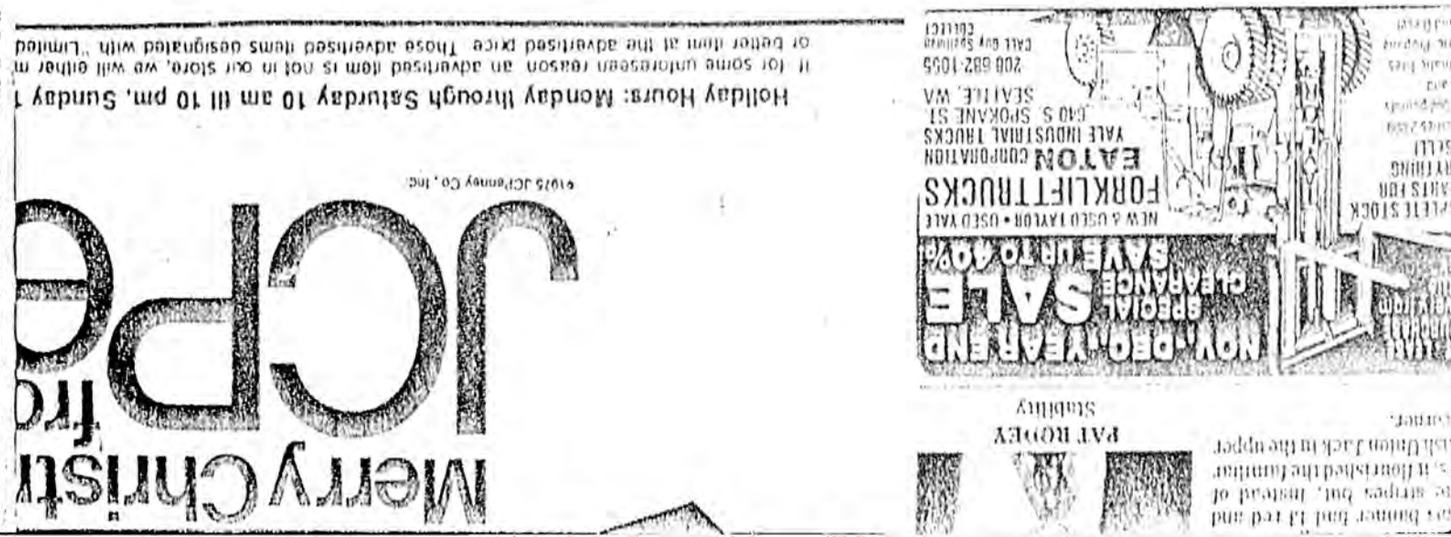
Who is correct?
Only time will tell.

Beer Can Lovers Now Have Guide

CHICAGO (AP) — Not only is the world full of beer lovers but apparently the world is also full of beer can lovers. If one is to judge by the recent sales here of "World Wide Beer Can Collector's Guide," by Robert Dabbs and David Harris of Independence, Mo.

The book sold 40,000 copies the first three weeks it was available in the Chicago area. It will soon be available nationwide. It lists every conceivable commemorative cans to foreign ones, and tells how to date a beer can, how to trade beer cans and how to judge the relative worth of a beer can.

(The book is published by World Wide Beer Can Collectors of Independence, Mo., and distributed by Wallace-Homestead Book Co., Des Moines.)



Gasoline Was Once Waste, Now It's 'Waste Not'

By MAX B. SKELTON

HOUSTON (AP) — Motorists may find it difficult to believe, but gasoline was an unwanted byproduct in the pioneering days of petroleum refining.

Gasoline components of crude oil were thrown away as refiners sought kerosene to replace whale oil as lamp fuel. The first refinery, conceived in 1847, processed only five gallons of crude a day.

The processing capacity of one U.S. refinery now is being expanded to 650,000 barrels a day, which will be the world's largest, and total domestic capacity is approaching 15.5 million barrels a day, with a barrel containing 42 gallons.

The early refineries were, in a sense, do-it-yourself operations. The refiner sought places where oil seeped above ground, skimmed crude from water processed it, and then marketed it, first as medicine and later as kerosene.

Such one-man enterprises were the forerunners of today's gigantic petroleum industry that supplies 70 per cent of the nation's energy.

Two events near the turn of the century paved the way for oil to attain its big business stature:

The first gasoline-powered automobile appeared in 1893. And the Jan. 10, 1901, Spindletop discovery in southeast Texas gave the nation its first oil "gusher." It produced more than 100,000 barrels of crude each day.

About 10,000 firms ranging from one-man independents to multibillion dollar giants now are engaged in exploration and production.

About 100 pipeline companies move crude oil, petroleum products and natural gas to interstate markets. More than 130 companies operate a total of 250 refineries.

There are about 15,000 wholesale oil jobbers, 13,500 companies dealing in fuel oil and liquefied petroleum gas and more than 300,000 retailers of motor gasoline.

Oil is a business for specialists: wildcatters, geologists, geophysicists, petroleum engineers, drillers, roughnecks, pipeliners, refiners, marketers.

Col. Edwin Drake, a retired railroad conductor, conceived the idea of drilling for oil. Drake brought in the Titusville, Pa., discovery well on Aug. 27, 1859, after drilling to a depth of 69½ feet. The well produced eight to 10 barrels a day.

Drilling quickly spread to Ohio, Texas, California and Oklahoma. Since the Drake well, more than 2,725,000 wells have been drilled in the United States, including more than 1,395,000 oil wells drilled to completion, of which about 560,000 still are producing.

But the gushers are gone. The average well now produces only 17.4 barrels a day. One with a potential of several hundred barrels a day is a good well and one with potential in the thousands is rare.

Most obvious prospects have been drilled at least once, many of them several times. Explorers now are having to drill deeper and deeper and in difficult areas offshore, in Alaska and the Arctic.

Science has replaced hunches in selecting drilling sites, but financial risks are high.

One group of companies paid more than $900 million for the right to explore in the Gulf of Mexico off the Florida coast. The first seven test wells were dry.

Geologists and an army of specialists using seismographs and other sophisticated instruments are constantly searching for hints of oil deposits more than 400 million years old below the earth's surface.

But drilling is the only way to determine whether such hints are correct. And, again, there are high risks.

Of the record 37,111 wells completed in 1956, 30,753 were oil producers, and 4,543 were gas producers. Dry holes totaled 21,503.

Along drilling slump that often blame mostly on federal natural gas price controls was reversed last year when 31,556 completions included 12,784 oil wells and 7,240 gas wells and 11,674 dry holes.

The risks are even higher for new field wildcats, wells drilled in an area never before productive.

A study by the American Association of Petroleum Geologists of such wells indicates only one of every 10 is completed as a discovery well, only two out of 100 make significant discoveries of one million or more barrels of oil or the natural gas equivalent, and 80 per cent of the discoveries have reserves of less than one million barrels.

A companion study indicates independents — all the explorers except the 16 largest major companies — drill nine out of every 10 new field wildcats and make 75 per cent of the discoveries.

Additions to reserves show another picture. Despite drilling only one out of 10 such wildcats, the majors discover almost half of the oil and gas reserves, with most of their explorations in ultra-deep, high-cost or high-risk areas.

Drilling costs have doubled since 1963.

In 1973, 25,350 onshore wells drilled to an average depth of 5,060 feet cost an average of $88,447, or $19.46 per foot drilled. The 49,197 drilled in 1953 with an average depth of 4,036 feet had a cost average of $10,743, or $12.36 a foot.

The 888 offshore wells drilled in 1973 had an average depth of 9,408 feet and average cost of $651,254, or $69.23 a foot. The 82 drilled in 1953 with a depth average of 8,540 feet cost $298,763 per well, or $31.29 a foot.

Recoverable domestic oil reserves peaked in 1970 at 39 billion barrels. Gas reserves peaked in 1967 at 292 trillion cubic feet.

Gathering systems totaling nearly 70,000 miles collect oil from individual wells and move it to storage tanks or dump it into a 76,000-mile trunk pipeline system serving the refining centers.

Most U. S. refineries place emphasis on gasoline production. Refineries in Western Europe concentrate on fuel oils.

Compared with the kerosene objectives of 1850, modern refineries produce an estimated 2,000 products, ranging from asphalt to plastics.

Refineries separate crude oil into its various parts called fractions. The basic process is fractional distillation, boiling the liquid and then collecting and condensing the resulting vapor.

Each fraction such as gasoline or kerosene has its own boiling point and is drawn off as a vapor.

More sophisticated processes are used to increase gasoline production or improve its quality.

Basic production includes liquefied gases, gasoline, kerosene and jet fuel, home heating oil, diesel oils, lubricating oils, heavy fuel oils, and asphalt.

Once refined, the fuels are sent on their way to retail distribution centers and eventually, in the case of gasoline, to the local service station. Much of this refined fuel is distributed via a 76,800-mile pipeline which spreads out from the refineries to transport products to major consumer areas.

The drilling slump and increased demand have more than offset additions to reserves. At the start of 1975, domestic reserves were about 34.2 billion barrels of oil and 207 trillion cubic feet of natural gas.

Recoverable proved reserves estimates of oil and gas that scientists believe can be produced with existing technology. Engineering data on the performance of a reservoir can cause up or down revisions in the recoverable estimates.

Most estimates of oil reserves are conservative in that current technology permits production of only about 33 per cent of the oil believed to be in a reservoir. Oilmen say research to increase this ratio could go a long way in reversing a five-year downward trend in domestic oil production and relieving the nation's energy shortages.

A Texas group, for example, estimates that the state's recoverable reserves, estimated at 12 billion barrels under the 33 per cent factor, would be increased by 1.5 billion barrels if the figure were raised just to 34 per cent.

Estimates of reserves cannot be based on a single well. Additional or development wells must be drilled to define the extent of the new reservoir. An initial discovery could ultimately lead to development of a giant field of 100 million barrels but dry holes in development could reduce its financial value greatly or even cause abandonment.

Such development drilling is a major factor in the lead time separating the start of explorations and the delivery of the newly discovered oil to consumers.

It takes years to translate new discoveries into significant production. Proved reserves first must be enough to justify such major service costs as pipelines to move the oil to refineries.

Oilmen say that very little oil discovered this year will be available this decade.

The time lag for a small 1967 Louisiana offshore lease sale was four years, but the area normally carries predicted lags of five to 10 years.

The first pipeline to be built after the Drake discovery transported 30 barrels of crude an hour a distance of five miles. The domestic industry now has a pipeline network in excess of 222,000 miles

Gasoline Was Once Waste, Now It's 'Waste Not'

Wednesday, December 10, 1975, Anchorage Daily Times 25

By MAXB. SKELTON

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Estimates of reserves cannot be based on a single well. Additional or development wells must be drilled to define the extent of the new reservoir. An initial discovery could ultimately lead to development of a giant field of 100 million barrels but dry holes in development could reduce its financial value greatly or even cause abandonment.

Such development drilling is a major factor in the lead time separating the start of explorations and the delivery of the newly discovered oil to consumers.

It takes years to translate new discoveries into significant production. Proved reserves first must be enough to justify such major service costs as pipelines to move the oil to refineries.

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State to limit gasline flow

By ANDY WILLIAMS
Daily News Staff Writer

The state expects to limit the flow of natural gas from Prudhoe Bay to about half the level projected by El Paso in its application to build a pipeline, state officials told the legislature's Joint Gas Pipeline Impact Committee Thursday.

Commissioner of Natural Resources Guy Martin and other state oil and gas officials said a structural model of the Prudhoe Bay formation indicated the optimum rate of gas production was 2 billion cubic feet a day. In its filing before the Federal Power Commission, El Paso projected a rate of production of 4 billion cubic feet a day.

JOHN C. BENNET, head of Alaska operations for El Paso, said the company had been advised of the lower projection and had filed an amended form with the FPC taking it into consideration. He said the pipeline and liquefaction system proposed by El Paso was still "feasible at the lower level of production."

However, a staff assistant to the committee said the rate of production had a direct bearing on the rate at which the cost of the pipeline was amortized. With the lower production figure, the pipeline would transport half as much gas at the same cost, he said.

Martin and his assistants, Hoye Hamilton of the Division of Oil and Gas and Pat Dobey of the Division of Geological and Geophysical Surveys, presented results of tests with the model at various rates of production and injection of water.

THE TESTS showed gas could be produced from the field at a rate up to 2 billion cubic feet a day, with water injection, without the volume of recoverable oil failing off appreciably. Beyond 2 billion cubic feet a day, the volume of recoverable oil declined significantly.

Martin said the state had the authority to limit the rate of gas production by regulation and intended to do so to the optimum rate of the field.

State officials said the optimum rate would be determined by experience in the first years of oil production, when all the gas will be reinjected. Hamilton said it was not known whether water injection would work in the Prudhoe Bay field, although, he thought the chances were better than 50-50 it would. Martin said the state would commit no gas until it was determined the gas could be produced without diminishing the amount of recoverable oil.

THE STATE'S estimate on the rate of gas production was lower than the 2.5 billion cubic feet a day estimated by H. J. Gruy and Associates in a study for the Interior Department. Oil industry representatives agreed the Gruy figure was a reasonable one in testimony before the committee Wednesday.

Amos Mathews, executive vice president of Alaskan Arctic Gas, said his company intended to transport 2.25 billion cubic feet of Prudhoe Bay gas a day in its proposed pipeline through Canada, picking up another 2.25 billion cubic feet from the Mackenzie delta area.

Board votes to sell portion of Inlet gas

A state advisory board Wednesday voted to sell a portion of the state's Cook Inlet royalty gas to the Anchorage Natural Gas Co.

The state Royalty Oil and Gas Development Advisory Board's action calls for Phillips Petroleum Co., operators of a liquefied natural gas plant at Nikiski, to relinquish its rights to the state's gas. The company now exports to Japan about 15 million cubic feet of state royalty gas daily. The contract allowing the purchase of the state gas for that use was signed in the late 1960s.

Guy Martin, commissioner of natural resources, said the transfer of the state's gas from Phillips to the Anchorage company would become effective next year if the legislature approves the board's findings.

Anchorage Natural Gas has told state officials that its Anchorage-area customers could be in danger of minor gas shortages as early as next year and significant interruptions of service could occur in the early 1980s, unless the company finds additional supplies.

The gas company supplies gas for the Chugach Electric Co. and Municipal Light and Power Co. generating plants.

Asked if the issue of exports contributed to the board's vote Wednesday, Martin said, "it was not so much a reaction . . . as a balancing of value."

University Gets Gas Line Study

FAIRBANKS (AP) — As decisions near on the routing of a natural gas pipeline from Prudhoe Bay to the south, the University of Alaska says it has received a grant to study alternatives to the arctic gas proposal.

The director of the Institute of Social, Economic and Government Research, Vic Fischer, has confirmed that his department has received a $15,000 contract from the Bureau of Land Management to study alternatives to the Arctic Gas pipeline proposal. The study is a follow up on Arctic Gas Co.'s draft environmental impact statement.

Nine alternatives are being considered, in addition to the arctic gas proposal, which would see the line cross the Arctic Wildlife Range:

—An offshore route, which would go offshore in the Arctic Ocean from the Beaufort Sea to Canada.

—An onshore route, which would skirt the south edge of the Arctic Wildlife Range.

—Also being considered is the route known as the Fort Yukon Route, which would take the gasline right through Fort Yukon, along the north side of the Yukon River through Canada.

—A route proposed through Fairbanks then along the Alaska Highway to Edmonton, Alberta.

—Another route through Fairbanks would go along the Alaska Highway, and then to a gas liquification plant at Haines.

Three other routes involve turning the gas to a liquid before shipping it by tanker. They include:

—The Point Gravina Route, which is favored by the El Paso Co.

—The Cook Inlet Route, which takes the gas from Prudhoe through Fairbanks, down the rail belt, to the existing petrochemical complex at Nikiski Beach, north of Kenai... and from there by tanker.

—The last alternative is the Golovin Route, which would take the gas from Prudhoe by pipeline to the Seward Peninsula, and then by tanker across the Bering Sea.

Approval asked for Nikiski pipeline

The state Department of Natural Resources has set Sunday as the deadline for calling for public hearings on a petroleum products pipeline from Nikiski to Anchorage.

The Nikiski Alaska Pipeline Co. applied for a state pipeline right of way permit in October for the 70-mile line. The company also sought approval from the Army Corps of Engineers for a portion of the pipeline that would cross Cook Inlet.

The $11.3 million line would bring 40,000 barrels of refined petroleum products daily to Anchorage from the Tesoro-Alaska refinery at Nikiski.

About half the project would cross state lands. The company also has sought Corps of Engineers approval to cross Ship and Chester Creeks with the 10-inch line.

No public hearings have been scheduled for the Nikiski proposal, and the Corps of Engineers comment period on the permit application has expired. The Department of Natural Resources is scheduled to close its comment period on the proposal Dec. 14, and after that time no requests for public hearings will be considered.

Oil, gas strike in Canada

A consortium of Canadian and American oil companies have announced a major hydrocarbon discovery in the Mackenzie River Delta region of northern Canada.

Standard Oil Company of California — a member of the group, which includes Sun Oil, Bow Valley Exploration Ltd., Arctic Coast Petroleum Ltd. and Numac Oil and Gas Limited — said Monday the discovery, located on 1146 acres of a 45,000 acre lease, flowed at the rate of 31 million cubic feet of gas and 7,200 barrels of oil per day on short tests.

SoCal said the 11,000 foot well penetrated two hydrocarbon zones — one just below 5,100 feet and one below 9,600 feet. Gas flowed at 17 million cfd from upper zone and 14 million cfd from the lower strata.

Sun Oil, as operator for the consortium, drilled the well — designated at Garry P-04.

Study favors Alaska gas route

By MARK PANITCH
Our Washington Correspondent

WASHINGTON — The Interior Department [illegible]nesday released the Alaska Natural Gas [illegible]portation Systems study mandated in 1973 [illegible] the trans-Alaska Pipeline Authorization Act. [illegible]ginally due to be released under terms of the [illegible] November 16, the document was released [illegible] a month late, apparently as a result of [illegible]-agency squabbling over possible bias in the [illegible] towards one of the two systems competing to [illegible] Alaska gas to the Lower 48.

The center of the controversy was the [illegible] risk analysis in the study which compares the potential for interruption of construction on the two proposed routes.

THE ANALYSIS clearly favors an Alaska liquefied natural gas tanker route over an all pipeline Alaska-Canada route.

In unveiling the study, Assistant Interior Secretary [illegible] Carlson placed heavy weight on the risk analysis section of the report. When a reporter [illegible] him on whether the Interior Department favored one route over the other, he insisted "Interior doesn't have a position." Moments later he replied to a follow-up question that the study [illegible] for itself." He said "people have to be [illegible] their own judgment."

The risk analysis reportedly was challenged by officials at both the State Department and the Federal Energy Administration on the basis that it made too many assumptions and then used those assumptions to justify an Alaska-LNG route.

THE STATE Department, particularly, is understood to have felt that the risk analysis would undercut ongoing negotiations with Canada for a hydrocarbon treaty.

However, the risk analysis also concludes that the Alaska-LNG route would stand more chance of interruption once it was in operation.

"Two tentative conclusions were reached," the study says. "First the . . . Alaska-Canada system would be the more risky to construct and would have the greater potential for schedule slip and cost overrun . . . Second the . . . Alaska-LNG system is more risky to operate, with a greater potential for flow interruption once in operation."

But, the study concludes that the National Net Economic Benefit (NNEB), a system of assigning economic value to certain aspects of each proposal, for the Alaska-LNG system would be $6.6 billion compared to $5.3 billion for the Alaska-Canada system.

The factors compared in the analysis were:

Modularity — The Alaska-LNG system, the study says, can be divided into five discrete components. "This modularity," it says, "provides a distinct advantage in managability over a more homogenous and interactive project such as the Alaska-Canada system."

Labor — "Potential labor difficulties in Canada are considered more likely than in Alaska . . ."

Arctic Conditions — The Alaska-LNG system, it says, is less exposed to arctic construction conditions because more of it has further south, it has the advantage of using facilities left from the oil pipeline.

Gas production no threat to Slope oil

By ANDY WILLIAMS
Daily News Staff Writer

Oil industry representatives Wednesday denied production of natural gas at Prudhoe Bay would reduce the amount of recoverable oil there, as was suggested in a study, but said costs of production would be higher than those estimated in the study.

Spokesmen for BP-Alaska, Exxon and Atlantic Richfield Co., the "big three" leaseholders at Prudhoe Bay, took exception to conclusions of a study by the Aerospace Corporation for the Department of Interior that gas production over the life of the field would decrease the volume of recoverable oil by 400 billion barrels.

BUT THEY also objected to the study's figure of 47 cents per mcf (million cubic feet) for the wellhead value of the gas as the break-even point for production of the gas. They said it would be considerably higher.

The testimony came at a meeting of the legislature's Joint Gas Pipeline Impact Committee, which began two days of hearings on relative merits of competing routes for the pipeline and of producing the gas as opposed to reinjecting it into the field. The committee solicited comments on the Aerospace study, which was conducted by H.J. Gruy and Associates.

Forrest Garb, president of H.J. Gruy, acknowledged that the 400-million-barrel figure for oil lost through gas production could be reduced by effective management of the field. He said the study used a life of 23 years for the field and that oil produced after that would also cut into the 400-million-barrel figure.

GARB SAID the figure of 47 cents per mcf was influenced by use of a discount rate of 10 per cent, which is the cost producers would pay on money invested. The 10 per cent figure was set by the Interior Department but the actual discount rate would probably be higher, he said.

Oil industry representatives testified there was no reason any oil would be lost through gas production if sound practices were used in management of the field. They said the optimum production of oil and gas could be established early in the life of the field and that reinjection of the gas could hurt the field in the latter stages of production.

They agreed with Garb that the discount rate would be greater than 10 per cent, probably in the range of 15-20 per cent per year. However, they said they did not know what the break-even wellhead price would be.

TESTIFYING for the oil industry were Kenneth Keep, resident manager of BP; Judd Miller Jr. of Exxon, and Howard Slack, resident manager of ARCO.

The hearings will continue today with state officials expected to testify on economic benefits to the state of production.

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...y MARK PANITCH
...shington Correspondent

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Close Of Deal

ADT

Special to The Times 12/11/75

NEW YORK — Atlantic Richfield Co. has announced the closing of the sale of a $420 million oil and gas production payment to Alasca, Inc., a Delaware non - profit corporation. The announcement said the proceeds are to be received in seven installments through March 1977.

The credit agreement is to finance development of Alaskan natural gas reserves at Prudhoe Bay.

Alasca, Inc. financed the purchase of the production payment with a private placement of $200 million of notes with institutional lenders and the syndication of $220 million of commercial bank loans. First National City Bank of New York acted as a financial adviser in the private placement and as agent and manager in syndicating the commercial bank portion.

Discharge of the production payment will be made out of revenues generated from the sale of production from a 20 per cent portion of Atlantic Richfield's interest in the main Prudhoe Bay field on the North Slope of Alaska and from other properties in Alaska, Texas and offshore Louisiana.

In a separate transaction last March 25, Pacific Lighting Gas Development Co., a subsidiary of Pacific Lighting Corporation, agreed to pay to Atlantic Richfield interest, fees, legal and other costs related to the production payment for the exclusive right to negotiate for the purchase of 60 per cent of Atlantic Richfield's future natural gas production from the main Prudhoe Bay field.

An Atlantic Richfield spokesman said that a major portion of the company's capital commitments, which will total nearly $2 billion in 1975 alone, is dedicated to development of the Prudhoe Bay field in Alaska.

Gravel To Amend Bill On Gas Line Decision

By BETTY MILLS
Times Washington Bureau

WASHINGTON — Sen. Mike Gravel, D-Alaska, plans to amend his legislation mandating an expedited decision in the natural gas pipeline case to give the Federal Power Commission an additional five months to reach a decision.

Gravel decided to make the change following discussions with members of the commission which has set Dec. 1, 1976, as the target date for reaching a decision in the gas line case.

In addition, Gravel has sent a copy of his bill to President Ford.

The Alaskan Democrat said he discussed the legislation with the President when he accompanied Ford to Alaska earlier this month, and the President asked to see the bill.

"In introducing legislation of this type, my hope to add some discipline to the proceedings and prevent any possible slippage in the schedule," Gravel wrote the President. "The commission has agreed that legislation of this type would be helpful to them in attemtping to meet their proposed deadline."

Gravel told the President his bill substitutes congressional review for judicial review of the commission decision.

"A seven-year delay such as we experienced in trying to build the trans-Alaska oil pipeline would be devastating to the nation's efforts to become energy self-sufficient.

"A speedy FPC decision and expeditious implementation of that decision are essential to our efforts in this regard," Gravel wrote Ford.

Gravel also sent the president a copy of a letter he had received from Power Commission Chairman Richard I Dunham, who said a final commission decision by Dec. 1, 1976, is a reasonable target.

Meanwhile, rival legislation sponsored by the Arctic Gas consortium is expected to go into the hopper of the House of Representatives next week.

Rep. Philip Ruppe, R-Mich., said yesterday he intends to introduce the legislation before the Christmas recess. He said he is still talking to other members to gain co-sponsors.

Congress Gets Gas Line Study

(Continued From Page 1)

cost of the two transportation systems.

The cost of the Arctic Gas transportation system, according to the report, is $4.538 billion, whereas the cost of the El Paso project is $3.079 billion.

The department's projections were based on an extensive, year-long analysis of the economic benefits of the gas pipeline proposals, risk studies, national security considerations and international factors.

The 239-page document went to Congress yesterday, several days past its due date.

In releasing the report, Kleppe said, "the important message of this report is that both of the systems studied are technically and economically feasible, subject of course to the environmental considerations revealed by the final environmental impact statement.

Kleppe Delivers Gas Line Study

12/11/75

By THOMAS P. SOUTHWICK
Times Washington Bureau

WASHINGTON — Interior Secretary Thomas S. Kleppe told Congress yesterday that the Arctic Gas proposal for bringing natural gas from the North Slope involves the risk of substantial cost overruns and schedule delays.

In a report submitted to Congress, the department said the possible cost overruns for the Canadian route could range between $1 billion and $3 billion and the schedule delays could be anywhere from one to three years.

In contrast, the department believes the risk of overruns and delays with the competing project, that proposed by the El Paso Natural Gas Co., would be between $500 million and $1.3 billion and between six months and 18 months.

However, the Interior document concludes that the El Paso proposal is more expensive and offers fewer economic benefits to American consumers.

The report said the Canadian line would bring a total of $8.729 billion in national economic benefits to the U.S. The El Paso project would bring a total of $8.281 billion in the national economic benefits.

These figures take into account the benfits to consumers, the goal of achieving energy independence and the

(See Page 2, Col. 2)

Official Predicts Gas Shortages

ADT 12/11/75

WASHINGTON (AP) — Warm autumn weather has provided a respite from a severe natural gas shortage but the potential for serious shortfalls will increase each year as production continues to decline, a federal energy official says.

Natural gas production may be restored to present levels in the 1980s if federal price regulations are removed and if new areas offshore and in Alaska are explored, Deputy Federal Administrator Eric Zausner said.

But "we're in for a couple more years of declining supplies of gas" before that, he told reporters Tuesday.

FEA estimated in 1974 that raising wellhead prices to $2 per thousand cubic feet would not stimulate production any more than a price of 75 cents per thousand cubic feet.

But Zausner said the agency had oversimplified its analysis and FEA now believes that the higher price will be adequate to encourage natural gas discoveries.

Federal agencies had predicted that natural gas supplies this winter would fall 19 per cent below demand, causing fears of industrial closings and layoffs. The eastern states were expected to be the hardest hit.

oderick appointed to state post

k Roderick, former mayor of the rage Borough, has been appoin- eputy commissioner of the state rtment of Natural Resources. mmissioner Guy Martin announ- e appointment Monday, and said rick is expected to assume his new round the first of the year.

rtin said that present deputy com- oner Bill Fackler will become tive director of the Alaska Royalty d Gas Development Board. He announced the selection of Hope nt David G. Hanson as chief of the formed Natural Resources Plan- nd Research Section.

DDERICK, contacted at home ay, said as far as he's concerned going where the action is."

feel the orderly development of tural resources is really essential state's survival," he said. "I feel the field that is most important to tate, and that I have something to offer."

He said he looks forward to working with Martin, and added that despite the move to Juneau he will not sell his Anchorage home.

Roderick has been in Alaska over 20 years, and has a lengthy and varied experience involving Alaska natural resource issues. He was the founder in 1955 of Alaska Petroleum Publications, and three years later founded Alaska Title Guaranty Company. He also founded and directed firms devoted to oil and gas exploration and investment, and was a co-publisher of Alaska Industry magazine from 1969 to 1972.

EARLIER, he practiced law for several years with present Sen. Ted Stevens, R-Alaska. In 1968 Roderick took a one-year sabbatical leave to direct the Peace Corps in India. Just prior to his election as borough mayor in 1972, he was a government relations advisor to Alyeska Pipeline Service Company.

"I am delighted that Jack will be joining the department," said Martin. "His record of private and public achievement speaks for itself, and his knowledge of key Alaska resource issues will greatly strengthen the state administration during an exciting and important period."

He said Fackler's new duties as director of the royalty board are crucial to the future of the state, adding that the entire board believed he was ideally qualified to take on the job.

HANSON, who has already assumed his new post, holds a bachelor's degree from Pacific Lutheran University and a master's in resource management. For four years he was with the Environmental Protection Agency in Washington.

Martin said the new section will coordinate resource issues within the department and with other state agencies.



Jack Roderick

Stevens Submits Plan For All-Alaska Route

By BETTY MILLS
Times Washington Bureau

WASHINGTON — Sen. Ted Stevens, R-Alaska, threw a new wrinkle into the gas line debate today, submitting legislation to require that the pipeline bring natural gas from the North Slope must be totally under U.S. jurisdiction.

Stevens' legislation would prohibit the Federal Power Commission from issuing a certificate to the Arctic Gas Consortium, which wants to pipe the gas through Canada.

The legislation is a calculated effort to gain the support of Middle West and Northern State senators who previously have opposed the El Paso proposal to bring the gas through Alaska on a route nearly parallel to the oil pipeline.

The legislation includes language requiring the Federal Power Commission to allocate natural gas produced in the Prudhoe Bay area "in such manner as will supply each such region and state with an equal per centum of the per centum decline in natural gas supplies from all sources to such region or state between the calendar year 1973 and the date transmission of Prudhoe Bay gas commences."

The bill mandates that the commission and other governmental agencies can approve "only such application or request which provides for such pipeline to be constructed or otherwise located in its entirety above, on, or under land areas in a state or states of the United States."

In a lengthy Senate floor speech, Stevens said recent development in Canada have convinced him that "it will be a long cold wait if we wait for our Canadian neighbors to act" on the Arctic Gas proposal.

Stevens cited three developments in Canada that persuaded him to introduce the bill:

— The adoption of a resolution by the National Liberal Party calling for the federal government to "Canadianize the industry."

— The likelihood that the settlement of native land claims in Canada is many months away.

— The present challenge by Arctic Gas of the impartiality of Marshall Crowe, the master of the National Energy Board which is hearing the competing Canadian proposals.

"The net impact on me regarding the Canadian attitudes is that we will have nothing but a long cold delay" if the U.S. waits for Canada to make a decision, Stevens said.

"My bill does not say the FPC must approve the El Paso approach," Stevens said. "Congress has the right to tell the FPC it must only consider a pipeline under U.S. jurisdiction."



DAYS TO CHRISTMAS

Gravel sees gas line decision by Dec. of '76

From Our Washington Correspondent

WASHINGTON — Sen. Mike Gravel, D-Alaska, Wednesday advised President Gerald Ford that the chairman of the Federal Power Commission feels a decision on Alaska gas systems competing for certification by the FPC could be made by December 1976. Gravel said he is changing the target date in a bill he introduced to substitute Congressional review of the FPC decision for judicial review to conform with that view.

Gravel, in a letter to Ford, said he introduced his bill in an effort "to add some discipline to the proceedings and pre any possible slippage in schedule."

Gravel's office said his ter, a copy of a letter to Gr from FPC chairman Rich L. L. Dunham and a copy of bill were all sent to Ford response to interest in the s ject shown by the Presid during his recent visit Alaska enroute to Chi Gravel accompanied Ford far as Alaska on the trip.

In his letter, Dunham sa neither application from Paso Alaska Co. nor from Ar tic Gas is yet complete. Th he said, is "one of the problem which complicate th assessment."

State declines ... gas study funds

The Royalty Oil and Gas Development Advisory Board has declined to take action on a private group's offer to contribute $10,000 toward a study of Prudhoe Bay natural gas reserves.

The board, meeting in Juneau this week, reached a consensus that accepting the offer would be a conflict of interest.

The Organization for the Management of Alaska's Resources (OMAR) offered to contribute $10,000 for a study on how the state's royalty gas should be allocated. The group seeks to learn how much of the royalty gas can be used in the state and how much could be sold to companies. OMAR proposed that the board provide $30,000 for the study.

The private group said committing a share of state royalty gas to a company could contribute to a favorable Federal Power Commission decision on routing a proposed natural gas line through Alaska.

The El Paso Alaska Co. and Arctic Gas Co. currently are involved in hearings before the Federal Power Commission (FPC) on a gas line route from Prudhoe Bay. El Paso's proposal calls for an Alaska-Canada route; Arctic's an Alaska-Canada route.

OMAR and others supporting a trans-Alaska route fear the state will lose the line unless it shows a willingness to commit all or part of Alaska's 12½ per cent share of Prudhoe reserves to El Paso.

Martin said the state may in the future do so. But he said a number of questions will need to be answered before making a commitment of any kind for Alaska's royalty gas.

In addition, said Martin, the board in its discussions late Wednesday determined that accepting $10,000 from OMAR for a royalty study would be "clearly a conflict of interest" because OMAR has received donations from El Paso.

Martin said several questions should be answered before any royalty commitment is made.

...Block Of Gas Line Possible Seen By State

(Continued From Page 1)

The oil company spokesmen challenged an Aerospace Corporation report to the Department of Interior that there could be a loss of 400 million barrels of oil from the Prudhoe Bay field's ultimate production if gas is produced for sale, rather than reinjected.

Testifying for Arco, Howard Stack said with good reservoir management, it is possible that the 400 million barrel estimated "loss" can be reduced to a negligible amount.

And Dr. Kenneth Keep, Alaska manager for BP Alaska, raised the possibility of a loss in oil production if all the gas is reinjected.

However, he, too, said with good reservoir management schemes this loss could be prevented.

Judd Miller Jr., production manager for Exxon USA, testified that optimum recovery from the Prudhoe Bay field is dependent on early gas sales.

"The gas at Prudhoe Bay will ultimately be sold," Miller said. "The question is one of timing. In our opinion, the benefits from an early sale offset possible loss in oil recovery."

Hamilton said their studies show that if gas production at Prudhoe Bay should exceed 2 billion cubic feet a day, oil production drops off drastically. Highest recovery from the field would be 2 million barrels of oil a day if no gas were sold and water were injected, he said. Forrest Gard, president of the H. J. Gruy Co., of Dallas, who made the reservoir study for the Department of the Interior, told the committee that 2.5 billion cubic feet a day would be "otpimum" gas production.

Martin said both El Paso Alaska, proposing a trans-Alaska pipeline, and Arctic Gas, proposing a pipeline through Canada, have estimated their projects would require 3 to 3.5 billion cubic feet a day.

However, this statement was challenged by both companies. El Paso Alaska Vice president John Bennett later said his company has filed with the Federal Power Commission an alterntive to carry 2.5 billion cubic feet a day. And Amos Mathews, executive vice president of Alaskan Arctic Gas, said his company never has said it would require more than 2.25 billion cubic feet of gas per day from Prudhoe Bay, which would be combined with 2.25 billion from Canada's MacKenzie Delta.

Martin also told the committee that the reservoir study "is merely one of the factors" that will be considered by the Federal Power Commission in arriving at a decision to certify either a trans-Alaska or a trans-Canadian pipeline.

The committee gave about 10 minutes each to Bennett and Matthews, at the end of the two-day meeting.

It was the first appearance before the committee for either El Paso, which already has the state legislature's endorsement for its trans-Alaska pipeline proposal, or Arctic Gas.

The committee, seemed to be unclear what its role or its next step should be.

After hearing economist Arlon Tussing expound for 30 minutes on how it is possible Alaska's natural gas could be "valueless" because of the high cost of building any pipeline, Rader asked, "Can we ignore your pessimistic outlook and go ahead and state a preference for one route over another?"

Tussing responded that "As a member of the state's Royalty Gas Development Advisory Board, a quasi-judicial group, I don't want to speak prejudicially about issues before the board." One of those issues obviously is El Paso's proposal to purchase all or part of the state's royalty gas — a commitment El Paso has said is needed to insure that a trans-Alaska route will be selected by the Federal Power Commission.

But, he added, "I don't think it wise to push for one route in spite of what the state receives" for its gas. "I would be conservative about committing the state's royalty gas now. There are so many contingencies." The Royalty Board took that position at its meeting in Juneau this week.

One alternative to a pipeline, which would convert the state's royalty gas to methanol, "is worth looking into," Tussing said, although it is "not in the race." There is no one ready to submit such a proposal to the Federal Power Commission, he pointed out.

Sen. John Huber, D-Fairbanks, frequently mentioned the methanol alterntive during the two days the committee was in session. He said privately that Wentworth Brothers of Cincinnati is investigating the methanol proposal, and he said if Wentworth could obtain the state's 12½ per cent royalty gas, plus uncommitted gas from other Prudhoe Bay owners, it "might be enough to block a Canadian (pipeline) route."

Another proposal, by Westinghouse, would take the methanol out by submarine tanker, Huber said.

In his brief time before the committee, El Paso's Bennett said in the last 30 days, his company has amended its filing to the Federal Power Commission updating its total project cost estimate to $7.8 billion. He said the cost increase is due almost entirely to increases in the cost of materials.

They have modified construction plans for a liquefaction plant, to have it built within five years from the time a permit is issued, he added.

"For the last six weeks," he said, "El Paso has had a team looking at the Alyeska (trans-Alaska oil) pipeline and they have found that 75 per cent of the work pad and the entire haul road could be used for our construction. This moves us into year-round construction, and gives us greater comfort in that five-year time frame."

Bennett said because of new compressor design, they find they can reduce the amount of gas needed to operate the system to 9.6 per cent, "and we can recover an unknown amount of that," as the liquefied gas is regasified.

Tussing had predicted that a "pessimistic" prediction of the cost of transporting Alaska gas is $4 to $5 per thousand cubic feet. Bennett said the president of a gas company supplying gas to Boston told him four days ago that gas there is selling at $5.45 per thousand cubic feet.

"There are 40 million American homes who must use natural gas. It would cost $80 billion to convert them" to another form of fuel," Bennett said.

"There are many complex problems facing us and many obstacles, but the lack of a market for Alaska's gas is not one of them."

Bennett predicted that Mathews would agree with that statement, and he did.

Mathews and Arctic's trans-Canadian pipeline system could be built in roughly the same time frame as El Paso's.

Seen By State

By SUSAN ANDREWS
Times Staff Writer

State officials told a legislative committee yesterday they will block any gas pipeline from the North Slope until they are convinced that gas can be produced without drastically reducing the recovery of oil from the Prudhoe Bay field.

"Haven't we effectively destroyed a pipeline?" committee chairman state Sen. John Rader asked Commissioner of Natural Resources Guy Martin.

Martin replied, "No, only delayed it."

The testimony came yesterday during a two-day meeting the legislature's Gas Pipeline Impact Committee. Wednesday, officials of Atlantic Richfield Co., BP Alaska and Exxon all said they are confident both oil and gas can be produced from the Prudhoe Bay field without a loss in oil production.

They said water will be injected into the field to replace the pressure removed when gas is produced.

But Hoyle Hamilton, chief petroleum engineer for the state division of oil and gas yesterday said they have yet to see proof that sufficient water is available for injection and that the Prudhoe Bay reservoir will absorb the volumes of water that will be needed.

(See Page 3, Col. 3)

Our pipeline posture puzzles U.S.

By Hyman Solomon

WASHINGTON

CANADA IS EMERGING here as the big "X" factor in the multibillion-dollar decision on how to send Alaskan natural gas to southern U.S. markets.

"The central question now is where Canada is going on the question and how fast it will take to get there," one congressional aide in touch with pipeline developments told The Post.

The comment reveals a growing uncertainty, shared by others here, over Ottawa's current attitude toward some form of joint, Canada-U.S. project to transport gas across Canada to the U.S.

The concern has become more important in light of the recent decision by the staff of the U.S. Federal Power Commission to endorse strongly the transCanada Arctic Gas consortium pipeline proposal over two other contenders.

The FPC staff report amounted to a powerful push for the Arctic Gas pipeline, even though there are still several steps and decisions to be made before the U.S. formally adopts a route position late next year.

The feeling here among pipeline-issue watchers, however, is that the U.S. final decision may be determined more by what Canada does in the next several months while pursuing its own pipeline decision.

"Canada is going to have to show that it wants some kind of joint project," one observer said. "If it does that, it may well be a case of the U.S. going along with whichever route Canada chooses."

The FPC staff report lends weight to a growing consensus that, for all practical purposes, the real choice among routes has been narrowed to two. The third, proposed by El Paso Natural Gas Co., Houston, and which involves a combined pipeline-liquified gas tanker routing, is just about dead.

The FPC staff found the El Paso proposal the least attractive of the alternatives from almost every conceivable standpoint — economic, environmental, and risk.

In addition, El Paso must now contend with the indirectly related problem of an Alaskan oil surplus on the U.S. West Coast. There is mounting anger within Congress over what it considers false assurances by the oil industry of the need for Alaskan oil on the West Coast during the time an oil route was being chosen.

U.S. legislators are not likely to forget the oil pipeline when it comes to choosing a gas route, The Post was told.

Congressional observers say the Northwest-Alcan gas pipeline alternative is still very much alive despite the short shrift it received in the FPC staff decision. Alaska, which has been favoring the El Paso route, probably will switch to the Alcan option as a second choice because of its greater contribution to the state's economy.

British Columbia's Bennett government is also reportedly strongly in favor of the Alcan route, which would run parallel to the Alaska Highway and into British Columbia for part of its length. This route is also associated with the Canadian Maple Leaf project being considered as a possible way to tap gas from Canada's Mackenzie Delta.

In its report, the FPC staff said the Alcan and Maple Leaf system combines the Alaskan and Mackenzie Delta reserves "in an enormously inefficient way." The route would involve 1,200 more miles of pipeline than the Arctic Gas proposal.

The FPC staff recommended that one section of the Arctic Gas project, which would run gas to the West Coast, be eliminated as unnecessary and too costly.

Beyond that, however, the report, with little qualification, said the Arctic Gas alternative was "vastly superior" to the other two projects.

The staff argued that the Arctic Gas route would provide the cheapest project both on a capital and unit-cost basis. It suggested that North American and Euro-dollar capital markets could provide the capital funds for the near-$9-billion project.

It is said that since President-elect Jimmy Carter will have to make the final decision on the pipeline route next year, he will not be anxious to make such a major decision if there is any real prospect of it backfiring on him. If the U.S. ends up leaning toward the Arctic Gas route, it will want some strong signals that Canada is not going to desert it once the U.S. is committed.

The Financial Post January 1/77 issue

I Armstrong, secretary of the poration, said Koniag was ocked and dismayed" by the lings of the Rowan Group ort on racial prejudice in chorage. The Rowan Group, ed by attorneys of Kodiak tives charged with fraud in ting up the village of Shuyak, orted earlier this month that would be "very difficult" to her a fair jury to hear the e.

"We are asking that the Chief stice of the United States se an investigation by the stice Department of the leral jury selection system in aska, charging that the present stem of jury selection deprives aska Natives of their human hts and civil liberities."

Armstrong said Koniag has ked for investigations by the stice Department, congressnal judiciary committees, and e judicial committees of the

(Continued on Page 10)



In a conference of elders ...

Susie Stocking, 88, Kobuk, participates in her second Elders Conference at Kotzebue. She and other old timers are contributing many legends and songs of the Eskimo people for the historic record being compiled here. –More photos by Margie Bauman on page 13

that they committed fraud in setting up the corporate entity for the land claims act.

The ruling comes after a January 5th hearing at which attorneys for the defendants argued that the trial should be held outside Alaska. They presented a report by the Rowan Group, Inc., a public opinion survey firm, which indicated that it would be very difficult to have a fair Anchorage trial because a majority of Anchorage residents were found to be biased against Alaska Natives.

Shyuak Village Status

The three defendants were indicted by a federal grand jury

AVCP non-profit corps. to merge this year

Tundra Times January 19, 1977

By MARILYN RICHARDS

If all sails smoothly, five non-profit corporations in the Calista region will incorporate this year to handle their Bureau of Indian Affairs service area.

The five organizations: Yupiktak Bista, Inc.; the Yukon Kuskokwim Health Corporation; Kunam Kitlutsisti; the Association of Village Council Presidents Housing Authority are studying to incorporate under "one umberella" using the village council president name. However they are planning on retaining the other organization's names to identify their departments.

The organizations are now currently funded through state and federal grants to provide health and social services to the 56 villages in the region. Preliminary studies indicate that services will expand into education, housing, and job services.

Last month the executive committees of the organizations adopted a unanimous resolution to work toward the consolidation under "the corporate umbrella of AVCP" said Eddie Hoffman, that president organization's.

"Although these corporations are created or sanctioned by the AVCP, there is very little coordination of administrative and field activities resulting in inefficient utilization of resources available to provide services to the people," said Carl Jack AVCP's executive director.

Both Hoffman and Jack agree that the possible incorporation will be a significant step to fulfill the goals and the implementation of the Indian Self Determination and Education Assistance Act.

Representives of the five organizations met with the representatives of the Tanana Chiefs Conference, Inc., late last week. TCC, the interior based non-profit organization which serves 43 villages, after which the AVCP hopes to pattern themselves. The Tlingit-Haida Council, in Southeast, and the Cook Inlet Native Association are two other primary subcontractors.

"I am sure one corporate umbrella will help us make objective decisions for the benefit of our people in the Bethel area," added Hoffman.

The organizations plan to make further decisions and recommendations at the convention of the AVCP Jan. 26 to 29 in Bethel.

Hearings begin today

Statewide hearings on rates and the unavailability of fire insurance have been shceduled for January 19, 20, 21 and 24 by the Division of Insurance.

(Continued on Page 10)

Natives tur the land an

(Editor's Note: Fledgling Native corporations have dabbled in everything from construction to tourism since the passage of the land claims act in 1971. Many however have turned to land and sea, traditional sources of food and shelter, for a new look at an old way of living. In this, the first of two parts, Staff Writer Jeffrey R. Richardson traces the development of Alaska's marine resources.)

By JEFFREY R. RICHARDSON

Politics and economics have a way of spoiling good ideas. One good idea that has been victimized by both is aquaculture. Aquaculture is the artificial production of fish, shellfish and marine plants for human use.

In Alaska, aquaculture is now seeing better days because people are more and more con-

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editorial — Gasline route

After several years of closely observing the debate between Arctic Gas and El Paso about the method of transporting Alaskan gas to the populous urban and suburban regions of America and southern Canada, the Tundra Times is relieved to note the emergence of a third, more viable, alternative in the Northwest – Alcan Pipelines proposal.

(Continued on Page 2)

(Continued from Page 1)

The Alcan proposal has one highly desireable attribute — it does not have any of the lethal and undesireable deficiencies of the Arctic and El Paso proposals.

Let us note the problems plaguing the Arctic route:

(1) It presents a severe challenge to the subsistence lifestyles of Alaskan and Canadian Arctic peoples — What assurance is there that the people of Kaktovik and the Mackenzie delta will be left undisturbed in the pursuit of their subsistence lifestyles? None, that we may observe.

(2) Let us not force the Canadian Native people to settle their aboriginal claims in the same frenzied, develoment-based turmoil in which Alaska Natives were forced to reach a land claims settlement during the 1960's and early 1970's. Before any type of Canadian pipeline system should come under serious consideration, Canadian Native claims should be fairly and thoroughly adjudicated without pressure from too-rapid development. We should know this from the Alaskan experience in resolving Native claims.

(3) Although we often do not lend much credence to the conservationist elements (special interest groups which often have little respect for the Native subsistence lifestyles, nor for the property rights of the original Canadian and Alaska Native landlords), many environmental questtions about the feasibility of building the Arctic system with minimal impact on our Arctic ecosystems have not been adequately satisfied.

(4) Alaskan and Canadian Inupiat Eskimos are dependent upon migratory patterns of caribou for protein and essential nutrients. In spite of many assurances to the contrary in advance of construction of the Alyeska pipeline, Anaktuvik Pass Eskimos report disruptions in migratory patterns of the Porcupine caribou herd. We believe that there may be no guarantees of avoidance of such disruption where non-indigenous technology is massively applied against the arctic ecosystems. There are no such herds of caribou to be impacted by construction along the highway.

The El Paso route, a favorite of many Alaskans, will find it extremely difficult — we believe impossible — to overcome the lethal objections of the conservationist elements, staff recommendations of the Federal Power Commission, and the demands of more populous midwestern and eastern markets. Sound environmental concerns are concentrated about the uncertainty of implementing a technologically unproven gas transmission system involving a pipeline system, gas liquification system and LGN tanker system. The southcentral Alaska terminus proposed by El Paso has been demonstrated to be highly susceptible to earthquake danger. The El Paso system would increase tanker traffic along sealanes and near ports which state and federal officials worry may become cluttered with unsafe vessels.

Regardless of how Alaskans feel about the El Paso route, odds against its selection are tremendous and increasingly stacked against the proposal. The remaining contenders, we believe, will be Arctic and Alcan. The Tundra Times is hopeful that the decision will (1) not infringe upon the subsistence lifestyles of Alaskan and Canadian Native peoples, and allow them to continue to

the government knew all along that the Natives were not given full title of the land, they never will. They the government will get the land back when all the Natives have to pay property tax. Sure they promise the Natives, forty million acres—Ok suppose they do. How in the h— do you Natives think that we will pay property, and if we don't pay taxes on property. We naturally lose all the land to Internal Revenue Service. Only thing we look for is tax free land and free choice of selection of land. This is known as reservation. Naturally we don't want that.

But the point is we have choice of accepting that or be cut off from all federal benefits. Including, and from Bureau of Indian Affairs, always remember that we as Natives, have far less rights as the Blacks or other minority groups.

I am writing at the conclusion of this letter to the Secretary of Interior. Don't worry I will not bring up the issue of reservations in Alaska. Although there is no doubt in my mind that there will eventually be one. Only sad thing about the whole d— set up is that people don't seem to realize the future plans of the Dept. of Interior.

All I could say is more power to those who have their hands in cokkie jar. For tomorrow might be too late.

I have been in this world 53 years, and in last thirty years the Natives, have been permitted into the bars. I remember when I was young. There were signs all along Second Avenue that: No Natives permitted on where any kind of alcoholic beverages is served. There have been many changes these lot of Natives have lost what little pride they had. Look around!

There are too d— many welfare agencies. I see down at the Tanana Chiefs Social Service where young man asking for welfare assistance. And if you ask the young man why he is not working he usually say there is no work. Thats a d— lie. Because at the time pipeline was going full blast. Yet the young man seems to give me positive reason why he's not working. As soon as he gets his check from the agencies. He goes directly to the bar. This type of welfare assistance we could do without?

Well so much for this and that I will close with this little

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It is with dismay that

Book

By W

A Small History of the
Adams Press, Chicago, Il

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Regardless of how Alaskans feel about the El Paso route, odds against its selection are tremendous and increasingly stacked against the proposal. The remaining contenders, we believe, will be Arctic and Alcan. The Tundra Times is hopeful that the decision will (1) not infringe upon the subsistence lifestyles of Alaskan and Canadian Native peoples, and allow them to continue to gather their daily ration of protein in peace, and (2) allow for the adjudication of Canadian Native land claims in a fair and equitable, orderly and comprehensive manner, and (3) allow for intelligently planned development of Alaskan resources with minimal environmental damage.

In our view, the best way to go is the Alcan route.

—T. R. j.

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Well so much for this and that. I will close with this little phrase: Be thankful you have seen the Sun rise today. For tomorrow there might not be no Sun for all of us.

Signed

Gilford

[illegible] Kuskokwim whose representatives were selected at public meetings within the villages represented by the specific fisheries organization. These individuals were selected because the villagers believed the individual selected to be most qualified and willing to represent the village on fish and game matters. Through this constant attention to fish and game these groups decided that they were capable of participating in the states fish and game advisory board system. You are well aware that the system designed to allow rural peoples to participate in the Boards of fish and game decision making has never worked in Rural Alaska.

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By Wall

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Adams Press, Chicago, Illinois

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1/14/77

Southeast Alaska Empi

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Two developments prompted the AII decision to support the Northwest's proposal — The Federal Power Commission staff report supporting the trans-Canada route proposed by Arctic Gas Co., and the position taken by the State of California and its Utility Commission before the FPC in support of that route across the Arctic National Wildlife Range.

Bergt said the FPC is the arena for a decision on the route and its influence must be considered.

"Without predicting what the FPC will do, there is enough support in the lower 48 and evidentiary support before the Federal Power Commission to certify the trans-Canada route." he said.

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"The Alcan route is a good alternative for Alaska. It is a compromise. It is not an all or nothing gambit."

Bergt said the Alcan highway route would satisfy many of the state's interests and many lower 48 interests.

Meanwhile, Lt. Gov. Lowell Thomas, Jr., Thursday told the Organization for Management of Alaska's Resources (OMAR) he is totally dedicated to a trans-Alaska natural gas route from Prudhoe Bay to a Gulf of Alaska port.

The state has come out in support of the El Paso proposal, and the legislature is to consider contracts proposed by the administration with three firms for Alaska's one-eighth royalty share of Prudhoe Bay gas.

Thomas said he has been traveling in the lower 48 speaking on behalf of such a route, adding complications involved in constructing a gas line through Canada should rule out U.S. support for that route.

New Alaskan Pipeline Proposed

SUNDAY, Jan. 23, 1977

UNITED Feature Syndicate

By JACK ANDERSON

WASHINGTON -- From the Rockies to the Atlantic, the eastern two-thirds of the nation has been gripped by one of the coldest winters in history. Temperatures in Texas plunged to the lowest since 1895; ice threatened shipping on the Ohio and Mississippi; many communities ran short of salt for clearing the roads. In Cameron, Wis., the thermometers registered a frigid 60 degrees below zero.

The weather has aggravated the natural gas shortage. With schools closing and customers shivering for lack of fuel, the natural gas industry is pressing for construction of another Alaskan pipeline to bring gas from the far north to the lower 48 states. Eventually, this could double the amount of gas available to consumers.

Two companies, Arctic Gas and Northwest Pipeline, have offered separate plans to build pipelines across Alaska and down through Canada to the gas-starved Midwest. These pipelines would run 2,400 miles -- three times the length of the problem-plagued Alaskan oil pipeline.

El Paso Natural Gas Company, on the other hand, wants to construct the gas pipeline along the same route as the oil pipeline. This would make use of the abandoned construction camps after the oil line is finished. It would also revive the boom in Alaska and keep the cash registers ringing.

But the gas would be delivered not to the Midwest but to the south Alaskan port of Valdez. Then El Paso would liquefy the gas, pipe it aboard huge tankers, navigate the treacherous coastal waters and deliver it on the West Coast, thousands of miles away from where it is most needed. The entire gas flow in the United States, therefore, would have to be rerouted.

By Act of Congress, President Carter must decide which pipeline proposal to recommend to Congress by July 1. It will be a $12 billion decision, which will affect the prosperity of Alaska, the profits of rival gas consortiums and the welfare of millions of Americans.

With such high stakes, the politicians have been maneuvering and manipulating behind the scenes. Alaskan state officials, for example, added a political caveat to its offer of future gas; the sale would be linked to political support of the El Paso pipeline plan.

Southern Natural Gas, which distributes gas throughout the southeastern United States, readily accepted the deal. Peter Smith, the company president, assured state officials in unreported testimony that his lobbyists would push the all-Alaskan pipeline.

Pointing to President Carter's hometown on a map of the United States, Smith declared meaningfully: "That little dot represents the community of Plains, Georgia ... It is very close to the South Georgia Natural Gas Company, which is a wholly owned subsidiary of Southern Natural Gas."

Smith assured the Alaskan officials that "we have done this kind of political effort in the past, and we know how to do it. We can do it again. We're going to do it again. We will exert every influence we possibly can."

Citing the company's past lobbying achievements, Smith boasted: "I think the major significance of what we did was the actions that we took with our ccongresssonal delegations -- our senators and our representatives from the South and also the governors in the South, including one who lives in that place where the blue dot is on the map."

Of course, he confided, "we did have to grease the skids to get the support we needed." We called Smith for his comment; he denied this was a reference to political contributions.

President Carter must decide not only which pipeline to support but whether to hit up the taxpayers for part of the cost. In a memo for the eyes only of the new president and his top advisers, the Treasury Dept. has recommended "private financing." The memo explains that the "technological uncertainties" and the "sheer massiveness" of the pipeline project have caused some advocates to plead for "financial assistance in the form of loan guarantees by the federal government."

But the Treasury contends that "the project's risks should not be borne by the general taxpayers but should be shared between the three parties benefiting directly from the construction of the project, namely, the owners of Alaskan gas, the owners of the transportation system and gas consumers."

The memo adds that the Treasury "believes the potential beneficiaries have the capacity to finance the project." But El Paso has cited the financial obstacle as another reason for keeping the pipeline out of Canada. This not only would eliminate the need for delicate negotiations with the Canadians, but the company also claims it could finance the project without federal assistance by charging its customers an extra tariff.

The liquefication process is also costly and inefficient. Up to 6 per cent of the gas is lost as it is transformed into liquid and back again into gas. The environmental safety of the liquefication plants is also uncertain.

Meanwhile, skeptics still question whether the natural gas shortage is real or contrived. A House subcommittee, for example, uncovered evidence that precious gas was intentionally held off the market last winter, presumably to create public pressure for deregulation of natural gas prices. Congress, accordingly, voted down legislation to remove price controls.

But the federal government echoed the industry's line that the free market should determine the supply, demand and price of natural gas. This would stimulate exploration, increase production and reduce demand, it is argued.

The Federal Power Commission, therefore, granted price rises for "new" natural gas, and the outgoing Ford administration advocated complete deregulation. But now it is up to the Carter administration to decide how to combat future cold spells.

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Southeast Alaska Empi

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Neil Bergt, President of Alaska International Industries of Fairbanks, said today that his company will support the Alcan Highway gas pipeline route as proposed by Northwest Pipeline Company.

Two significant developments prompted his decision, Bergt said. One was the Federal Power Commission Staff report which argues strongly for the Arctic Gas Company's trans-Canada route. The other development is the official position taken by the State of California and their Utility Commission before the FPC which also favored the trans-Canada route. He pointed out that the California position is important because they would have subsequent control of terminal siting for the tanker segment of the El Paso route.

"The decision making arena is the Federal Power Commission," Bergt said. "Although an all-Alaska route is preferable to us (Alaskans)," Bergt said, "there are too many other national and regional interests involved. Insistence on the all-Alaska route is an all or nothing gambit for Alaska. The Alcan Highway route satisfies many of Alaska's interests and many lower 48 interests. Without predicting what the FPC will do, there is enough support in the lower 48 and evidentiary support before the Federal Power Commission to certify the trans-Canada route.

"The Alcan route is a good alternative for Alaska," he said. "It is a compromise. It is not an all or nothing gambit. It remains to be seen whether public policies can adapt to new developments on a timely basis. Somebody has to speak up first, though, and that is why Alaska International is taking this position now for the Alcan Highway route."

From: Alaska International Industries

Contact: Marco Pennyalberry
452-7171

Note: This column appeared in the Southeast Alaska Empire on 1/24/77. During typesetting, however, four crucial paragraphs were left out. The following two pages contain the original newspaper copy, with missing paragraphs circled.

Jack Anderson With Les Whitten

Energy

WASHINGTON—From the Rockies to the Atlantic, the eastern two-thirds of the nation has been gripped by one of the coldest winters in history. Temperatures in Texas plunged to the lowest since 1895; ice threatened shipping on the Ohio and Mississippi; many communities ran short of salt for clearing the roads. In Cameron, Wis., the thermometers registered a frigid 60 degrees below zero.

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By Act of Congress, President Carter must decide which pipeline proposal to recommend to Congress by Sept. 1. It will be a $12 billion decision, which will affect the prosperity of Alaska, the profits of rival gas consortiums and the welfare of millions of Americans.

Southern Natural Gas, which distributes gas throughout the southeastern United States, readily accepted the deal. Peter Smith, the company president, assured state officials in unreported testimony that his lobbyists would push the all-Alaskan pipeline.

Citing the company's past lobbying achievements, Smith boasted: "I think the major significance of what we did was the actions that we took with our congressional delegations—our senators and our representatives from the South and also the governors in the South, including one who lives in that place where the blue dot is on the map. They were extremely helpful and of significant assistance to us."

Of course, he confided, "we did have to grease the skids to get the support we needed." We called Smith for his comment; he denied this was a reference to political contributions.

S.E. Alaska Empire 1/24/77

President Carter must decide not only which pipeline to support but whether to hit up the taxpayers for part of the cost. In a memo for the eyes only of the new president and his top advisers, the Treasury Dept. has recommended "private financing." The memo explains that the "technological uncertainties" and the "sheer massiveness" of the pipeline project have caused some advocates to plead for "financial assistance in the form of loan guarantees by the federal government."

But the Treasury contends that "the project's risks should not be borne by the general taxpayers but should be shared between the three parties benefiting directly from the construction of the project, namely, the owners of Alaskan gas, the owners of the transportation system and gas consumers."

The memo adds that the Treasury "believes the potential beneficiaries have the capacity to finance the project." But El Paso has cited the financial obstacle as another reason for keeping the pipeline out of Canada. This not only would eliminate the need for delicate negotiations with the Canadians, but the company also claims it could finance the project without federal assistance by charging its customers an extra tariff.

The liquefication process is also costly and inefficient. Up to 6 per cent of the gas is lost as it is transformed into liquid and back again into gas. The environmental safety of the liquefication plants is also uncertain.

Meanwhile, skeptics still question whether the natural gas shortage is real or contrived. A House subcommittee, for example, uncovered evidence that precious gas was intentionally held off the market last winter, presumably to create public pressure for deregulation of natural gas prices. Congress, accordingly, voted down legislation to remove price controls.

But the federal government echoed the industry's line that the free market should determine the supply, demand and price of natural gas. This would stimulate exploration, increase production and reduce demand, it is argued.

The Federal Power Commission, therefore, granted price rises for "new" natural gas, and the outgoing Ford administration advocated complete deregulation. But now it is up to the Carter administration to decide how to combat future cold spells.

By JACK ANDERSON

WASHINGTON -- From the Rockies to the Atlantic, the eastern two-thirds of the nation has been gripped by one of the coldest winters in history. Temperatures in Texas plunged to the lowest since 1895; ice threatened shipping on the Ohio and Mississippi; many communities ran short of salt for clearing the roads. In Cameron, Wis., the thermometers registered a frigid 60 degrees below zero.

The weather has aggravated the natural gas shortage. With schools closing and customers shivering for lack of fuel, the natural gas industry is pressing for construction of another Alaskan pipeline to bring gas from the far north to the lower 48 states. Eventually, this could double the amount of gas available to consumers.

Two companies, Arctic Gas and Northwest Pipeline, have offered separate plans to build pipelines across Alaska and down through Canada to the gas-starved Midwest. These pipelines would run 2,400 miles -- three times the length of the problem-plagued Alaskan oil pipeline.

El Paso Natural Gas Company, on the other hand, wants to construct the gas pipeline along the same route as the oil pipeline. This would make use of the abandoned construction camps after the oil line is finished. It would also revive the boom in Alaska and keep the cash registers ringing.

But the gas would be delivered not to the Midwest but to the south Alaskan port of Valdez. Then El Paso would liquefy the gas, pipe it aboard huge tankers, navigate the treacherous coastal waters and deliver it on the West Coast, thousands of miles away from where it is most needed. The entire gas flow in the United States, therefore, would have to be rerouted.

By Act of Congress, President Carter must decide which pipeline proposal to recommend to Congress by July 1. It will be a $12 billion decision, which will affect the prosperity of Alaska, the profits of rival gas consortiums and the welfare of millions of Americans.

With such high stakes, the politicians have been maneuvering and manipulating behind the scenes. Alaskan state officials, for example, added a political caveat to its offer of future gas; the sale would be linked to political support of the El Paso pipeline plan.

Southern Natural Gas, which distributes gas throughout the southeastern United States, readily accepted the deal. Peter Smith, the company president, assured state officials in unreported testimony that his lobbyists would push the all-Alaskan pipeline.

Pointing to President Carter's hometown on a map of the United States, Smith declared meaningfully: "That little dot represents the community of Plains, Georgia ... It is very close to the South Georgia Natural Gas Company, which is a wholly owned subsidiary of Southern Natural Gas."

Smith assured the Alaskan officials that "we have done this kind of political effort in the past, and we know how to do it. We can do it again. We're going to do it again. We will exert every influence we possibly can."

Citing the company's past lobbying achievements, Smith boasted: "I think the major significance of what we did was the actions that we took with our ccongresssonal delegations -- our senators and our representatives from the South and also the governors in the South, including one who lives in that place where the blue dot is on the map. They were extremely helpful and of significant assistance to us."

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ALASKA FORUM

Why the second choice is a loser

By A.C. SWALLING

I appreciate being invited to express in this newspaper my views on a matter so vital to the economic health of Alaska, both near - term and for the future. I refer to the natural gas transportation system to bring North Slope natural gas to the south 48.

First, a bit of background. As chairman of the North Commission, established in 1967 by the Alaska Legislature, I was privileged to participate in the various studies carried on by that body. The members of the commission felt very strongly that the proposed oil line should be entirely under American control and so advocated.

THEY ALSO ADVANCED the concept that the natural gas pipeline should generally use the same corridor, terminating within Alaska at tidewater, with liquifaction facilities so sited that LNG could be "made available for transport by rail, truck, ship, or barge to remote villages and towns to bring total energy benefits of Alaska's resources within reach of all its citizens." Such a proposal would make possible the transportation of gas (surplus to Alaska's needs) to the Lower 48 by LNG carrier.

Some in the petroleum industry expressed opposition to a combination pipeline - LNG carrier system to transport North Slope natural gas to the southern markets. Arctic Gas is evidence of their opposition, but the commission persisted in its efforts to interest companies to analyze such a combination transport system.

Of all the companies approached only El Paso Natural Gas Co. evidenced interest. After many months of preliminary study, El Paso announced on Dec. 4, 1972, that they would file to develop and build such a system with a regasification facility on the West Coast and a tie in to the transcontinental pipelines, thereby making gas available to virtually any part of the Lower 48.

THE PROJECT was explained to Alaskans and overwhelmingly endorsed throughout the state. It was endorsed by the former and present governors, as well as the Eighth and Ninth Legislatures.

The filings of El Paso's Alaska project has been detailed and exhaustive. The statements, calculations, estimates, and computations of benefits to Alaska and the nation have withstood the cross examination by Arctic Gas and Alcan representatives as well as questions posed by the administrative law judge of the Federal Power Commission. Such is not the case of the Alcan's presentation whose interest in a competitive route did not surface until recently.

Too often lately we have heard certain media representatives and government officials suggest that because of the considerable momentum that Arctic Gas seems to have, Alaska may have to fall back and support the Alcan proposal as a "compromise" position in the natural gas pipeline controversy. Of course, this incredible idea presumes that the trans - Alaska route is doomed to failure, and Alaska must therefore settle for second best. Well, in my book, second best is a loser; and Alaska should not have to compromise on any issue involving its own interests or its natural resources. Furthermore, the project which will best benefit Alaska in this particular case also provides the greatest advantages to the nation as a whole.



A.C. "Al" Swalling is chairman of the board of the Alaska Bank of Commerce and president of Swalling Construction.

THE TRANS-ALASKA project as sponsored by El Paso will provide many opportunities for Alaska that Alcan simply cannot meet. The comparable advantages and benefits are twice as great with the trans - Alaska route than with Alcan. For example, information available for each project shows that ad valorem and income taxes will be $2.6 billion for trans - Alaska versus just $1.3 billion for Alcan. The difference incidently would be enough to build the Susitna Dam or pay for the capital move. Direct employment during the construction of the project will be 22,000 for Alaska and 15,000 for Alcan. Long - term employment after construction will be 600 for Alaska and 100 for Alcan.

By far the greatest advantage of the all - Alaskan route relates to its terminating at an ice - free tidewater site near Cordova. If Alaska is ever to have a chance to promote the construction of a petrochemical industry, it will be with the El Paso project. The natural gas and the even more valuable natural gas liquids (LPG's) must be delivered to a year - round shipping port to allow marine transportation of the product. Furthermore, Alaska is naturally at such a severe economic geographical disadvantage, that a difference of just a few cents per million - BTU in the cost of pipelining the feedstocks to the plant site, could make or break our ability to compete in a world petrochemical market.

Some would neatly do away with this critical factor by suggesting that a lateral could be constructed from the Alcan pipeline to Prince William Sound. Let's look at this idea more closely. Assuming that both El Paso and Alcan will transport initial volumes from Prudhoe Bay of 2.4 billion cubic feet daily, the state's royalty share would amount to 12½ per cent, or 300 million cubic feet. El Paso's FPC application shows that its pipeline will be 810 miles long and have a yearly operating cost of $503 million. This means that it will cost 51 cents per million BTU to transport gas from the North Slope to Cordova.

THE FPC EXHIBITS for the Alcan pipeline indicate that it will be 730 miles long and have an annual operating cost of $330 million, which translates to 62 cents per million BTU to the Yukon Border. But we must back up to Delta Junction, which would be the point of departure of the new lateral going to Cordova. The transportation cost to Delta Junction via the Alcan line (544 miles) would be 40 cents per million BTU. Then, the new lateral must be built — by someone — to haul the state's 300 million cubic feet of royalty gas southward. It would be 265 miles long and 24 inches in diameter, and would cost approximately $234 million. With annual operating costs of $49 million, the transportation cost between Delta Junction and Cordova would be another 40 cents.

This, the difference between the El Paso cost of service (51 cents) and the Alcan - new lateral cost of service (80 cents) would be 29 cents per million BTU. Delivering 300 million cubic feet of royalty gas each day, the annual savings which would result from the El Paso line for the potential petrochemical customer near Cordova, would amount to $35.9 million. In the highly competitive world of the petrochemical industry, a saving of that magnitude would be a considerable incentive to locate in Alaska. We also hear the suggestion that a lateral could be built from the Alcan line to Haines. This arrangement would produce a transportation cost of $1.27 per million BTU — considerably less attractive than even the lateral to Cordova.

We must be careful not to treat too lightly the problem of who would build either one of these laterals from the Alcan pipeline. Despite Alcan's representations, we have no real indication that that company would build them. Petrochemical companies are not in the pipeline business, so we shouldn't expect them to build the laterals. It might be possible to expect a new, private company to build them, but we have seen no sign of this happening yet. And finally, I suppose the state could get into the pipeline business, although I would suggest that we could make better use of our tax monies — the Permanent Fund included.

BECAUSE THE EL PASO pipeline, taking advantage of technological advances, will operate at a higher pressure than Alcan (1670 psi vs 1250 psi), it will be a more efficient system and would provide cheaper transportation to any point along its route. If 30 million cubic feet per day were delivered to Fairbanks, I am told that the transport cost would be 33 cents per million BTU for Alcan and 26 cents per million BTU for El Paso, providing approximately $1 million in annual savings for the Fairbanks consumers with the all - Alaska pipeline. I understand that these figures do not include the cost of fuel, and if fuel costs were added, Alaskan natural gas customers would realize even greater savings with El Paso's project. Looking again at the FPC filings, we can see that within Alaska, Alcan requires 15 compressor stations consuming 80 million cubic feet of fuel each day, while El Paso needs just 10 stations consuming less than 46 million cubic feet of gas for fuel each day, thereby, effecting a very substantial saving of this valuable non - renewable resource.

The transportation advantage of the trans - Alaskan - LNG proposal extends beyond those communities along the pipeline itself. If for some reason communities in Southeast Alaska decide that they want North Slope natural gas, it could be delivered by barge in the form of LNG. Here once again, the economies of scale inherent in the El Paso project would result in a far lower transportation cost than Alcan could provide, by, in some cases, more than $2 per million BTU.

It can be fairly stated that the trans - Alaskan route can offer Alaska everything that the Alcan route could, and more. Conversely, the Alcan route can show no advantage over El Paso, economically or otherwise.

UP TO THIS POINT I have only reflected on the benefits to Alaskans under the all - Alaska route. Let us add to those the national interests to be served through the balance of foreign payments, the construction of 11 LNG carriers in United States shipyards, the procurement of 1,500,000 tons of domestic pipe and fittings, as well as the manning of the carriers with American seamen.

Speaking for myself, I have never retreated from the conclusions of the North Commission, that the only logical transport system for natural gas from the North Slope to market, is one that is totally under the American Flag.

Returning then to the original problem, we Alaskans simply cannot look upon Alcan as a "good second choice." It is in fact little better than Arctic Gas — which is no good at all for Alaska.

As the FPC staff position paper recently said, "Alcan is just a relocated Arctic Gas Project." Staff also strongly criticized Alcan's concept, costs and schedule as being unrealistic and undefensible. In other words, in my opinion, Alcan simply hasn't shown anyone that they know how to put together a major transportation project.

It should now be clear to all Alaskans that our real competition is Arctic Gas. And when we call Alcan a "good second choice," we are diluting our support for the trans - Alaska route. The end result will be that we'll get Arctic Gas approved — and we'll deserve it!

Gas Line Fight Gathers Steam

By BETTY MILLS
Washington Bureau

WASHINGTON — The natural gas pipeline battle is shaping up in Congress and early indications are that the fight may be as heated as the oil line battle of several years ago.

Introduction of legislation mandating the Arctic Gas route through Canada, sponsored by one-quarter of the 100-man Senate, is a serious setback for the pro-Alaskan gas line forces.

But the legislation may have a salutory effect for those

Times Analysis

promoting the Alaskan route if it serves to squelch the overconfidence many of them have been feeling.

The all-Alaskan proposal appears to be in good shape. The Canadian alternative has many problems which add up to one conclusion: that the line may take considerably longer to bring precious natural gas to Lower 48 markets. Delay is a key factor, and El Paso seems to have the edge in that regard.

In addition, the support by environmentalists for a line which parallels the oil utility corridor is a big boost for El Paso.

But is El Paso has won a few skirmishes, the battle is far from over.

Many observers of the gas line fight have believed from the start that Congress will be the arena in which the route will be decided.

Alaskan Senators Ted Stevens and Mike Gravel have introduced separate pieces of legislation that would have the effect of mandating the all-Alaskan route. Rep. Don Young is preparing legislation — which he hopes to offer this spring—that would combine several features in the gas line issue, including the thorny problem of dealing with the state's royalty gas.

Stevens made a concerted effort to woo the support of midwestern and northern senators to his bill, carrying out extensive negotiations with Sen. Walter "Fritz" Mondale of Minnesota. But these fragile discussions fell through, much to the disappointment of Stevens.

Via a "Dear Colleague" letter sent around to all members of the Senate, Mondale was able to win 25 cosponsors when he put the bill in the hopper on Feb. 6.

Many senators respond to a "Dear Colleague" letter by signing onto a piece of legislation that they may not understand fully. One of the senators who cosponsored the Mondale bill, in fact, earlier had joined in Gravel's legislation (to mandate a gas line decision by mid-1976).

So the fact that Mondale now has a quarter of the Senate behind him does not mean that measure of support will stay with him throughout Congressional consideration.

Alaska's representatives in Congress can now be expected to launch their own offensive in favor of the all-Alaskan line.

When Stevens got wind that Mondale was about to offer his bill, he mobilized his staff to issue a response. In a statement inserted in the Congressional Record the day Mondale introduced his bill, Stevens said:

"Many Canadians believe that an all Canadian line is preferable to a joint Canadian-U.S. route from the perspective of financing, environmental quality, costs to Canadian consumers and Canada's desire to maintain Canadian control over Canadian resources.

"Even if the Canadians supported a trans-Canada pipeline, which is, as I have pointed out, highly questionable, a trans-Canada pipeline could not be of benefit to the U.S. because it simply could not be built in the time frame necessary to allow the delivery of Alaska's gas to any markets in the U.S. — whether it be the North, South, East, West, or even the Midwest," Stevens said.

The Alaskan Republican said the trans-Alaskan line can be built at least two years earlier than the trans-Canadian alternative.

The bills offered by Mondale, Stevens and Gravel will likely be a prime focus of discussion next Tuesday as the Senate Interior and Commerce Committees hold a joint hearing on the gas line issue. Although billed as a preliminary oversight hearing, the legislation is sure to be mentioned. Guy Mertin, commissioner of natural resources, will present the state position.

Meanwhile, on another front, the state made an impressive display this past week at the Federal Power Commission administrative hearing on the two competing gas line proposals.

From Jay Hammond through Martin, the state presented a forceful case for a gas line through the 49th state.

Anchorage Times 2/15/76

...mounds of ice form at the base of the cataract. The picturesque scene is a ... still trying to dig itself out ... intense snow storm that struck last weekend. *(AP Wirephoto)*

Federal grand jury, IRS probe Tenneco's conduct

By ERIN VAN BRONKHORST
News-Miner Bureau

JUNEAU—Federal grand juries are probing Tenneco's conduct in three cities, and an Internal Revenue Service investigation of the company is continuing, a spokesman for the company said Tuesday.

Tenneco Vice President Robert Thomas made a short statement about the investigations to the joint legislative hearings on the proposed royalty gas sale. Tenneco has signed a tentative contract to purchase half of the state's royalty gas, and the deal must be approved by the Legislature.

News articles published in the Fairbanks Daily News-Miner in December pointed out that Tenneco had made a number of contributions to state and local officials in the Lower 48 over the past five years. Some of the contributions were legal and at least one case was possibly illegal. The articles were based on reports Tenneco filed with the Securities and Exchange Commission.

The federal grand juries are doing separate investigations in Milwaukee, New Orleans, and Washington, D.C., Thomas told the legislators.

The IRS investigation started in early 1976 and is still continuing, he said, adding that the company has supplied "voluminous documentation" and allowed many employes to be interviewed.

Several stockholders' lawsuits also were filed in connection with the contributions. Thomas said the federal suits have been consolidated for handling in Texas and no trial date has been set there. The suits filed in the state courts are being held up pending resolution in the federal courts, he said.

He emphasized that the company now has "detailed procedures for compliance with ethical policy" and that its internal investigation has been closed.

Thomas had a copy of the six-page report the company had filed with the SEC but he did not have copies for the legislators. Senate committee Chairman John Rader said copies will be made for them.

None of the legislators' questions during Thomas's three hours of testimony dealt directly with the investigations.

Sen. Chancy Croft, D-Anchorage, asked if there were limits to the political activity Tenneco might engage in to support the trans-Alaska gas line. That political support is a key reason for the sale.

"Whatever legal limitations there are in state or federal law are implied in the contract. That is a general principle of contract law," Thomas said.

Tenneco employes already have met with representativs from the other two royalty gas buyer companies to map a

(See TENNECO, page A-3)

Inside

MUCH OF THE NATION is frozen to a standstill by snow and ice, but that didn't stop the groundhog from predicting more harsh weather ahead. Page 9

TREASURY SECRETARY W. Michael Blumenthal tells Congress that President Carter's tax rebate plan is the fastest way to help the nation's economy. Page 9.

State News	2, 8
Local News	3, 8
Comment & Opinion	4
Northern Life	11
Sports	16, 17
Comics	22
Crossword Puzzle	22
Horoscope	22
Classified Ads	23-27



Army Engineers battalion from North Carolina and more than two dozen pieces of snow-fighting equipment arrived in Buffalo, N.Y., to help National Guardsmen clear the city after a blizzard that so far has cost the area an estimated $60 million.

The National Weather Service predicted temperatures up to 30 degrees today in Buffalo, no significant snow and winds easing to 12- to 25-miles

Alaska natural gas may be sent to stricken areas

WASHINGTON (AP)—A Liberian-flag vessel may make two trips to bring liquefied natural gas from Alaska to Everett, Mass., to help cope with the nation's energy problems, Treasury Secretary W. Michael Blumenthal said today.

Blumenthal granted a limited waiver of the Jones Act, which prohibits U.S. coastal trading by non-U.S. vessels, to make the shipments possible.

The ship, the Kenai Multina, will be able to make two voyages from Alaska to Massachusetts via the Panama Canal. It will be able to deliver about 700 million cubic feet of liquid natural gas on each voyage.

The waiver of the Jones Act will terminate on May 10 of this year. Treasury said the company handling the transaction, the Columbia Gas System Service Corp. of Wilmington, Del., requested a one-year waiver for six trips.

The announcement said that no U.S.-flag liquid natural gas carrier capable of transiting the Panama Canal was available.



Income tax: part III

You don't like it? Tr

EDITOR'S NOTE: Following is the third in a series of five articles entitled "Coping With Your Income Tax." They were written to help taxpayers prepare their 1976 tax returns.

By JIM LUTHER
Associated Press Writer

WASHINGTON (AP)—Filing a federal income tax return is not one of the more popular forms of amusement.

But many persons who don't have to file might find it profitable to do so.

Heading such a list are teenagers, part-time workers and poor working families. A family, while not liable for any taxes, could qualify for a government check of up to $400.

Generally, anyone—regardless of age—who earned $5,100 or more in 1976 must file a return. But in some cases, a return is required if income totaled as much as $750.

You must file a return if you are:

• Single, under 65 and grossed at least $2,450 in 1976. If you are 65 or older, the figure rises to $3,200.

• Married, under 65, filing a joint return and had income of at least $3,600. If you are 65 or older, the figure is $4,350. If both you and your spouse are 65 or older, you must file if income totaled $5,100 or more.

• Eligible to be claimed as a dependent by a parent, have taxable dividends or interest and had total income of $750 or more.

But even if you don't have to file a return, it could be to your advantage to do so.

For example, if you are single, 20 years old and earned $2,000 last year in a part-time job, taxes should have been withheld from your wages. You can get back all that federal income tax by filing a return.

Again this year there is a special tax

TENNECO . . .

(Continued from page A-1)

strategy, Thomas said, but he stopped short of calling the group an official committee.

Croft asked if state officials had requested Tenneco keep records of the amounts it spent on political activity and Thomas said they had not.

Croft also asked how much money Tenneco had spent lobbying the Alaska Legislature for approval of the contract. Thomas said he did not know but he would obtain the figure if necessary.

The Tenneco report to the SEC listed a number of contributions, including:

- From 1970 until August, 1972, cash amounts ranging from $200 to $2,000 were given by the president of a Tenneco subsidiary (Midwestern Gas Transmission Co.) to state public utility commission chairmen in Indiana, Illinois, Kentucky and Wisconsin.

- In 1972, contributions of $1,000 each were made by a subsidiary, Tenneco Oil Co., to two Louisiana district judges and a Louisiana district attorney who were running for re-election, all in the same parish. The payments were made in cash from the subsidiary's working account by an employe, according to the report, and were approved by senior management of the subsidiary. The contributions violated the then-existing Louisiana prohibition against corporate campaign contributions, according to the report.

- Campaign contributions from Jan. 1, 1970, through Dec. 1, 1975, by three Tenneco subsidiaries in California elections totalling about $180,000. These contributions were legal under California law, according to the report.

- Starting in 1966 or 1967, many high-level executives made annual cash contributions of $2,000 each to a fund to be used for political contributions. The fund did not exceed $40,000 in any one year, and was discontinued after 1973, the report said.

Under federal law, the fund was legal if it was voluntary, and "Most participants would probably state that their contributions were made voluntarily," the report said, concluding that the fund did not violate federal law.

The stockholders' suits seek to enjoin Tenneco officials from continuing the alleged unlawful diversion of the company's assets and also seek damages for alleged violations of federal securities laws, waste of corporate asset, violation of judiciary duties and maintenance of false books and records.

'Lord of Rings' will be animated

LOS ANGELES (AP)—An animated motion picture will be made from the classic "Lord of the Rings" by J. R. R. Tolkien, the first from the late author's works.

Ralph Bakshi will direct the movie using international artists and will introduce new animation techniques, said producer Saul Zaentz, who was coproducer of "One Flew Over the Cuckoo's Nest."

'Heroes' reunites Yale drama grads

LOS ANGELES (AP)—Talia Shire will star with Henry Winkler in the movie "Heroes," which takes place on a crosscountry trip.

The movie will be a reunion for Shire, most recently seen in "Rocky," and Winkler, who is Fonzie on telvision's "Happy Days." They were classmates at the Yale School of Drama.

Production will begin in late February, after Shire finishes the television movie "Kill Me If You Can." She plays a young woman who backs out of a wedding and meets a colorful Vietnam veteran on the trip.

PUBLIC M

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CLAUDINE LONGET
'Think Of My Children

way to ... this ...

Any heavy tampering with the legislation "would almost certainly assure there could be no bill passed," Senate Majority Leader Robert Byrd, D-W.Va., warned over the weekend.

The bill would enable Carter to order gas transferred from one pipeline company to another to get it to areas hardest hit by the current spell of abnormally cold weather.

Carter's proposal also would free some gas from federal price controls through July 31.

Congressional leaders say final action should come by the end of the week.

Carter flew by helicopter to Pittsburgh on Sunday, saying he wanted a first-hand look at the impact the weather is having on employment.

Arctic temperatures that swept across the eastern half of the nation on Friday put more than 1.5 million

Carter's ... legislation, goes back to work on the bill today after opening debate Friday. Attempts to amend the legislation may produce a "free-for-all on the floor," one Senate aide said.

Although a vote in the Senate was possible by late today, leaders said a vote was more likely Tuesday.

In the House, a "markup" session on the legislation was scheduled for today by the House Commerce Committee to ready the bill for anticipated action Tuesday.

Congressional leaders have urged members to restrain from offering amendments. But a number were expected to be tried nonetheless.

One amendment, offered by Sen. Bennett Johnston, D-La., and backed by most senators from gas-producing states, would eliminate the bill's authorization for the President to order connections between interstate and intrastate pipelines.

Boucher: Keep Options Open

By SUSAN ANDREWS
Times Staff Writer

Former Lt. Gov. H. A. "Red" Boucher will urge the state legislature this week not to approve pending contracts for sale of the state's royalty share of Prudhoe Bay natural gas. He maintains that the state should keep its options open.

The legislature has set hearings for today through Wednesday on contracts to commit 2.6 trillion cubic feet of natural gas in return for political support for the all-Alaska pipeline route proposed by El Paso. The contracts, which were months in negotiation, have the approval of Gov. Jay Hammond and the state's Royalty Oil and Gas Development Advisory Board but must be okayed by the legislature before going into effect.

Boucher will testify tomorrow.

"I'm opposed to committing resources for political purposes," said Boucher, who is a Democratic candidate for governor in 1978. He said the contracts will give Tenneco, El Paso and Southern Natural Gas options on a resource worth $4 billion.

A year and a half ago, Boucher said El Paso's sea route had distinct advantages. Now he says it faces problems, such as where to land the gas.

"Now we have a land route (the Alcan proposal) and a sea route," he said. "The Alcan proposal has numerous problems, too," such as unanswered questions regarding the Canadian provinces' ability to tax and the impending native land claims.

Boucher is not convinced that the El Paso all-Alaska pipeline project is the best economically for the state. He has a copy of a letter from a state official to Northwest Energy Co., the firm proposing a competing Alcan Pipeline down the Alaska Highway, which says that under certain

(See Page 2, Col. 1)

A Times 1/31/77

Boucher Wants Gas Contracts Nixed

(Continued From Page 1)

circumstances the Alcan project could bring a greater financial return to the state.

Boucher obtained the letter from Northwest officials. But he denies that he is on Northwest's payroll or anyone's payroll who has a direct connection to any of the three pipeline routes.

In business as a consultant since leaving state government, Boucher said his clients include Modern Construction, whose chief interests at the moment are possible shopping centers in Anchorage and Fairbanks and a possible deal with Calista native corporation to act as their construction arm.

"I've had opportunities but purposely avoided doing consulting work for any pipeline," he said. "I did one study for Omar (Organization for Management of Alaska's Resources) and the Associated General Contractors in December 1975. I spent three months in Canada gathering data on the reality of problems that pipelines through Canada face. At that time, I pointed out that Interior was considering Alcan's route."

Boucher said his chief concern in the royalty gas issue is a petrochemical industry in the state. "What we have to address ourselves to is creating as much ad valorem value as we can from our oil and gas." His major objection to the Arctic Gas pipeline route is that has makes no provisions for instate use of the gas.

If the state legislature goes ahead with the sale of royalty gas, Boucher will urge that the contracts include only the residue or "dry" gas, with the valuable liquids removed.

He says negotiations should begin now on sale of the liquids, which are the feedstocks for a petrochemical industry.

Boucher also is highly skeptical of the provision of the royalty gas contracts which allows the state to switch its support from the all-Alaska pipeline to another pipeline route if it appears the all-Alaska route will not win federal approval.

"That doesn't sound like an all-out effort to me," he said. "I think that if the El Paso project is ruled out, it should require legislative approval to switch support to another route, and it should require reworking of the contracts."

Boucher said the royalty gas sale is a political decision, and if he were trying to win support for election as governor, "I sure am picking the wrong side of an issue. And I did so a year ago, before anyone else surfaced."

Balloting Begins

About 700 municipal general government employes were to choose a single bargaining agent to represent them today amid early-morning complaints that the balloting was not secret.

The employes were to choose between the Alaska Public Employes Association and the Anchorage Municipal Employes Association. Early morning voters said the balloting was not secret because each employe had to sign in before voting and a corresponding number was beside the sign-in signature and on the ballot each employe received.

Freeze Keeps Millions Home

(Continued From Page 1)

of businesses, and about 90,000 workers have been laid off. All state schools have been closed since Thursday, keeping more than 2.6 million pupils at

Activity in Buffalo, N.Y., was still far from normal. National Guardsmen, city workers and private contractors worked all day to clear snow from streets and highways, but one official said

ordered onto a 40-hour week until further notice — regardless of what fuel is used.

Industrial use of natural gas was cut off last week in New Jersey, and Public Utility Commission president Joel Jacobsen said Sunday that

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...profits take a heat jump since the Sea-Land labor problem began five months ago.

Through the use of subcontractors for much of the trucking end of its operation, Tote has been able to accommodate Sea-Land customers inconvenienced by the previous strikes — a situation that Sea-Land has used in court to stop the strikes.

Tote, a non-union shop itself, offers the van use policy that Teamster Secretary-Treasurer Jesse Carr blames for the strike.

Teamster members have been warned that this strike, the fourth since August over Sea-Land's policy of letting its customers use its trucks whether or not they are driven by members of Local 959, may be a long one.

Sea-Land management says flatly that will never happen.

Although Teamster spokesmen

(See Page 2, Col. 5)

Tussing Calls Tactic Pointless

AT Times 2/3/77

JUNEAU (AP) — State lawmakers have been told what some say they've always suspected — selling the state's royalty gas in exchange for a lobbying campaign on behalf of an all-Alaska natural gas pipeline route is a meangingless political exercise.

"There is nothing the state can do to advance a trans-Alaska gas line," Arlon Tussing, a prominent Alaska economist and consultant, said during a legislative hearing yesterday on administration-negotiated royalty gas contracts. "These are contracts which don't mean anything.

"The purpose of the contracts are internal Alaska politics."

The administration of Gov. Jay Hammond is seeking legislative approval for contracts to sell Alaska's 12.5 per cent royalty share of Prudhoe Bay natural gas to three major gas transmission companies in exchange for their support for the all-Alaska pipeline route proposed by El Paso Natural Gas Co.

But Tussing, a nationally-known University of Alaska economist, said flatly that support for Artic Gas's rival Canadian pipeline route had too much support in financial circles, the federal bureaucracy and Congress to be overcome.

"I expect an unbroken chain of decisions in favor of Artic Gas," Tussing said, predicting that the Federal Power Commission would recommend the Canadian route and President Carter and Congress would accept the recommendation.

But Tussing also predicted that political forces within Canada would prompt the Canadian government itself to reject the Artic route.

In the final analysis, Tussing said, the pipeline route decision will be made in negotiations between the U.S. and Canadian governments.

Those negotiations, he predicted, will result in the selection of some variation on the Alaska Highway route being proposed by Northwest Pipeline Co.

"I believe the Alcan proposal offers a way out of a dilemma for both governments," Tussing said.

Tussing said the contracts were proposed by the Hammond administration as a defensive political maneuver and probably would be passed by the legislature for the same reason.

"Suppose you were the governor," Tussing said, "and you were under assault from Omar (Organization for the Management of Alaska Resources), the Anchorage Times and the Anchorage business community for not giving 100 per cent support for El Paso.

"And suppose your advisors are convinced that El Paso has very little chance. But you are concerned that when Artic Gas gets the nod, your critics will say it was only because you didn't do everything you could to sell El Paso.

(See Page 2, Col. 1)



City Offers Bake Sale Truce

By DON HUNTER
Times Staff Writer

The municipality is de-escalating the cupcake campaign.

To do that the municipal Department of Health and Environmental Protection has prepared a series of amendments to the existing health code. Those amendments will be handed to the Anchorage Municipal Assembly Tuesday and probably will be set for public hearing in two to three weeks.

Health Department Director Bert Hall yesterday reiterated that the department is not concerned with usually non-dangerous foods such as cookies and cakes

definition for bake sales — "an informal sale of prepared food that is not potentially hazardous, to the general public in a fixed location for a period of time not to exceed 14 consecutive days."

Bake sale enthusiasts were shocked last week when it was reported that the city planned to begin enforcing health code provisions requiring inspection of kitchens in which bake sale goods are prepared.

Most bake sales in Anchorage are informal fund-raisers for community groups. The goods sold usually are prepared in private homes.

Tussing Says Tactic 'Pointless'

(Continued From Page 1)

"It would seem an astute political move to go ahead and call everybody's bluff."

Despite his contention that the contracts are useless, Tussing said the Democratic-controlled legislature is in the same political boat as Alaska's Republican governor.

"What happens if you vote it (the contracts) down?" Tussing said. "Where is the finger going to be pointed when Artic Gas is approved."

With some exceptions, Tussing's assessment drew favorable reviews from members of the special House and Senate committees.

"He made a lot of good points," said Sen. Clem Tillion, R-Halibut Cove. "But I'll probably vote for them (the contracts) even though they probably won't make any difference."

However, Rep. Clark Guening, D-Dist. 7 and chairman of the House special committee, said he would vote against the contracts if he became convinced they would not produce results.

The single negative comment came from Sen. Mike Colletta, R-Dist. I, who told Tussing he took "offense at your lumping us all together as making a show."

Tussing's blunt testimony followed an appearance before the committee by Michael Holland, manager of El Paso's Alaska office.

Holland spent most of his time attempting to refute the findings of another consultant that Alaska could receive more for its royalty gas under the Artic proposal because of lower transportation costs involved in the trans-Canada route.

Holland also repeated the contention of representatives of two other firms involved in the contracts — Tenneco and Southern Natural Gas — that the royalty gas sale will have "a profound positive influence on the ultimate success of our proposal."

But like the others before him, Holland was hard pressed to quantify the alleged influence.

The hearings were to conclude today with testimony from representatives of the Alcan and Artic route and supporters and opponents the three competing proposals.



State Rests Case In Vice Trial

By JON MATTHEWS
Times Staff Writer

An informant and several federal agents have completed their testimony and the government today was to rest its case in the prostitution and gambling conspiracy trial of four Alaskans.

Defense attorneys this morning were to submit motions to U.S. District Court Judge William P. Gray [illegible]

Their statements were topped off by yesterday's testimony from several Federal Bureau of Investigation agents with lesser roles in the investigation.

Attorneys for McVeigh and Miller yesterday said the two prominent political figures will take the stand in their own defense. Both lawyers also said they plan to use character witnesses as part of their [illegible] tive witnesses.

Yesterday morning, FBI agent C. J. Morgan took the stand for the government and told of how he had assumed the undercover identity of a Cosimo Morganti during the investigation. Morganti was to be a front man for Vic Rossi, the identity used by FBI agent Desvernine during his undercover work.

Rossi was to be an East Coast [illegible] interested in financing [illegible]

ally talked with defendant Day during that time. Later, under cross-examination by Day's attorney, the agent said he didn't encourage prostitution in Valdez while playing his role as the underworld-connected Morganti.

Day's attorney brought out that while in Valdez, the agent had gone to Day's house for Thanksgiving dinner. But the agent told the jury he did not know the defendant well and

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Arctic's Bob Ward testifies

Royalty gas pacts 'okay' from state point of view



BOB WARD
Arctic President

By G. MICHAEL HARMON
Associated Press Writer

JUNEAU (AP)—The president of Arctic Gas Co. agreed Thursday that the sale of state royalty gas to gain political support for the all-Alaska pipeline route of arch-rival El Paso Natural Gas Co. will have "some impact" in the Lower 48.

"In all candor and in my opinion, the contracts are pretty good from the standpoint of what the state wants," Robert Ward told legislative hearings on the administration-negotiated contracts with El Paso, Tenneco and Southern Natural Gas Co.

Ward said there was "no question" that El Paso, like any of the three competing pipeline firms, would be helped by the commitment of Alaska's one-eighth royalty share of Prudhoe Bay natural gas, but added that he could not quantify the potential impact on the upcoming federal route decision.

"They've got to have some impact," said Ward, whose firm is proposing a

Fairbanksans testify, Page 3

vinced they will help that much, but they won't hurt."

Ward also said he thought the state was "pretty well protected under the contracts," in getting the highest price for its gas.

But he also said there was "no question" that Congress would endorse his firm's proposal while acknowledging that Arctic faces major problems in winning Canadian approval of its route.

Ward's assessment was in conflict with other testimony Thursday from Morris Thompson, vice president of Northwest Pipeline Corp., who said the contracts were a bad deal for the state and would not be decisive in the route decision.

Northwest's proposed Alcan pipeline route would extend from Prudhoe Bay to Fairbanks and then down the Alaska Highway to Washington state.

Thompson said the sale of Alaska's

the selection with Congress having only 60 days to vote it up or down," Thompson said. "And I feel any selection by the President will be approved.

"What impact will political clout have upon a regulatory agency (the Federal Power Commission) and a new President?"

Thompson also maintained that "approval of the contracts will substantially reduce royalty revenues to the state because the transportation system (El Paso) the state has selected to support costs more to build; the markets of Tenneco and Southern Natural Gas are more remote than that of Northwest Pipeline Corp. which increases transportation costs; and there is a substantial possibility of deregulation which will create substantially different marketing opportunities than we face today."



Our jobless

Ekt 2/4/77

Gillam opposes royalty gas sale

ERIN VAN BRONKHORST
News-Miner Bureau

AU—Mayor Harold Gillam of ks told legislators Thursday he st the proposed royalty gas ying "nothing is more odorous han the sale of a resource in e for some dubious political

travelled to Juneau and o days to testify briefly before legislative hearings, which eir fourth day Thursday. estifying from Fairbanks were las and Robert Dempsey, who presented their plans for use of the gas in a petrochemical industry in the Interior.

Besides his first objection, Gillam said he believes the sale does not obtain the maximum use of the resource within the state. He said a proposal had been made to use the royalty gas for making fertilizer in the Delta Junction area, but this was not considered by the state administration.

"The sale is premature and I see no overpowering reason why it should be concluded," he said.

Gillam emphasized he was speaking for himself, not the entire city, saying nobody could do that. He added most of the city council members agree with some of his statements. His trip was paid for by the city.

Dallas, a petroleum engineer now working for Tanana Valley Community College, told the committees, "what matters the most to the state is what happens to the state's share of the LPG's—the liquids."

The natural gas sent through the pipeline would be 85 per cent methane, the substance usually called dry gas, he explained. The rest of it is actually "liquids"—ethane, propane, butane, and some pentanes—which can be used in a petrochemical industry.

A plant near Fairbanks could take from the pipeline some of the methane for heating, he said, plus the liquids which could be sold to a huge complex of petrochemical firms he envisions near Fairbanks.

Dempsey and Dallas brought with them a "magic briefcase" full of petroleum products, such as insulated pipe and polyethylene gas pipe, which they passed around to the lawmakers. Some of the products were made outside and some in Anchorage and Fairbanks, Dallas said.

Making these products in Fairbanks would keep the jobs in Alaska and economically benefit the state, Dallas contended.

"There are some who say that a petrochemical industry is not economically feasible but I maintain that it is," he said.

As for the royalty gas contracts, Dallas recommended a series of revisions so that the state would sell only the residue gas—that is the gas left over after the liquids are removed.

Pet 4

Lack of cold delays exploration

LY (AP)—Alaska's record- inter has delayed exploratory n Naval Petroleum Reserve 4, reserve that lies next to the il and gas fields of Prudhoe

y knows for sure how much oil lie under the tundra covering llion acre reserve that borders Arctic Ocean—estimates have rom less than 10 billion barrels' 00 billion barrels.

ntrast, exploratory work has at Prudhoe Bay reserves total billion barrels.

why the drilling is so im- Estimates of Pet 4 are "really sses" until wells confirm that lies in accumulations large to make it worthwhile to , said an official of the U.S.

M.F. Westfall, manager of operations of the drilling contractor, said the warm weather and a lack of snow has put the firm's oil drilling program three weeks behind. Husky Oil NPR Operations Inc., a subsidiary of Husky Oil, is drilling the exploratory wells for the Navy.

But Westfall said Husky still plans to complete drilling of five wells by the scheduled completion date of May 1, before spring breakup prevents further work.

The trouble started when South Harrison Bay didn't freeze over. Husky had planned to land on the ice, but had to use a small frozen lake farther from the work site.

Then the winds came. There were "a lot of blows which interfered with aircraft movement," said Westfall. These in the second year of a five-year contract with the Navy for exploration of the reserve.

Five hundred persons are working on Pet 4 this winter, handling chores ranging from drilling wells or conducting seismic work to finding likely geologic structures for future wells.

Work must be done while the tundra and lakes are frozen and workers and equipment can be moved without damaging the tundra.

The exploration effort is the most ambitious ever undertaken on the North Slope. And the accompanying seismic exploration program—employing five 40-man crews who are covering 2,830 line miles—is the largest single onshore effort ever in North America in a single season, according to Lt. Cmdr. A.E. Corcoran. He is of-

Lake Teshekpuk, Husky dug its first well—at a cost of $7 million. The Navy said no commercial quantities of oil or gas were discovered.

The reserve was set aside in 1923 for national defense purposes after oil seeps were observed. The Navy carried out a $60 million, 9-year research program in the 1950s that did not settle the issue.

In 1974, the deputy director of naval petroleum reserves said the energy crisis might have been averted if the Navy had been allowed to fully explore and develop Alaska's North Slope. Lt. Commander Kirby Brant, after resigning his post, said the Eisenhower administration had stopped exploration just when the project was getting going.

The future of the drilling program is unclear. Congress has transferred Pet 4 from Navy to the Interior Department with orders for Interior to evaluate the resource.

Husky officials say they aren't sure what changes Interior might make in the program, if any. And if President Carter sets up a new energy department it's possible Pet 4 may be shifted to this new department instead of Interior.

But despite these complications, Husky has already planned to drill seven more wells next year. Officials note that it takes a year's time to order the necessary supplies and barges them to the north slope. "We're just going ahead until someone tells us not to," said Westfall.

Gas hearings no big deal for delegation

By RICHARD FOLEY
Daily News Staff Writer

JUNEAU—Royalty natural gas hearings are big news in Juneau this week, but all three Ketchikan legislators say the outcome of the hearings won't directly affect Ketchikan much.

Sen. Bob Ziegler and Rep. Oral Freeman, Ketchikan Democrats, said they backed the all-Alaska gas line route proposed by El Paso Natural Gas Co. Rep. Terry Gardiner, D-Ketchikan, admitted the all-Alaska route would have some job impact on Southeast but he thought a route following the Alcan highway was the best.

A special house committee has been taking testimony all week on gas contracts signed by Gov. Jay Hammond and three gas companies. The contracts are not valid without legislative approval. Hammond has proposed a sale of Alaska's one-eighth share of the Prudhoe Bay gas in exchange for a strong congressional lobbying effort by the companies for the Alaska pipeline route. The sale would be contingent on congressional approval of that route.

Freeman said the biggest impact the gas issues would have in Ketchikan depended on how much the pipeline affected the economy of the state as a whole. Freeman was not optimistic about plans by southeastern interests to bring a portion of the gas into the Panhandle.

There has been some talk of putting a spur on the Alcan gas route to send gas into Haines, or to have some of the resource barged into the Panhandle from the all-Alaska route's terminal.

Gardiner also doubted such plans would be feasible because the costs would be higher than current needs. Although El Paso recently said it might be possible to barge gas into the Panhandle, Gardiner said the statement probably was an attempt to gather public support from the region for an all-Alaska route.

Ziegler said he didn't think the legislature would reject Hammond's proposed contracts.

"An overwhelming number of Alaskans would like the all-Alaska route," he said.

Ziegler added, "If there is a sentiment from home, I sure haven't heard it."

Freeman said he hadn't been at the gas hearings at all this week. He added, tongue in cheek, "There are so many statewide candidates sitting in the front row there isn't any place for me to sit.

"Calling it a gas hearing is not inappropriate," he said. "A lot of proceedings don't mean much because the decision on the direction of the gas route will not be made in Alaska."

The Hammond administration has signed the tentative gas contracts with El Paso, Terneco Alaska Inc., and Southern Natural Gas Co.

Weather

Ketchikan and vicinity: Mostly cloudy with scattered rain showers today, increasing clouds tonight with periods of rain Saturday. Winds S-SE 15-25 mph and gusty. Low temperature 42 (6C), high 46 (8C). Sunset 5:29, sunrise 8:30.

Wrangell-Petersburg: Continued mild, showers this afternoon decreasing tonight and Saturday. Winds east to 15 mph, occasionally gusting to 25.



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Ketchikan

VOL. 42 NO. 29 KETCHIKAN, ALASKA,

Congress flooded with

EDITORIAL PAGE

The Anchorage Times

ROBERT B. ATWOOD
Editor and Publisher

WILLIAM J. TOBIN
Associate Editor
And General Manager

CLINTON T. ANDREWS JR.
Managing Editor

Gas Sale Politics

IT WOULD BE a shame if partisan politics wound up wrecking a united legislative front on the matter of a trans-Alaska natural gas pipeline.

An important factor in the state's hope to steer the pipeline through Alaska — rather than across Canada — lies in the power of Alaska to sell its royalty share of the gas production from Prudhoe Bay.

A tentative sales agreement has been worked out between the administration of Gov. Jay Hammond and three natural gas companies to share in the state's portion of production. The contract requires approval by the legislature.

The primary goal is to ensure that whoever buys the state's gas will transport it across Alaska, providing spinoff benefits quite apart from the dollars received for sale of the energy to be shipped to Outside markets.

AT HEARINGS last week in Juneau the proposed agreement came under fire. Some of the heaviest vollies came from a University of Alaska economist whose outspoken viewpoints were more politicial than scientific. His argument is that it really doesn't matter what Alaska wants, because it isn't going to get the pipeline, anyway.

Coincidental with the hearings came the recommendation in Washington, D.C., of an administrative law judge for the Federal Power Commission that the line be constructed across Canada, rather than across Alaska.

His recommendation was colored with all sorts of fancy phrases and personal observations, including one that called the trans-Alaska pipeline proposal "as wellcrafted a chamber of horrors as this writer has ever seen." That's rather lurid prose for a government report.

IN THE FACE of that sort of stuff, the state needs to strengthen its case for the trans-Alaska route in every way possible.

And there is nothing more important at the moment than approval of the gas sale to El Paso, Tenneco and Southern. Bickering in the legislature, however, could shoot this down.

The fear of some legislative observers is that partisan politics, some aimed at the next gubernatorial election in which Gov. Hammond will be a candidate, will delay or block approval of the sales agreement.

That would be a tragedy. And those legislators engaged in partisanship should be aware of the heavy responsibility they would bear if their activities resulted in loss of the pipeline.

ANCHORAGE DAILY NEWS FEB. 11, 1977

All-Alaska gas line gets boost

WASHINGTON (AP) — A Transportation Department report released last month in the waning days of the Ford administration favors an "all - Alaska" pipeline as the best way to bring arctic natural gas to the lower 48 states.

Under the plan, proposed by El Paso Alaska Co., a natural gas pipeline would be built parallel to the Alaska oil pipeline from Alaska's North Slope to a seaport at Gravina Point. The gas then would be liquefied and shipped by refrigerated tanker to California.

The opinion differs from one expressed last week by a Federal Power Commission judge who recommended a 4,000-mile pipeline across Canada to transport the gas from North Slope reserves.

The Transportation Department recommendation was in a report Jan. 12, "National Transportation — Trends and Choices for the year 2000."

Outgoing Transportation Secretary William T. Coleman said at the time that much of the report might be changed by the administration of President Carter. The new transportation secretary, Brock Adams, has not indicated a preference for any of the three proposals that have been made for transmitting the North Slope natural gas.

The Jan. 12 report said the "all-Alaska" plan proposed by El Paso appeared to be the most viable for these reasons:

—It could be put into operation sooner because it does not require Canadian approval, and it can be constructed faster because it would parallel the trans-Alaska oil pipeline and would be smaller in diameter than the Alaska-Canadian pipeline.

—The delivered price of gas by LNG tanker would be comparable to the pipeline price, considering likely Canadian taxes and the cost of moving the natural gas from the U.S. border to consuming areas.

—The U.S. would collect more money in taxes and would not be affected adversely in its balance of payments.

—The trans-Alaska line would bring Fairbanks gas and Alaska industry.

—Because the cross-Canada pipeline would require regulatory approval of two governments and negotiation of the equity share of each company, delays might be substantially longer than for the all-Alaska system.

The report concluded that "either system may find it difficult to meet the 1981 timetable projected earlier."

Regulatory procedures and a long construction timetable are expected to prevent any gas from flowing from the Arctic until the mid-1980s.

FPC Administrative Law Judge Nahum Litt last week recommended a proposal by the Arctic Gas Study Group.

BERGER INQUIRY

Secondly, the national political realities – re-enforced by President-elect Jimmy Carter's recent victory – guarantee the certification by the federal government of Northwest Pipeline's proposed Alcan route, now the only politically-viable alternative to the trans-Canada route proposed by Arctic Gas. The Arctic Gas proposal has been effectively foreclosed by a series of adverse events, which include the Berger Inquiry's recent staff report concluding that the resolution of native land claims in Canada – 10 to 15 years in the future – is a prerequisite to the construction of any pipeline through the Canadian arctic.

While that portion of the staff report was widely-publicized by Alaska's pro-El Paso news media and political establishment, little was said about the Berger staff's concommitant conclusion that Northwest's Alcan proposal would not adversely conflict with Canadian natives' unsettled land claims. And to the extent that the claims issue is a factor in the certification of the Alcan route, Northwest scored a shrewd coup when it captured Morris Thompson as its project director, whose Alaska native origins and recent experience as head of the U.S. Bureau of Indian Affairs in Washington provide a strategic advantage.

Arctic Gas' cause has been further prejudiced by the unexpected failure of explorationists to find sufficiently commercial quantities of gas in the Canadian arctic, upon which the economic feasibility of Arctic Gas' proposal depended.

These critical factors, which preclude any need for the state to commit its royalty gas to anyone – and which were effectively masked by yet another administration "study" purporting to establish the economic superiority by El Paso's proposal – were conveniently overlooked or ignored by the governor in the interests of furthering his recently-disclosed intentions to run for re-election in 1978.

Perspective

By Joe LaRocca

Gov. Jay Hammond's unsurprising announcement last weekend that his administration had negotiated agreements to sell the state's North Slope royalty gas to three companies in exchange for their support of an All Alaska gas pipeline route, represented a triumph of public relations over rational public policy.

The hoopla that attended his announcement effectively concealed from most observers the fact that, with the stroke of a pen, Hammond signed away a precious state asset and got nothing or less in return.

Fortunately, the buck doesn't stop at Hammond's desk. The agreements are subject to legislative approval, which guarantees a more public – perhaps even sane – approach to the disposal of the state's Prudhoe Bay royalty gas.

Hammond's capitulation to the overt pressures of vocal and influential special interests was painfully reminiscent of the pre-OPEC era when gullible Middle East monarchs gleefully collected baubles from shrewd entrepreneurs in exchange for oil concessions worth billions.

ARTLESS DEALINGS

There are at least two major reasons why Hammond's artless dealings with the three tentative purchasers of the state's royalty gas – were they final – would profitlessly deprive the state and the majority of its citizens of an enormously valuable asset.

First, his premature commitment of a portion of the gas to the El Paso Co. renders that company's plan for an All Alaska pipeline academic, since its real – if covert – motive was mainly to nail down a substantial share of North Slope natural gas.

Although El Paso will continue to pursue its pipeline proposal publicly in order to maintain the appearance of a good faith effort on behalf of an All Alaska line, if the legislature ratifies the governor's agreements it would matter little to El Paso whether its own or a competing pipeline route is certified by the federal government.

It's also irrelevant to the other two purchasers – Tenneco and Southern Natural Gas – which pipeline system is built, since they too would be guaranteed a major share of North Slope gas, although in order to appear to live up to their end of the bargain, they will lobby overtly on behalf of an All Alaska pipeline.

Under the agreements, all three could retain their rights to the state's royalty gas if a route other than El Paso's is selected, simply by switching their support to whichever project wins federal approval.

Alaska May Offer Gas Delivery Funds

Considers Financing All-American System to Transport North-Slope Fuel

L.A. Times

BY DAN FISHER
Times Staff Writer

Alaska is considering a plan to guarantee all or part of the financing necessary to build an all-American system for delivering North Slope natural gas to California and the lower 48 states, a top state official testified here Wednesday.

The plan, outlined by Alaska Lt. Gov. Lowell Thomas Jr. at a hearing of the California Commission for Economic Development, could bear importantly on an upcoming Carter Administration decision on which of three competitive Alaskan gas plans should be approved.

The all-American system, proposed by El Paso Natural Gas Co, has generally been considered a long shot in the competition, especially since the U.S. Federal Power Commission recommended to President Carter on Monday that he select one of two trans-Canada pipeline alternatives. Both of those routes are conditional upon the consent of the Canadian government.

El Paso's proposal is for a new gas pipeline roughly paralleling the oil line currently being completed from Alaska's North Slope to the ice-free port of Valdez on the Pacific Coast. The gas would be liquefied at Gravina Point, Alaska, and shipped by special cryogenic tankers to a proposed terminal and regasification facility at Point Conception on the Southern California coast. From there the gas would be distributed throughout the country in existing pipelines.

Alaska favors the El Paso plan because it will mean far more tax dollars and jobs in the state than either of the trans-Canada lines. The state's economy has been buoyed since 1974 by construction of the trans-Alaska oil line, but that job is expected to be done this summer, and officials are concerned that without the gas line project, the state's economy might go into a tailspin.

Among criticisms of the El Paso plan has been the charge that it will be the most expensive of the three alternatives. However, Alaska may change all that, Thomas testified Wednesday.

"The state of Alaska is currently considering a finance plan to guaran-

Please Turn to Page 20, Col. 3

Continued from Page 1

tee bonds or debentures needed to construct the trans-Alaska LNG facility," he told the commission.

The liquefaction facility at Gravina Point accounts for nearly one-third of the estimated cost of the El Paso system, and if the state guaranteed the bonds necessary to finance it, the company presumably would be able to borrow the money at a lower interest rate.

"If this plan is put into effect the price to consumers in the lower 48 would be lowered by 3%," Thomas said. The state is also considering backing the pipeline portion of the project as well, the Alaska official said. If it backed both the pipeline and liquefaction facility, the savings could be nearly 14% over currently projected costs. That could make consumer prices under the El Paso plan less than under either of the competitive, trans-Canada proposals, Thomas added.

Thomas said in a subsequent interview that Alaska officials have been "kicking it (the finance plan) around very informally for a couple months. But now it's gaining a real head of steam." The state intends to reach a decision within two months. Carter is scheduled to make his decision on an Alaskan gas route by Sept. 1, so Alaska's verdict will come in time for its impact to be felt by the White House.

Perhaps even more important than its impact on the White House would be the effect of Alaska's financing plan on the Congress. Under legislation passed last year, Congress will have 60 days to review the President's decision once it is made. And many insiders feel that it will ultimately be the Congress which selects an Alaskan gas route. Proponents of all three competing routes are lobbying heavily in Washington and elsewhere.

Thomas said the financial wherewithal to back El Paso's plan could come from a permanent fund which the state created last year to set aside a portion of its Prudhoe Bay oil revenues. Or, Thomas said, "it could be backed by our general fund. We feel that with a company like El Paso, the chances of it going belly up are almost nil."

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Editorial Opinion and Comment of

FAIRBANKS
Daily News - Miner

"Independent in All Things . . . Neutral in None"

Other opinions expressed on this page do not necessarily reflect those of the Daily News-Miner.

A closing word

The state royalty natural gas sale contracts are up for final action in the State House this week, and whether they win or lose the legislature deserves credit for the way they've been handled.

Despite the shrill complaints from fans of the gas sale, the issue has been treated with due study and haste. Two months is not an unreasonable time for 60 people to work over a complex 20-year contract that took almost a year to negotiate, and proposals with greater merit have died in the legislature without even seeing a committee vote.

The royalty gas contracts passed at least two committees headed by people opposing them. This is especially remarkable because the contracts are the type of issue most legislators find hard to oppose in a floor vote, and the type of legislation which could be killed with just a few weeks of stalling in committee.

The supporters of the gas sale should be happy to get as far as they have, and their pressure tactics and attacks against legislators and the press certainly haven't helped.

The rhetoric flying in the past couple months has built a facade of debate over details around a basically philosophical question. The question is not one open to political pressure or even extended debate because the different sides are working from different basic assumptions.

The basic question is still: should the State of Alaska buy political support for El Paso Alaska's trans-Alaska gas pipeline through an economic partnership with three of the nation's leading energy companies?

Those who say "yes" include the companies themselves, some business leaders and the Organization for the Management of Alaska's Resources, the most active citizen group supporting the trans-Alaska route with its own $10,000-a-month ties from El Paso Alaska.

They believe the contracts necessary to draw political support upon which the trans-Alaska pipeline fight will be decided.

Those who say "no" include Fairbanks Mayor Harold Gillam, former Lt. Gov. Red Boucher, several newspapers and a number of prominent legislators from both parties.

They believe the gas sale is either wrong, unnecessary or both. Some are loyal El Paso supporters while others are neutrals or are backers of the Alaska Highway route.

trading, pressure or [illegible]. Supporters of the sale are in a position for easy attacks on a popular issue, and opponents only reply by restating personal beliefs and hitting details of the contracts.

The supporters have made unwarranted personal attacks and stretched the truth to the breaking point. The debate hasn't been a pleasant one, as we can attest because this newspaper was the first to draw fire from the gas sale forces.

As far as the legislative debates go, there's an old political rule that says you should never try to force someone to vote against their philosophical or personal beliefs. It's a rule of good faith and good politics, and it's been quite soundly shattered recently.

We've stated before our fear that too close a partnership with the oil industry may harm Alaska's image and position on other issues. This is the year we will be before Congress on a number of important questions, and we should be serving our own and the nation's interests by taking a leadership role among energy and resource-producing states whose own reputations have been similarly soiled in the past.

The emotions aroused in the past two months bring a new worry that Alaskans won't be standing with each other on these other issues, even if they are united with the oil industry on the pipline issue.

However the final vote comes out, we must remember that we are an important state but we are a small one in population and political clout. We must remember even in the hottest disagreements to respect the legitimate positions and beliefs of our neighbors.

After this week we're going to have to deal with people in the consuming states whose only interest in our gas is a desire to burn it. If we can't work among ourselves, we'll certainly fail with them.

FAIRBANKS
Daily News - Miner

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Setback for gas contracts

2/22/77
ADN

From Our Juneau Bureau

JUNEAU — Voting along party lines, the House special committee considering three contracts to sell Alaska's royalty gas recommended Tuesday evening the contracts be rejected.

The committee also issued a 17-page report largely critical of the proposed contracts, saying legislators must be aware of the costs of approving the contracts before they vote.

LED BY Chairman Rep. Clark Gruening, D-Anchorage, the three Democrats on the special committee recommended each of the three contracts not pass the House. Gruening was joined in voting against approval by Reps. Joe McKinnon, D-Anchorage, and Charles Parr, D-Fairbanks. The committee's two Anchorage Republicans, C. V. "Chat" Chatterton and Joe Hayes, urged approval of the contracts.

The primary concern of the Democrats seems to be whether the state will be able to take back its share of the gas for in-state use if it wants to, despite a take-back provision in the contracts. The committee report also cited a "loss of flexibility in dealing with other potential buyers of the state's royalty gas" if the proposed contracts are approved.

The contracts would sell the state's one-eighth share of Prudhoe Bay natural gas to three gas transmission companies — Southern Natural Gas Co., El Paso Natural Gas Co., and Tenneco Alaska Inc. In return for the gas, the three companies would throw their support behind a trans-Alaska gas pipeline route proposed by El Paso.

"... **THE COST** considerations cast doubt on the advisability of committing gas for export from the state in order to gain marginal political leverage in the gas pipeline routing decision," the committee report, prepared by Gruening, said. "If in the opinion of individual legislators, these cost considerations are outweighed by the likelihood that commitment of the gas will have some favorable effect, the committee strongly recommends that 100 per cent of the state's royalty gas not be committed."



Clark Gruening

"In addition, approval of any or all of the proposed contracts should be done only after the method of determining what is surplus to the intrastate domestic and industrial needs of the state of Alaska is clarified in the contracts."

The report also said a pipeline "to carry the state's royalty share . . . to Fairbanks or tidewater has not yet been given the serious consideration it deserves."

THE HOUSE Finance Committee will now have the last review of the contracts before they come to a vote before the full house. Most legislators expect the full vote to come next week.

Senate Amends Plan To Sell State Gas

SENE 2/22/77

By CHUCK KLEESCHULTE
Empire Staff Reporter

The Senate Finance Committee this morning threw a major curve into the consideration of the sale of the state's share of North Slope gas by adding an amendment to the proposed contracts.

The finance panel, chaired by Sen. John Sackett, R-Galena, on a 4 to 3 vote, approved an amendment first proposed by the Senate Resources Committee Monday, and revised this morning by Sen. Chancy Croft, D-Anchorage.

The amendment calls for the automatic termination of the administration-negotiated pacts if Congress repeals a section of the Alaska Gas Transportation Act of 1976 prior to the Federal Power Commission (FPC) bestowing its blessings on the contracts with three transmission firms: Tennessee Gas Co., Southern Natural Gas and El Paso.

The federal transportation act, approved last October, gives Alaska the right to remove its gas from interstate commerce at any point it wishes without FPC approval being required.

Acceptance of the amendment marks a defeat for proponents of the royalty gas sale, since while it doesn't affect the contracts, it affects the resolution granting legislative approval for the contracts. The amendment makes legislative approval of the contracts conditional and probably will require renegotiation of the pacts, to relieve the uncertainty the amendment will create.

Administration officials repeatedly have stressed that requiring renegotiation of the pacts could prove tantamount to rejection of the contracts since the process will prove sufficiently time consuming that the state will lose the political support for an all-Alaska gas route it is seeking to obtain.

The vote also sets the stage for a Senate floor battle where contract proponents will attempt to disengage the pacts from the amendment, fighting for approval of the former and the rejection of the latter.

"The effect of the amendment is to net not only political support for the El Paso line in Congress, but also support for Alaska's right to keep its access to gas for in-state uses," Croft said before the vote.

When the vote came Sackett joined three committee Democrats, Croft, Sens. George Hohman, D-Bethel, and H.D. "Pete" Meland, D-Sitka, in voting for the amendment, while Republican Sens. Clem Tillion, Halibut Cove; Joe Orsini, and John Butrovich, Anchorage, voted against the pacts.

The committee then voted to move the contracts to the floor with Sackett recommending that none of the three proposals be approved, while the other Republicans asked that the pacts win approval without the amendment, and the Democrats refused to make a recommendation.

Croft's amendment is aimed at guaranteeing the state will not forfeit the right to use its gas for in-state uses, by signing a contract now before gas first starts to flow through any pipeline system to the lower-48.

Attorney General Avrum Gross argued the amendment was not needed since the pacts will not go into affect until the FPC approves the entire package including two provisions in the pacts designed to give the state the right to remove its gas for valid in-state uses when it wishes.

Croft, however, argued that once the contracts are signed the state is legally committed to selling its gas in interstate commerce. He argued the FPC might approve the state's contracts with the transmission firms, contracts which contain the "takeback" provisions, but that such a safeguard would be worthless if the overriding takeback provision in the gas transportation act is already repealed.

Tillion, who argued strongly against the amendment this morning, promised a strong floor battle against the amendment.

House Group Nixes The El Paso Contract

SEAE 2/22/77

Contracts calling for the sale of the state's share of royalty gas hit an obstacle Monday when a House panel questioned the need for all three contracts and recommended rejection of one pact.

The House Special Gasline Review Committee, chaired by Rep. Clark Gruening, D-Anchorage, voted 3-2 to recommend the full House reject a contract with El Paso Gas Co.—the firm seeking permission to build the all-Alaska gas pipeline system.

The proposed contract with El Paso calls for sale of 25 per cent of the state's gas to El Paso or a maximum of 650 billion cubic feet of the state's 2.6 trillion cubic feet of North Slope reserves over 20 years.

The panel did vote to report all three contracts to the House Finance Committee for further review and took a basically neutral position on contracts with Tennessee Gas Transmission Co., a subsidary of Tenneco Inc., and Southern Natural Gas Co. These contracts call for the sale of 50 and 25 per cent of the state's gas.

Reps. Charles Parr, D-Fairbanks, and Joe McKinnon, D-Anchorage, voted not to make a recommendation on the Tenneco-Southern pacts and voted against the El Paso contract. Reps. Joe Hayes, R-Anchorage, and C.V. "Chad" Chatterton, R-Anchorage, voted for all three contracts. Gruening voted 'no' on all contracts.

The committee, on a 4 to 1 vote, approved a staff report which tended to be skeptical of the political benefits the state will net from the contracts and which is negative about the costs the state could incur by approving the administration-negotiated pacts.

"I think all the legislators are going to have to sit down and weigh the contracts and make up their own minds on whether the benefits outweigh the costs," Gruening said.

The panel's report also said it (the El Paso contract) "makes little sense even under the political objectives of building 'constituencies' and 'lobbying efforts'" to sell state gas to a company which already is firmly committed to the fight for the all-Alaska route."

The committee's report added "there has not yet appeared any compelling reason for the sale of the royalty gas at this time." It said the main obstacles to construction of the Arctic backed trans-Canadian pipeline system are and will continue to be Canadian Native land claims and delays in construction and financing inherent in the Arctic line.

"Regardless of whether the state enters into these contracts at this time, those problems will continue to be the substantial roadblocks to construction of a Canadian pipeline," the report says.

The committee's main objection to acceptance of the contracts lies with problems relating to the state's gas "takeback" provisions, Gruening said. The committee's report, backed by a Feb. 16 legal opinion by Billy G. Berrier, director of legislative legal services, argues the takeback provisions are clouded by "substantial ambiguity as to how surplus gas will be determined at the time the state decides to use the gas."

The committee recommended all three contracts be renegotiated or supplemented by letters of intent to back up the state's view it will have the ability to decide what gas it needs to takeback from the transmission firms.



REP. CLARK GRUENING
GAS PANEL CHAIRMAN

The committee's report argues that the contracts don't set out a performance level the firms must meet in lobbying for the El Paso project and might even prove a liability given the "political mood" toward the petroleum industry at present. The report laments the "loss of flexibility" the contracts will produce for the state in seeking new markets for sale of its gas or in use of the gas in petrochemical developments.

The report leaves the issue to the full House to weigh on their own. But the committee did urge that not all the state's gas be sold at the present time.

All three Democratic members approved the panel's report and only Rep. Hayes disagreed with the conclusion drawn from the 1,100 pages of testimony gathered during joint House-Senate hearings held earlier this month.

The committee recommendations now head on to the House Finance Committee, chaired by Rep. Steve Cowper, D-Fairbanks, for consideration. Following a short trip to the Rules Committee, the issue will be before members on the floor—an action Gruening guessed might take place next week.

Readers write...

ADN

Disturbed by a question

2/17/77

Dear Editor:

We were disturbed by the selective concerns you expressed in your Feb. 15 editorial questioning the effectiveness of the state selling its surplus royalty gas from Prudhoe Bay.

Rather than accepting FPC Judge Litt's erratic ruling as holy writ, you might more appropriately ask how he arrived at his indefensible conclusions regarding construction and environmental conditions in Alaska and political problems in Canada. We can assure you that federal government agencies, as they begin their review of the gas line routing issue early this summer, will be asking the hard questions that Alaskans themselves should be raising.

But if you regard Judge Litt as an infallible guide to the ultimate outcome of the gas line decision (actually FPC judges have a poor track record in these matters), then you might be interested in knowing that during the state's testimony in the FPC hearings, Litt specifically criticized Alaska for doing nothing tangible to support the trans - Alaska gas line proposal. The judge told the state witnesses that if Alaska were truly serious about securing a trans - Alaska route it would commit at least some of its royalty gas to those companies working for the route.

We are not familiar with the Gilbreth memorandum you quoted, but at the same time the unanimous opinion of Alaska's congressional delegation should not be ignored. Sen. Ted Stevens, Sen. Mike Gravel, and Rep. Don Young have all repeatedly urged the state's sale of its excess royalty gas via a trans - Alaska line as crucial for achieving approval for the project. Their assessment of Washington, D.C., realities surely deserves some consideration.

I think that you should also take a harder look at the myth that, while Alaska wants a trans - Alaska route, the rest of the country is demanding a gas line through Canada. There is not such sentiment in the other states whose inhabitants are lamentably unaware even that North Slope gas is available to ease their energy problems, much less that there is a dispute over how to get it to them.

Also you should remember that Judge Litt did not recommend "a trans - Canadian route," as you put it. While he acknowledged that the trans - Alaska line is viable and certifiable, he called for approval of only the Arctic Gas route. Rightly or wrongly he wrote, "there is not even the possibility" of certifying the Alcan route. So by accepting Litt's tenuous pronouncements as the inalterable will of the US government, you are in effect giving support to the Arctic Gas project that it in no way deserves.

Benjamin F. Harding
Community Relations Director
OMAR

Got something to say? Then say it, and send it to Readers Write, The Daily News, P.O. Box 1000, Anchorage, Alaska 99510. We invite readers to express their views. We ask that letters be typed, if possible, and signed with an address and phone number.

Gas contracts critical says Sen. Stevens

ADN 2/17/77

From Our Juneau Bureau

JUNEAU — Republican U.S. Sen. Ted Stevens Wednesday strongly urged the state Legislature to quickly approve three contracts to sell the state's one-eighth share of Prudhoe Bay natural gas in exchange for support of an all-Alaska gas pipeline from the North Slope.

"These contracts are a vital aid to our attempts to secure a decision in favor of the all-Alaska route," Stevens told a joint session of the House and Senate. "I hope you will approve the contracts. To reject them now would be a serious and possibly fatal blow to our efforts to convince people in Washington to support an all - Alaska line."

STEVENS' address to the legislature coincided with the arrival of a 50-member delegation from the Organization for the Management of Alaska's Resources (OMAR), which was also boosting early passage of the gas contracts.

The three contracts would be sold to Tenneco Alaska Inc., Southern Natural Gas Co., and El Paso Natural Gas Co. in exchange for support of the trans-Alaska route.

Other issues Stevens addressed:

— The trans-Alaska oil pipeline. "The main thing we must try to do is to insulate our royalty share from the transportation costs. If we can establish a market for Alaska oil at Valdez or clearly establish a value in a similar fashion, then Alaska's return would not depend on where the oil goes. There is no reason why Alaska should lose money because the Lower 48 can't figure out what to do with our oil."

— Fisheries and the 200-mile limit. "I am a co-sponsor with Sen. Kennedy of a bill which would create a fisheries assistance fund composed

(Continued on Page 2)

Gas Contracts Vital, Stevens Tells Solons

Calling the proposed state royalty gas contracts "a vital aid" to Alaska's efforts to win approval of an all-Alaska gas pipeline route, U.S. Sen. Ted Stevens Wednesday urged state lawmakers to endorse the contracts as soon as possible.

Stevens in an address to a joint session of the Alaska Legislature told lawmakers "help" from the two newest participants in the gas issue, Tennessee Gas Transmission Co., a subsidy of Tenneco Inc., and Southern Natural Gas Co., is needed immediately.

"The state simply must take a more active role in supporting an all-Alaska pipeline route. The key deadline is July 1 when federal agencies must make their recommendations to the President," Stevens said.

The contracts in Steven's view also "firm-up" the supply of liquified natural gas (LNG) to Southern and East Coast states—a key provision of the contracts since those states are already growing more dependent on LNG and want a dependable domestic source of the fuel rather than depending on foreign sources.

Stevens in response to an hour of lawmaker queries, specifically to a question from Rep. Russ Meekins Jr., D-Anchorage, downplayed recent proposals that the state should step in and actually help finance the El Paso all-Alaska pipeline project. Alaska's senior Republican senator said such efforts might backfire in Congress.

"One of the strong selling points of the project in Congress is that El Paso is the only project which should be able to totally finance itself in the private sector. Congressmen will admire that. I don't see any reason yet to change the picture unless El Paso asks for your help," Stevens said.

Stevens at a reception later in the day, clarified a statement stemming from a Washington news conference last week. The senator said that at that conference he was urging Canadian decision makers to publically tell the Congress and the President what they have been telling some members of Congress privately, that Canada has no intent to expedite a decision on any pipeline.

"I wasn't trying to threaten Canada or interfere with her decision process. I was just trying to get them to come out and say that even though we are friends, they have no intent to go against their own best interests even if we want them to rush to a decision," Stevens said.

He also dismissed the importance of what some newsmen last week interpreted as a veiled threat to Congress, that Alaska would reduce the gas flow from the North Slope to such an extent an Arctic pipeline would not be economical, if the Arctic route is approved.

Policy profiles

ADN 2/16/77

Why federal policies fail

routing of gas & oil lines



By JOHN HAVELOCK
(First of a series of columns)

Early highway routing in the United States was usually a consequence of local private convenience and local financial limitations. As a result, when someone wanted to travel from Boston to New York, he would follow the convenience first of persons with a prior interest in going from Boston to Newton, Newton to Worchester, Worchester to Springfield, and so on to New York. The road would be wide or narrow, steep or graded, straight or crooked, point northwest or south, depending on the self-interest, the aspirations and the pocketbooks of local residents.

Though Henry Clay's "American System" proposals of 1817 conceived of a land transportation system that would bear some relationship to overall American transportation goals, no comprehensive implementation took place until the 1950s when the over-success of a single-minded national highway planning program founded a juggernaut.

ON A SOMEWHAT grander scale of distance, railroading followed a similar course of freewheeling private entrepreneurship free of long-term planning or broad regional or national conceptualization. Today's frequently redundant, largely bankrupt system of rail transportation is in large part a legacy of the absence of public transportation policy.

Do we learn? Alaska has a dozen regional zones of oil and gas potential. Pipeline transportation is the most rational and economic form of transportation for these commodities in almost every case. Yet there is no indication that federal decision making has been significantly influenced by consideration of the comprehensive needs of the next few decades.

For starters, gas pipeline decisions are given to one agency, the Federal Power Commission (FPC) and oil pipeline decisions are made (supposedly) by another agency, the Interstate Commerce Commission (ICC). Neither agency was established with the responsibility in mind, a fact reflected in the lackadaisical attention given by them to pipeline matters over the years. The Interior Department gets into the act from its perspective as a real estate holding company, which doesn't improve matters much.

THE BASIC DECISIONS on gas line routing are made as road decisions were made in 1800, on a narrow estimation of private benefit by those who hope to profit from the construction. The procedure is fundamentally flawed.

The gas pipeline routing case began as a contest between two consortia of private production ownership, marketing, processing and construction interests, one of which seems to have drawn in the State of Alaska as a party. The El Paso group is composed of a California marketing group, banking, maritime operating and shipbuilding ownership and union interests and, pulling the state in tow, most principals in the Alaska construction industry.

The Arctic Gas group has its own set of economic bed fellows including financial houses, production ownership interests, and overlapping interests in Canadian resource, construction and transportation ventures and most recently U.S. Steel as a pipe manufacturer. Carefully putting its head in blinders, the FPC as the guardian of national interest, chose to consider only the "serious" proposals, those consisting of packaged vested interests.

THE ALCAN GROUP, recognizing a viable political and economic compromise and a chance to make some money in some rather obvious public concerns which the other alternatives ignored, might be characterized as the opportunists. They saw an opportunity and organized a proposal around it, but a little late.

The alternative to letting public interest be towed in the wake of private was, and in some future will be, that the public interest representatives involved, the state and the federal government, get together with the public to determine what the most efficient and effective network of pipelines for Alaska and the continent should be, schedule it and put it out to proposals for private construction, ownership and management with some level of federal guarantee for capital needs.

For those that wince at federal guarantees, consider: either existing pipeline deal is way too big (like Lockheed Aircraft) and too important for the government to let it fold, so the government is the silent partner in any case.

THOSE WHO REALLY pay the piper are the consumers and the public, national and Alaskan, since the higher interest costs which result from straining the conventional market for supposedly risk capital will be passed forward in higher consumer prices and backward in lower tax payments and royalties to the state. The center of industry profit switches to financing, transportation and processing. The public is not going to save a dime by throwing yet another "largest-ever" enterprise, on top of TAPS, on a private financial market designed to handle considerably smaller arrangements.

The decision making process on routing for the first gas line seems now fated to follow the TAPS procedure by which public interest follows in the trail of private initiative and convenience. But we are not through with pipeline construction, nor with the design of other national transportation modes. A decision-making process constrained by short term private goals which focuses on the crisis of the hour is a poor instrument of policy formation. We can hope that in the future, the nation will look at better ways of making decisions rather than abdicating to the log rolling skills of private corporate power.

(John Havelock served as chairman of the state's pipeline coordinating committee in 1972-73.)

2/19/77

2—Anchorage Daily News, Sater

Gruening fires back at OMAR

JUNEAU (AP)—The chairman of a special House committee on the sale of Alaska royalty natural gas fired back Friday at accusations that the legislature is dragging its feet on the issue.

"I think the legislature should be complimented for not hurrying into the sale of Alaska's resources," Rep. Clark Gruening, D-Anchorage, said in a speech from the House floor.

Gruening said he was prompted to address the House by published accusations from members of the Organization for the Management of Alaska Resources that the legislature was "playing games" with proposed contracts to sell Alaska's royalty share of Prudhoe Bay natural gas in return for political support for an All-Alaska gas pipeline route.

The Anchorage lawmaker denied a claim voiced Thursday by OMAR member Butch Stein of Fairbanks that "Gruening didn't even have the courtesy to call a meeting (of his special committee) so we could testify."

Stein, a member of the Fairbanks borough assembly, leveled the accusation after a delegation of about 50 OMAR members failed to convince the legislature to speed up action on the contracts.

Gruening said Stein never requested a meeting of his committee and claimed that Stein was satisified with an informal meeting he conducted with OMAR members in the House chambers.

"I think haste makes waste and it behooves us in light of our Prudhoe Bay experence to wait," Gruening said in an apparent reference to a claim by a legislative consultant that the state may have lost up to $40 billion because of ineffective leasing policies on the North Slope.

SAEA 2/21/77

Boucher Claims Gas Attitudes Changing

ANCHORAGE (AP) — Former Lt. Gov. "Red" Boucher says the impact of the recent natural gas crisis has vastly improved the reception Alaskan oil and gas will get in California.

He said Friday, "The impact of California having to move its gas eastward and the overall recognition of what a similar gas shortage would do to California is having an impact."

Boucher, whose comments were made in a telephone call from Dallas, said he has been visiting the lower 48 for the past 10 days to measure the impact of the gas shortage.

He defended the legislature's refusal to give quick approval of Gov. Hammond's proposed sale of the state's royalty gas. Boucher said it's still not clear that the sale is legal.

According to Boucher, the necessary studies haven't been done and it hasn't been shown that the gas would be surplus to the state's needs.

He said criticism of the legislature by the Organization for the Management of Alaskan Resources (OMAR) is way off base.

He said, "I feel that Omar's statements concerning the actions of the legislature are totally out of order. In fact, it is typical of the pressure that has and is being applied ever since this sale was announced by governor in November to get the bill through."

Union Message

Teamsters Call For Gas Pact Rejection

SEAE 2/21/77

By CHUCK KLEESCHULTE
Empire Staff Reporter

Alaska lawmakers Saturday were asked to reject contracts calling for the sale of the state's share of North Slope royalty gas until language is modified to drive a point home to the Federal Power Commission (FPC) in Washington.

Jeff B. Barry, business manager for Teamsters Local 959 in Anchorage and director of the union's political-action arm ALIVE, called for acceptance of the sale contracts with three firms: Tennessee Gas Transmission Co., Southern Natural Gas and El Paso, but only if one clause is amended and another controversial clause is deleted.

Barry, speaking for the teamsters, told a special joint session of the Senate Natural Resources and Senate Finance Committees that the contracts should be modified so the state initially is selling only 80 per cent of its one-eighth share of the Prudhoe Bay reserves. That would provide Tenneco with 40 percent instead of half of the state's share and give El Paso and Southern 5 per cent less gas than presently called for.

Barry said such a move would assure the state adequate future supplies of natural gas for in-state uses—uses which he said face a critical gas shortage when Cook Inlet reserves are depleted in the mid 1980's.

Barry's charge, however, also was aimed at sending a firm message to the FPC that the state needs its gas and won't accept construction of an Arctic Gas trans-Canadian route which would effectively deny the state access to the North Slope reserves.

"Upon the evidence presented to (FPC Administrative Law Judge) Litt he had no knowledge that the vast majority of Alaskans have never had the energy benefits of natural gas or that the small area that has, may soon be blacked out.

"You must modify the contracts to show (in the formal record) that Alaska has a use for its gas," Barry said.

The representative of the state's most powerful union, in a scathing attack on the Hammond administration's handling of the state's case before the FPC, said Alaska has been "remiss and derelict in its obligation" to make clear the state's need for the gas for in-state uses.

"The state was dilatory and uncooperative," said Barry, who called the recent Litt recommendation a "shocking indictment of the state administration's" performance before the FPC.

Sen. Clem Tillion, R-Halibut Cove, strenuously objected to Barry's charge saying the proposed gas contract protects in-state use of the gas, allowing the state to takeback set percentages of the gas with one year's notice and takeback all of its gas on two years notice.

"It's not that we haven't made our case clear to the FPC. It's just that Litt hasn't paid attention to the arguments. He doesn't want our gas to be used here in Alaska—he wants it to head to the East Coast," Tillion said.

Barry countered that the state could be barred by FPC regulations from removing its gas from even an El Paso line once the gas begins to flow. He said such a bar could result no matter what type of takeback provision is included in the contracts.

He said such a problem would be compounded if Congress follows Litt's recommendation made Feb. 1 and repeals Section 13-b of the Alaska Gas Transportation Act—the clause which allows Alaska to withdraw its gas from interstate commerce.

Barry also said the teamster's are "totally opposed" to a provision in the contracts allowing Alaska to switch its support from backing the El Paso all-Alaska gas route—a clause which allows the present three firms to switch their support to any route the state finally backs and keep their rights to the royalty gas.

Barry criticizes the clause as abrogating legislative power and said approval of the clause would give sole power to the governor to make a key decision, a process the teamsters said "set a bad precedent" for the future.

Barry under repeated questioning by Tillion said he would rather see the present contracts scrapped, even if that meant loss of the contracts and their potential political influence for the all-Alaska route. Barry, however, was quick to add that renegotiation of the contracts should not have to be a time consuming task and that approval by both the Royalty Board and the legislature could be expedited.

Tillion, however, rejected that view. "We have to vote these up or down without changes. We don't have time to reopen negotiations given all the problems that might entail.

"Our Congressional delegation says they need these contracts and I'm not going to leave them high and dry," Tillion said.

Only Sen. John Huber, D-Fairbanks, voted against the contracts release from the Natural Resources Committee to the Finance Committee. Huber said he was holding out for the addition of an amendment which would have made it clear the pacts are dissolved if Congress would ever repeal Section 13-b.

The Resources committee eventually passed the contracts on to the Finance committee on a 4 to 1 vote. Sen. John Sackett, R-Galena, head of the Finance panel said the contracts would be up for review immediately upon receipt by his members. He said the contracts could be cleared for Senate floor action as soon as Tuesday.

Barry added the teamsters have already collected 10,000 signatures and will be attempting to net 40,000 more in the next three weeks on a petition which could easily become an initiative making it illegal for the state to cooperate in anyway with an Arctic or Alcan Gas project. The initiative if approved would force the state to fight in every way selection of Arctic route including denial of all right-of-way permits.

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SEAB

Gas Contracts Prompt

FEBRUARY 23, 1977 12 PAGES TODAY 25 CENTS

Senate 'Haggling'

By G. MICHAEL HARMON
Associated Press Writer

Senate President John Rader today compared legislative haggling over contracts for the sale of Alaska's royalty share of Prudhoe Bay natural gas to the actions of a "frightened animal."

"We're like a frightened animal, a rabbit, standing in front of a hawk," Rader said during Senate floor debate on the contracts. "We're immobilized by fear."

Rader made the allusion shortly before the Senate recessed for lunch without taking a vote on the contracts to sell the state's estimated 2.6 trillion cubic feet of gas to three transmission companies in exchange for political support for an all-Alaska gas pipeline.

Floor debate centered on a last-minute maneuver to attach a potentially deadly amendment for the contracts.

Pushed by Sen. Chancy Croft, D-Anchorage, the amendment approved by the Senate Finance Committee Tuesday would automatically terminate the contracts if Congress repeals section 13-B of the Alaska Natural Gas Transportation Act of 1976 before the Federal Power Commission acts on the pacts.

Section 13-B of the act, which establishes the procedure and timetable for federal approval of competing Prudhoe Bay gas pipeline routes, gave Alaska the unprecedented right to take its gas off the interstate pipeline for intrastate use without FPC approval.

Croft told the Senate that the amendment was necessary to protect the state's interest if 13-B is repealed, and would require the gas purchasers to lobby to retain the provision.

"The amendment says that if you want our gas, you have to lobby not only for the El Paso line but for 13-B as well," Croft said.

However, Sen. Clem Tillion, R-Halibut Cove, countered that passage of the amendment would kill the contracts and cause a Congressional backlash against 13-B.

"For us to flag 13-B in the open back in Washington now would add fuel to the fire for is repeal," Tillion said.

He also argued that takeback provisions of the contract are "perfectly adequate" to protect the in-state use of royalty gas, and said the legislature had no authority to amend the contracts.

Tillion based his contention on a tentative opinion from Atty. Gen. Avrum Gross that the legislature has no authority to qualify the contracts, but can only vote them up or down.

Gross said the administration of Gov. Jay Hammond will consider a Senate vote to amend the pacts the same as a rejection.

Tillion claimed that the administration has the votes in the Senate to defeat the amendment but acknowledged that the ballot will be close.

Croft said the amendment was offered to counter fears about the impact of a repeal of 13-B on the ability of the state to reclaim its royalty gas once it enters an interstate pipeline.

"If Congress repeals 13-B before the FPC approves the contracts, then the state loses control of its gas," Croft said.

Gross, however, categorically disputed the Croft claim, contending the contracts have "no impact on 13-B and vice versa."

Gross acknowledged that the repeal of 13-B would cause the state "real problems," but said those problems would exist whether or not the contracts are approved.

"Let's assume that Congress does repeal 13-B before the FPC approves the contracts," Gross said. "How does this amendment protect us?

"Whether we've got the gas because we never sold it in the first place or whether we've got it under the recall provisons of the contract—in either case we've got to get FPC approval to take it off an interstate pipeline for in-state use if 13-B is repealed."

Gross said supporters of the amendment "are tying to tie the contracts to the existence or non-existence of 13-B under the theory that if we don't have 13-B we can't protect our gas."

"My answer to that is that we can't protect our gas with or without the contracts if 13-B is repealed," Gross said.

Croft said the amendment also "makes sure we have political support not only for the all-Alaska line but for 13-B as well."

Gas line debate in Congress

ADN 2/18/77

WASHINGTON (AP) — Congress heard a long list of complaints Thursday on the initial decision of the Federal Power Commission favoring the Arctic Gas consortium plan for shipping Alaska natural gas to U.S. consumers.

The complaints came at a hearing of the House interior subcommittee on public lands. Congress has the final say on the ultimate selection of the natural gas pipeline plan.

Commission administrative law judge Nahum Litt decided last month that Arctic's plan was superior to competing proposals of Northwest Pipeline Corp. and El Paso Natural Gas.

Northwest president John G. McMillian said Litt's decision "is an advocate's brief in favor of one project, that is the Arctic Gas project, and reflects an incredible bias and antagonism toward the Alcan project," which is Northwest's plan.

McMillian said Northwest's proposed pipeline used existing technology and pipeline corridors and "substantially reduces risk of cost overruns and delays."

R. Clyde Hargrove, representing Arctic Gas, praised the FPC proceeding, pointing up Litt's conclusion that the Arctic Gas pipeline would deliver the most gas to needy midwestern users at substantially less costs than the competing plans.

Hargrove doubted that complex Canadian land claims would delay construction by Arctic Gas. He said there are legal methods which would preserve native rights and allow construction to begin.

John C. Bennett, representing El Paso, said his company's proposal would assure orderly development and transportation of North Slope gas.

Although the original El Paso plan was to ship the gas to Southern California, Bennett told the panel the tankers could make the gas available at other ports for shipment to any areas where it may be needed.

Bennett also stressed the El Paso plan would use American materials and workmen, and that the plan was the backing of the state of Alaska.

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FPC staff likes Alcan alternative

ADN 3/16

By ROSEMARY SHINOHARA
Daily News Staff Writer

The Federal Power Commission staff has taken issue with Law Judge Nahum Litt's rejection of the Alcan Project as an alternative to the Arctic Gas Co. proposed natural gas pipeline from the North Slope.

"Only in the case when no Alaska gas would be permitted to transit Canada is there a clear staff choice of an alternative to the Arctic Gas project, without the need for more information," the staff said in comments filed with the FPC in the wake of the Litt decision.

JUDGE LITT, in the first round of decision - making on the gas pipeline route decision, said the application of Arctic Gas was "superior in almost every significant aspect" to the other two proposals.

Litt termed El Paso Natural Gas Co.'s trans - Alaska route and tanker system a clear second choice, and he said Northwest Pipeline Corp.'s Alcan project was not worth considering.

Since the Feb. 1 Litt decision, all parties involved were given the chance to tear into the decision by filing "exceptions" for the full Federal Power Commission to consider when it makes its recommendations to President Carter on May 1.

THE FPC STAFF said it agrees "in the main" with the conclusions reached by Judge Litt in favor of the Arctic Gas route across Alaska's North Slope into northern Canada, and south along the MacKenzie River delta.

However, the staff said it is unclear that El Paso's project should be ranked as the second choice. If Canada refuses to allow a pipeline in the Mackenzie Valley corridor, as proposed by Arctic, the options would have to be re-studied, the staff said. The viability of Northwest's proposal is connected with whether or not an independent Canadian project known as the "Maple Leaf" project is built, the brief says.

Other major areas of disagreement by the staff were:

—Judge Litt's approval of a "western leg" proposed in the Arctic Gas project to deliver gas to the California area. Without gas purchase contracts, the FPC staff said "western leg" certification is premature.

—Certain of Litt's conclusions regarding financing and tariffs for the proposals. The staff said it has not been proven that an Alaska gas project is unable to "stand on its own feet," and will need novel tariff arrangements and "government backstopping."

—El Paso proposal to build a liquefied natural gas plant at Gravina Point in Prince William Sound. The staff said alternative sites in Cook Inlet should not be brushed off in consideration of where to put the LNG plant.

Each of the three applicants for the gas transportation system have also made critiques of Litt's decision.

EL PASO, in its criticism, said the judge gave "every conceivable benefit of the doubt" to the Arctic Gas project.

El Paso called the Arctic Gas construction schedule unrealistic, and said therefore the project costs are understated. Other criticism from El Paso concerned gas supply, environmental and Canada aspects of the Arctic Gas project.

While El Paso said Judge Litt was too generous in considering how much gas would be available from the Mackenzie Valley reserved in

(Continued on Page 2)

Gas Utilities Back Alcan

3/14/77 SEATTLE

SEATTLE (AP) — Three of the Northwest's natural gas utilities have thrown their support behind the so-called Alcan Project to transport Alaska natural gas to the lower 48, while one utility said it still has some questions.

Wendell Satre, chief executive of Spokane-based Washington Water Power Co.; James Thorpe, president of Seattle's Washington Natural Gas Co., and officials of Portland's Northwest Natural Gas Co. said Friday they support the project. The plan is advocated by Northwest Pipeline Corp., the sole supplier of natural gas to Washington, Oregon and Idaho.

But O. Marshall Jones, president of Seattle-based Cascade Natural Gas Corp., said his utility "cannot add our endorsement of the Alcan route."

The Alcan route would follow the trans-Alaska oil pipeline to a point south of Fairbanks, then turn east to follow the route of the Alcan Highway through Alaska and Canada.

There are two other competing pipeline proposals.

Satre said the Alcan route's use of existing highways and utility corridors would minimize environmental damage and reduce the possibility of cost overruns and construction delays.

Thorpe said the Alcan route "offers the best opportunity to work out a long-range, orderly plan for new Alaskan supplies and continued deliveries of Canadian gas to our area.

Jones, though, said Cascade has "serious reservations on the content of the proposed Canadian-U.S. treaty" which would be necessary for the Alcan project.

"The treaty does have serious loop-holes that we would like to see tightened up before lending support to either of the land pipeline proposals," Jones added.

The Arctic Gas Consortium advocates a route through the Canadian Mackenzie Delta south through Canada to the American Midwest. That route was picked as the best of the three by a Federal Power Commission administrative law judge.

El Paso-Alaska proposes a route paralleling the trans-Alaska oil pipeline. Natural gas would be liquified at Valdez, Alaska, and shipped to California. That route is favored by Alaska state officials and the Seattle Chamber of Commerce.

President Carter must choose one of the three routes to recommend to Congress.

Doyon Backs Alcan Route

ANCHORAGE (AP) — The Doyon Native regional Corp. says it is backing the Alcan natural gas route.

Doyon, the third largest regional corporation, thus becomes the first Native regional corporation to shift away from support of the El Paso proposal.

The Alaska Federation of Natives, which represents all 12 corporations, endorsed El Paso's project more than a year ago.

In announcing its support of Alcan on Thursday, Doyon President Tim Wallis said that route would give Doyon two opportunities for transporting any natural gas found in the Kandik Basin lands owned by Doyon.

3/14/77

Southeast Alaska Empire, Juneau, Alaska, Mond

Hammond Dismisses Pact Critics

By G. MICHAEL HARMON
Associated Press Writer

Gov. Jay Hammond responded formally for the first time Friday night to the sudden revival of attacks from Democratic legislators on administration-negotiated contracts for the sale of Alaska's royalty share of Prudhoe Bay natural gas.

The new exchange between the Republican administration and Democratic critics blew new life into a gas contract debate which appeared to have died more than a week ago with legislature approval of the pacts

Hammond's response largely dismissed the jab aimed at the integrity of Tenneco-Alaska Inc., the biggest beneficiary of the contracts. But the campaign picked up support from outspoken Democrats who appeared unlikely to let the issue end with one prepared statement from the governor.

Hammond's comments came in response to a harshly-worded letter from Senate Resources Chairman Kay Poland, D-Kodiak, branding Tenneco as a company which "may well be accused of profiteering in the face of a national crisis."

Poland began her attack alone Thursday, but the formal letter to Hammond on Friday also included the signatures of Democratic Sens. Chancy Croft of Anchorage, John Huber of Fairbanks, Pete Meland of Sitka and surprisingly Republican John Butrovich of Fairbanks.

Croft, prominently mentioned as a 1978 gubernatorial candidate, and gadfly Huber have been long-time, persistent critics of the contracts which originally were advertised by Hammond as a vehicle by which to pick up polical lobbying support and a national constitutency for the all-Alaska gasline route of El Paso Natural Gas Co.

Under the contracts, Tenneco receives a full half of the state's 2.6 trillion cubic feet of Prudhoe Bay royalty gas while El Paso and Southern Natural Gas Co. divide the other 50 per cent.

Poland pulled the trigger on the renewed battle, but Tenneco itself provided the ammunition with the lawsuit-prompted admission that it may have violated federal law.

A veteran of seven years in the Senate, Poland called for cancellation of the Tenneco pact based on the firm's written statement that it may have improperly diverted massive amounts of natural gas from the regulated interstate market to the unregulated and more profitable intrastate market.

Information on diversion from midwest customers to a Tenneco subsidiary in Texas contained in Tenneco filings before the U.S. Securities and Exchange Commission was disclosed by the New York Times. The Times said the diversions could total as much as 350 billion cubic feet.

Diverted to the intrastate Texas market, Tenneco could sell the gas for nearly twice as much as in the Federal Power Commission-depressed interstate market.

Tenneco made the disclosures during the course of a suit filed by Standard Oil Co. of Indiana, accusing the transmission company with failing to provide gas promised in a contract.

In one document, Tenneco said "it appears that such gas was released under a variety of procedures, some of which involve transactions which may have failed to meet all the regulatory requirements therefor under the Natural Gas Act."

Expressing shock at the disclosure, Poland fired off her first salvo two days ago, saying "it's a mystery to me to see how we can expect a company with such a tarnished reputation to have political clout."

Based on the admission, she called on Hammond not to sign the Tenneco contract, but quickly learned that all the pacts had been formally inked before they even were submitted to the legislature.

Undeterred, however, Poland on Friday called wrote Hammond a letter, called her committee together and won the support of a majority.

Poland said she felt personally affronted by the company's conduct because she had voted for the contracts "in spite of considerable personal reservations" about administration claims that the pacts would generate "an unspecified amount of persuasive political support" for the all-Alaska route.

Northwest hits route decision 3/14

By ROSEMARY SHINOHARA
Daily News Staff Writer

The chief executive officer of Northwest Pipeline Corp. says he thinks the initial North Slope gas pipeline decision made by an administrative law judge was "in bad taste."

John G. McMillian, whose company was the one most severely trounced upon in the first round of decision-making on a three-way competition for a gas pipeline project, says "I think we'll have a more sympathetic ear" before the administrative departments that will also make recommendations.

NORTHWEST HAS CHARGED that the recommendation in favor of Arctic Gas Co. made by Federal Power Commission law judge Nahum Litt was biased.

"There was no finding of facts and conclusions of law. He was an advocate for Arctic Gas," McMillian said in an interview last week. Because of the alleged bias, Northwest has officially requested that the FPC avoid any communication with the judge and his staff while the issue is under consideration by the full commission.

Judge Litt's recommendation said the Arctic Gas proposal, across northern Alaska and down the Mackenzie River valley in Canada, was clearly superior. He said El Paso Natural Gas Co.'s proposed trans-Alaska pipeline and liquefied natural gas tanker system was also viable, but Northwest's proposed Alcan pipeline wasn't.

"WE THINK the decision will have a backlash effect," McMillian said.

Under the Alaska Transportation Procedures Act of 1976, the Federal Power Commission makes its findings by May and other federal agencies have until July to make their sentiments known to the President. President Carter has said he will decide by Sept. 30 on the issue, and then the matter is before Congress to accept or reject.

In Canada, Justice Thomas Berger's report on potential social and environmental impacts of a trans-Canada gasline is due next month or in May. "We think it will say that Arctic Gas is going to have a heck of a problem, and won't be able to build in the Mackenzie Valley for years," McMillian said.

NORTHWEST WAS criticized most strongly by Judge Litt for having what he termed an undersized pipeline. Now, Northwest has submitted a proposal for a larger, 48-inch pipeline to the National Energy Board in Canada.

"We think with the 48-inch line we'll come out even with Arctic or a little ahead," McMillian said.

While all that is speculation so far, Northwest has gained some support since the Litt decision came down.

(Continued on Page 2)

• Northwest

(Continued from Page 1)

ONE NORTHWEST utility threw its support behind the Alcan project last week, while another utility said it still has some questions about it, according to an Associated Press report.

Northwest Pipeline Corp. is the sole supplier of natural gas to Washington, Oregon and Idaho. Wendell Satre, chief of the Washington Water Power Co. of Spokane, said Friday that he supports Northwest's proposal.

O. Marshall Jones of Cascade Natural Gas Corp. of Seattle said his utility "cannot add our endorsement of the Alcan route." Jones said Cascade has "serious reservations" on the content of the proposed U.S.-Canada treaty—Cascade would like to see loopholes in the treaty tightened.

IN ALASKA, Northwest Thursday picked up the endorsement of Doyon Ltd., a Fairbanks-based native regional corporation.

So far, Northwest and its Canadian partners have spent $27 million on the chance that the Alcan route might be chosen in Canada and the U.S. for a gas pipeline.

That is less than one-fifth of the moneyhArctic Gas has spent in its longer-term proposal, McMillian said.

FPC to accept more evidence on Alcan line

Northwest Pipeline Corp. officials said Monday the Federal Power Commission decision to accept additional evidence on Alaska natural gas transportation systems is "a major breakthrough for the Alcan Pipeline Project."

The FPC ruled Friday it would accept the Salt Lake-based firm's alternative pipeline system, which would use 48-inch pipe. That plan was submitted to the Canadian National Energy Board and the FPC by Northwest after FPC hearings Judge Nahum Litt said its 42-inch pipeline system would be inadequate. He endorsed the Arctic Gas proposal for a pipeline across the Arctic National Wildlife Refuge and south through Canada, and said El Paso's pipeline-tanker proposal would be a viable option.

Northwest officials say Litt is biased in favor of the Arctic proposal.

Natives hit Canada line

By The Associated Press

Canadian and Alaska Natives blasted pipelines routed from Prudhoe Bay natural gas fields through Canada at U.S. Senate subcommittee hearings in Washington, D.C., on Thursday.

George Erasmus of the Indian Brotherhood of the Northwest Territory said routing of a natural gas pipeline through lands which may be claimed by Canadian Natives would be "genocidal in effect."

A route through those lands proposed by the Arctic Gas consortium recently was endorsed by Federal Power Commission hearings judge Nahum Litt. The judge dismissed the issue of Native claims in his endorsement, saying he did not believe Canada would permit unresolved land claims to block its national energy policy.

But Erasmus and Daniel Johnson of the Council for Yukon Indians said they would go to court if necessary to block pipelines through territory claimed by their peoples.

Erasmus said Natives in the Nirthwest Territories "do not want a pipeline and do not need it. The pipeline would destroy them as a people."

North Slope Borough Mayor Eben Hopson also testified before the Senate Interior Committee's subcommittee on public lands in support of the Canadian Native stance.

"Our government has an obligation to treat the Canadian Native land claims just as fairly as it has dealt with the Alaska Native land claims," he said.

Northwest Indians begin anti-pipeline campaign

YELLOWKNIFE, Northwest Territories (AP) — Northwest Territories Indians have begun an intensive public information campaign directed at stopping the proposed Mackenzie Valley natural gas pipeline.

"There's going to be increasing pressure on the government to delay that pipeline," Indian leader George Erasmus said in an interview here. "We're going south."

Erasmus, Northwest Territories Indian Brotherhood president, said rallies, lectures, and lobbying of politicians are planned in the south to turn public feeling against the pipeline.

"The Dene feel they have a good chance of stopping the pipeline and buying time," he added.

The Dene are the estimated 12,000 Indian people of the Mackenzie Valley. Most are status Indians represented by the brotherhood.

They say they do not want the pipeline built at least until their land claims are settled and possibly not at all. Their claim, submitted to Ottawa last fall, calls for creation of a Dene government in the resource-rich valley.

The anti-pipeline campaign comes as the pipeline issue nears a climax. The National Energy Board is holding hearings on pipeline proposals and Justice Thomas Berger of British Columbia is expected to release his report on the social, economic and environmental impacts of a Mackenzie line next month.

Ottawa has said the pipeline decision will be made by Sept. 1, the date when President Carter is to decide how to bring Alaska natural gas to southern markets. One option is to have a Mackenzie Valley line carry gas from both Alaska and the Mackenzie Delta.

Pipeline hearings also are being held in Washington.

SEAE

nday, March 21, 1977

Do Gas And Oil Mix?

Unique Gas Idea Suggested

WASHINGTON (AP) — The United States would not need a natural gas pipeline through Alaska or Canada if some gas-derived chemicals were sent through the Alaska oil pipeline, a petroleum engineer testified Friday.

"It is unfortunate that natural gas cannot be transported as such in the oil pipeline," said Sullivan S. Marsden Jr., an engineering professor at Stanford University. "However, some petrochemicals manufactured from natural gas could be transported in the pipeline with the oil, and this is the gist of our proposal."

Marsden told a House Interior subcommittee that chemical conversion plants could extract methane, make it into liquid methanol and send it down the pipeline with crude oil. Tankers would take both products to refineries in the lower 48 states and separate them again.

Methane is used for industrial fuel but not to heat homes. It also is used by the chemical industry.

"We re simply proposing that the site of the conversion plants be moved from the present locations to Prudhoe Bay," Marsden said. "This would also free a considerable amount of present natural gas production which could go into readily accessible gas transportation lines."

Marsden said the petrochemical plants could be put on reinforced concrete barges and transported to the north slope of Alaska.

Committee members used the word "fascinating" to describe his plan. But they were skeptical.

"Have the Alyeska Pipeline people expressed any interest in your proposal?" asked Chairman 'Teno Roncalio, D-Wyo.

Marsden said they have not answered his letters. But he said consumers should conclude that his plan would save them money.

"Does this really make economic sense?" asked Rep. James Weaver, D-Ore.

Marsden estimated the cost of moving the plants at $2.2 billion but said that would be cheaper than building a gas pipeline.

Testimony on the proposed gas pipeline has concentrated mainly on which route it should take.

Improper gas shifts

Tenneco's shocking admission

By ROBERT D. HERSHEY JR.

(c) 1977, New York Times News Service

WASHINGTON — Tenneco Inc., which runs one of the nation's biggest operations in natural gas, improperly diverted gas contracted to interstate customers and sent it instead to a Texas subsidiary that could charge much higher prices, the company disclosed last week.

The amount of gas covered by these transactions since 1965 appeared to be substantial, but was probably not an important factor in this winter's gas shortage.

TENNECO SAID in a filing with the Securities and Exchange Commission that it uncovered the diversions while preparing its defense against suits brought against it for failure to deliver gas to two corporate customers.

It estimated the volume sold to its Channel Industries Gas Co. subsidiary in Texas during the period was 350 billion cubic feet but said only "some" of this represented gas released from contracts for interstate sale through procedures "which may have failed to meet all regulatory requirements" under the Natural Gas Act.

A spokesman at Tenneco's Houston headquarters said he would not comment on the registration statement or on a petition Tenneco filed with the Federal Power Commission on Feb. 28.

THE PETITION sought a decision on whether additional approvals were needed and, if so, that they be granted. A copy was requested of the agency this evening but could not be immediately obtained.

An FPC official said that the commission on at least one recent occasion dealt rather severely with a case involving failure to fulfill gas contracts. She added, however, that such cases were rare and that she could not recall any companies ever admitting such conduct.

In a separate development, the FPC modified its traditional policy of permitting offshore producers of natural gas to set aside up to half their production for use in fertilizer, chemical and propane plants owned by themselves or by others.

IN A DECISION involving Tenneco and other producers, the agency rejected advice from its staff that all the gas be required to be sold to interstate pipelines. By a 3-1 vote, the commission refused to approve the set - asides outright but said the producers could apply individually. The implication was that most applications would be approved, as they have been as standard practice since the surplus years of the 1960s.

The commission had been deadlocked for weeks on the question. The compromise that produced a majority was a condition that the producers be required to shift industrial gas to the pipelines if the pipelines needed it to maintain deliveries for the highest priority uses, such as for homes and hospitals.

Commissioner Don S. Smith said he would issue a dissenting opinion.

Tenneco, the nation's 22nd largest corporation, sends large quantities of gas into the Northeast from Louisiana and Texas. Its Tenneco Oil Co. subsidiary is a major gas producer.

DIVERTING GAS earmarked for interstate pipelines would be economically advantageous since the interstate price is limited by the FPC. The highest rate permitted now, applying only to wells drilled since Jan. 1, 1975, is $1.44 per 1,000 cubic feet. The intrastate price, not subject to Federal controls, now ranges between $2 and $2.25.

Ten years ago the range for interstate gas was between 11 and 21½ cents, the FPC said.

Tenneco's disclosure came in joint registration statements covering $150 million of 25-year debentures and 4.98 million shares of common stock to be issued in acquiring the Monroe Auto Equipment Co.

The Alaska Legislature, after a stormy debate, this month approved the administration's contracts with Tenneco, El Paso and Southern Natural Gas companies to sell the state's royalty gas in exchange for political support of the all - Alaska gas pipeline proposed by El Paso.

Following the legislature's vote on the measures, it was disclosed last week in the New York Times that Tenneco had been improperly shifting its natural gas supplies to Outside markets since 1965.

The disclosure brought new charges against Tenneco and the state gas contracts by some Alaska legislators. Sen. Kay Poland of Kodiak asked how a company such as Tenneco "with a tarnished reputation" could be of any value in the current gas pipeline battle ongoing in Washington.

Here is the New York Times' Page 1 story on Tenneco's admission.

California Drops Gas Buying Hint In A Letter To Alaska Lawmakers

By CHUCK KLEESCHULTE
Empire Staff Reporter

The chief of California's Energy Resources Commission has urged Alaska lawmakers to disapprove the proposed sale of Alaska's North Slope Royalty gas.

He hinted, instead, that the state might be able to sell its gas directly to California at potentially higher wellhead prices if the contracts aren't approved.

Richard L. Maullin, chairman of the California Energy Resources Conservation and Development Commission, Jan. 31 urged the rejection of the contracts which call for the sale of Alaska's one-eighth share of Prudhoe Bay reserves to three firms, Tennessee Gas Transmission Co., Southern Gas and El Paso.

Maullin, in a letter to Sen. John Rader, Senate President and head of the Joint House-Senate Gasline Review Committee, said California is opposed to the contracts since their approval would eventually make the state 90 per cent dependent on liquified natural gas (LNG)—an unacceptable level given the newness of LNG technology.

"If the one LNG terminal California is likely to approve were to be temporarily closed down due to an equipment malfunction, trestle damage, or earthquake, the state could face major disruptions in its gas supply delivery system.

"For this and other reasons, California supports an overland gas pipeline delivery system for North Slope gas," Maullin wrote in a letter mentioned at the public hearings, but not read publically.

Maullin urged lawmakers to consider a proposal being reconsidered this winter in California which calls for the establishment of a California State gas purchasing authority which could then attempt to purchase Alaska's share of North Slope reserves—gas which could be purchased from Alaska at higher than regulated prices since the Federal Power Commission (FPC) would not have control over terms of the sale price.

"There has been a lot of strong interest in the concept here among legislators in the past month. It's likely that hearings will be called soon to formally consider such an idea, but as yet it's an idea whose birth is not yet imminent," said Robert Shinn, special assistant to Maullin this morning in Sacramento.

"In the past month a number of people have focused on the concept," Shinn said. "It may well prove to be an idea whose time has come." California under present estimates will face gas shortages in the mid 1980's.

The Alaska Royalty Oil and Gas Advisory Board at its Nov. 21 hearing on the proposed gas sale noted the possibility of such a sales agreement, but dismissed the importance of the concept given the low level of interest being shown in the proposal in California at that time.

Former FPC Commissioner Rush Moody Jr., earlier this month said such a scheme might not result in substantially higher wellhead prices under a regulated market since the FPC would continue to regulate transportation of gas and could still disapprove of a state sale to California, if the commission felt the gas price was unreasonable.

Shinn this morning said he doubted the FPC would disapprove of the contracts as long as a sale price negotiated between the two states kept the price of gas competitive with other fuels.

Interest in the idea may have been sparkled in California by release Jan. 3 of a study which reported California could lose between 900 million and 1.5 billion cubic feet of gas supplies daily in the event of a shutdown of a liquification gas reprocessing plant in California. A key ingredient of the El Paso route is the liquification of the gas, and its transport by tanker to California where it would be reprocessed at a plant at Point Conception.

The letter also implied California might be willing to switch its support from favoring an Arctic Gasline to back an Alcan route, if Alaska would give up support of the El Paso pipeline route.

Of Problems With Gas Sale

2/11/77

The sale of the state's royalty share of Prudhoe Bay natural gas in exchange for political support for an all-Alaska gasline could have and exactly opposite impact, Natural Resources Commissioner Guy Martin was warned in a confidential memorandum last year.

"There is a political problem, we think, in entering into a contract with anyone providing for political support," O. K. "Easy" Gilbreth, then director of the Divison of Oil and Gas, said in the memo dated last March 15. "The danger in this case is particularly great, as the liability of contracting with an oil (or gas) company for political support of the trans-Alaska gas pipeline is like trying to stimulate a fire by putting (carbon dioxide) on it."

Because of a probable adverse reaction from the public and federal government, Gilbreth said, the proposed sale to Tenneco, Southern Natural Gas and El Paso "may be a much bigger liability than asset merely from the political standpoint."

The memo from Gilbreth, now director of the newly-created Division of Energy and Mineral Development, was obtained by veteran capitol reporter Joe La Rocca and published in this week's All-Alaska Weekly.

Gilbreth's memo also raised a number of largely technical and administrative objections to the proposed sale by the legislature, most of which appear to have been accommodated in the contracts submitted for approval by the administration to the legislature.

But one Gilbreth recommendation which was not adopted was his proposal to commit no more than 33 per cent of the state's estimated 2.6 trillion cubic feet of Prudhoe Bay gas to Tenneco.

"If the political motivation is so important, why not commit to five or more East Coast or Southern U.S. users and get five times the benefit," Gilbreth wrote.

SEAE 2/11/77 Southeast Alaska Empi

Stop Arctic Movement

Hastily Called Meeting Will Try To Stem Tide

By G. MICHAEL HARMON
Associated Press Writer

A high-ranking delegation of officials from the state, El Paso Natural Gas Co. and Alcan Pipeline Corp. will appear before a hastily-called congressional hearing next week in an effort to "slow down" momentum for Arctic Gas's Canadian Gasline route.

Informed sources said the hearing will be used as a vehicle to counter a recently-launched campaign by Artic to convince the Carter administration to speed up the pipeline decision-making process based on momentum gained from the recent ruling of a Federal Power Commission judge in favor of the Canadian route for the transmission of Prudhoe Bay natural gas to the Midwest.

In an effort to counter the alleged maneuver, El Paso and Alcan supporters will initiate their own campaign before a House Interior Committee Subcommittee on Public Lands hearing in Washington, D.C. Feb. 17.

The campaign, sources said, will be aimed at challenging the FPC judge's decision on the grounds that it did not comply with either the letter or the spirit of the Alaska natural gas pipeline procedural bill passed by Congress last year.

Arctic spokesman Dave Harbour called the charge that his firm was trying to press the Carter administration for a fast decision "patently ridiculous."

Spokesmen from the state, El Paso, Alcan and the Organization for the Management of Alaska Resources all called the one-day hearing a significant and major development in the pipeline debate, but the view was not unanimous.

Alaska Congressman Don Young is a member of the subcommittee, but will not attend the hearing. He has opted instead to spend the week in Alaska for a series of meetings and speeches.

Alaska Sens. Ted Stevens and Mike Gravel also did not plan to attend.

Bill Horn, a consultant to the Republican minority caucus, said Young "expressed his displeasure that the hearing would be set up on short notice when he was out of town, but was assured by the majority council for the subcommittee that these were nothing more than informational hearings for new members."

Rader Predicts Gas Sale Okay

SAE 1/13/77

By The Associated Press

Senate President John Rader predicts proposed contracts for the sale of Alaska's share of Prudhoe Bay natural gas will face little opposition in his chamber.

"I assume it will be supported without a great deal of difficulty," the Anchorage Democrat said.

The contract generally follows a resolution passed last year by the joint Senate and House Gas Pipeline Impact Committee on sale of the gas, Rader said.

Gov. Jay Hammond's administration negotiated the tentative contracts wtih Tenneco, El Paso Natural Gas and Southern Natural Resources in exchange for their support for the trans-Alaska pipeline proposal before Congress. However, the contracts must be approved by the legislature.

Rader said consideration of the contracts will be one of his top priorities for the session.

On Wednesday, he appointed a a special committee to review the contracts, and he has asked House Speaker Hugh Malone, D-Kenai, to appoint a similar committee.

Malone said he has not raised the proposal with the House Democratic caucus, but added that it "sounds like a good idea."

In the House, where Democrats are in control, approval of the contracts may not come as easily, however.

Malone said he does not know if any opposition will arise, but added that he has at least one queston about the plan.

When the gas is used by the companies for consumers in the Lower 48, communities there may become economically dependent on it, Malone said.

Teamsters protest Canadian gas line

ADN 2/10/77

By The Associated Press

The International Brotherhood of Teamsters Wednesday went to the Federal Power Commission to protest a hearing judge's endorsement of a trans - Canada route for Prudhoe Bay natural gas.

Teamster General President Frank Fitzsimmons told the FPC the union believes natural gas discovered within the United States should be transported within U.S. boundaries.

The union has endorsed the so-called "all-Alaska" natural gas pipeline and tanker route proposed by El Paso Natural Gas Co. for transport of Prudhoe Bay fuel.

Fitzsimmons said Administrative Law Judge Nahum Litt's endorsement of the Arctic Gas proposal for a route through Canada ignores the interests of Alaskans. The Teamster official said the El Paso plan would provide permanent jobs for Alaskans at liquification plants required to prepare the fuel for tanker transport.

Among Fitzsimmons' objections to a pipeline route through Canada was his contention that with a commodity as valuable as natural gas, relations between Canada and the United States "cannot help but be strained."

The Teamster leader also said the interests of Alaska and its citizens must be given greater consideration in the route decision.

Fitzsimmons said even in the United States, no institution has "been able to compel delivery of even a reasonable amount of gas from one area to another."

Violence reported in Sea-Land strike

By The Associated Press

Veiled Threats?

Feb 24 1977

Stevens Challenges Canadians On Gas Issue

By MARK PANITCH
Washington Correspondent

WASHINGTON—Alaska Senator Ted Stevens today challenged Canada to speed up its gas pipeline decision-making process in order to conform to the expedited U.S. schedule passed by Congress last year.

Stevens told a well-attended press conference in the Capitol that "A gas pipeline route through Canada, although facilitated through 195 miles in Alaska, could be delayed for 2,035 miles of construction on Canadian soil."

At the same time, Stevens issued a veiled threat to the rest of the country that if Alaska does not get a favorable pipeline settlement it could reduce the flow of Prudhoe Bay gas.

"Alaska could follow the procedure of the Texas Railroad Commission," he said in response to a question about Alaska's options from a Canadian reporter.

Q. What does that mean?

A. We could cut the flow of gas to make a pipeline uneconomical.

He then noted that federal pre-emption of Alaskan control over gas flow would require that the same preemption be extended to Texas, Louisiana, Oklahoma and other gas-producing states. "But I'm not threatening," he said.

Stevens said the press conference was called "to send a message to the White House" in time for a planned visit by Canadian Prime Minister Pierre Elliot Trudeau next week. He said he was trying to arrange a Capitol Hill meeting between members of Congress and Trudeau to discuss the gas line.

An informal poll of Canadian reporters immediately after the news conference yielded two major themes:

—If Canada were to accept Steven's challenge and expedite its pipeline process that would virtually guarantee the approval of the Arctic Gas project.

—In the words of one reporter, "We don't need Ted Stevens telling us what to do in Canada."

A third Canadian reporter combined the two with the comment that, "He is obviously trying to make somebody in Ottawa mad, hoping they'll dig in their heels and do nothing in response to him and this kind of assault."

In a prepared statement, Stevens described the Canadian decision-making process, noting there "is no specific time frame upon which to rely regarding eventual approval of a pipeline. We simply cannot assume Canadian approval in time to integrate construction with our expedited decision-making process."

Stevens also questioned whether the recently-signed hydrocarbon treaty between the U.S. and Canada will prevent discriminatory taxation of U.S. gas. "There is a real difference of opinion on this issue," he said.

"That issue is up to the Canadians, not the FPC, our President or the Congress," he said.

Stevens indicated he thought the biggest single problem facing Canadian approval of a gas pipeline through the Mackenzie Valley—the route proposed by Arctic Gas—is the settlement of native land claims in that region.

"The United States had its own land claims settlement," he said. "which culminated a 15-year process with the passage of the Alaska Native Claims Settlement Act in 1971. Every indication leads me to believe that the Canadian land claims problem is at least as complicated and will take at least as long to settle."

Canadian priorities, he said, would be "Canada's national interest, which is logical." But this could mean construction of the Polar Gas pipeline from the high Arctic Islands north of central Canada "where exploration has been much more successful than in the Mackenzie Delta."

Federal Power Commission Administrative Law Judge Nahum Litt came under attack also. "The FPC has its head in the ground as far as the decision affected Canada. What sense does it make to expedite the decision here in the U.S. when there is no similar sense of urgency in Canada?" he asked.

On other issues Stevens:

—Defended the proposed El Paso Gas liquefied natural gas system as the "most flexible" proposal. "When the Prudhoe Bay fields are exhausted the tankers will still be useful to move gas from offshore deposits to lower-48 markets."

—Pointed out that gas moving from the West Coast to the East Coast under the recently-passed natural gas act is a demonstration of the displacement principle that El Paso plans to use to get Alaska gas benefits to Eastern customers.

—Linked problems getting offloading facilities for Alaskan oil in California to that state's desire to get Alaskan gas. "They're holding up the oil off-loading facilities to get more of our gas." He said that California laws could be preempted by the federal government if they put a "plug in the pass" that Alaskan gas must go through.

—Defended the Arctic National Wildlife Range as a place "Alaska is trying to save." The range, he said, was the brainchild of "the ladies of the Fairbanks garden club" during the 1950's.

Stevens also made what appeared to be an unusual conciliatory gesture toward the conservation organizations that are fighting the Arctic pipeline. He blamed delay in construction in the trans Alaska oil pipeline on "lack of authority to approve right of way wider than 50 feet" instead of the conservationists.

Croft Expects Royalty Gas Trouble

By CHUCK KLEESCHULTE
Empire Staff Reporter

A member of a special committee set up in the state's Senate Wednesday to consider the proposed sale of Alaska's one-eighth share of North Slope natural gas this morning predicted the state's legislature would look at the sale critically and possibly disagree with several of its key tenets.

State Sen. Chancy Croft, D-Anchorage, said that the agreement worked out between the Gov. Jay Hammond and three natural gas distribution firms, Tennessee Gas Co., Southern Natural Gas Co. and the El Paso Natural Gas Co. failed to establish any criterion the companies must meet to uphold their end of a key section of the contract.

Hammond in announcing the royalty gas sale Nov. 12 said that the contract with the three firms was being inked at this time mainly so the state could win added political support in its battle to gain acceptance for El Paso's proposed All-Alaska route for the gas line.

Croft complains, however, that no where in the contract is the effort the firms must make on behalf of the El Paso route listed or explained.

Guy R. Martin, commissioner of the State's Department of Natural Resources and a chief negotiator on the royalty gas pact, this morning admitted the contract did not include specific measures to indicate the support the firms must show for the El Paso plan.

But Martin said that such measures were not necessary since the contract would be nulified unless the El Paso Alaska line was selected by the Federal Power Commission, the President and later probably by Congress.

"Before the state's Royalty Board we discussed this issue and decided we couldn't set a series of standards, only use the performance criterion of whether the firm's support won the state the selection of the El Paso route," Martin said.

Croft this morning questioned whether the state should ever sell its resources just to obtain political support for its objectives. "I think we in the legislature need to make a fundamental policy decision whether the contract is a good one, and also whether the objectives for it being made are good ones.

"I'm sure we'll give the issue close scrunity," Croft said.

Croft also said he felt the proposed gas sale to El Paso might not be in the state's best interest since state Gas Line Task Force studies indicate that El Paso's proposed project will not deliver gas at the lowest cost to lower 48 cities. The Hammond Administration argues the El Paso project, however, will provide the greatest economic benefit to the state and provide the country the greatest net benefit when all factors are considered.

Croft's attitude contrasts with that of Senate President John Rader who Tuesday said that he felt Hammond's royalty agreement closely followed directions given by the legislature to the governor last session. Rader said his preliminary review of the contract indicated it was a good pack for the state and he predicted the legislature would approve of the sale agreement. (See earlier story, P. 10)

Legislators this morning mostly assumed a "wait and see" attitude toward the contract which was handed out to legislators Wednesday with over a dozen supporting documents included.

Juneau's Sen. Bill Ray this morning said he was still withholding comment on the pact until he has had an opportunity to clarify several sections of the contract. Several House lawmakers also declined comment until they could read the supporting documents.

House Speaker Hugh Malone, D-Kenai, this morning said he would appoint Friday a special committee to participate in joint initial hearings with the senate on the sale agreement. After the initial hearings the contracts may be considered by both the Finance and Natural Resources Committees in both the House and Senate.

Special House Panel Created To Review The Royalty Gas Sale

SAE 1/14

By The Associated Press

A five-member special committee was appointed in the state House today to review proposed contracts for the sale of Alaska's share of Prudhoe Bay natural gas.

Gov. Jay Hammond's administration negotiated the tentative contracts with Tenneco, El Paso Natural Gas and Southern Natural Resources in exchange for their support for the transAlaska gas pipeline proposal before Congress. However, the contracts must be approved by the legislature.

Named to the House committee were Clark Gruening, D-Anchorage; C.V., Chatterton, R-Anchorage; Charles Parr, D-Fairbanks; Joe McKinnon, D-Anchorage; and Joe Hayes, R-Anchorage. Gruening will chair the group.

A similar committee was named in the Senate on Wednesday Senate President John Rader, the Anchorage Democrat who joined Republican coalition to rule the Senate, predicted the proposed contracts would face little opposition in his chamber.

But in the House, where Democrats are in control, approval of th contracts may not come as easily. Rep. Parr has questioned what th companies would promise to do in return for a share of the gas. H also has indicated he doubts whether their support "would make th much difference" in Congress.

The Senate committee will meet Jan. 31 through Feb. 2, but th House committee has not set a meeting date.

Juneau Perspective

Royalty Gas

By Joe La Rocca

One day last week the Hammond administration dropped on all legislators' desks a voluminous file of data designed to elicit their support for the governor's proposal to sell the state's surplus royalty gas from Prudhoe Bay — valued at $1.3 billion — to three pipeline companies.

Under state law, the sale can't be consummated unless it's approved by the legislature.

The proposed sale of the royalty gas — totalling an estimated 2.3 trillion cubic feet — has been the subject of intense and extended negotiations between the Hammond administration and the prospective buyers who have agreed, as a binding condition of the sale, to support the state's choice of an all-Alaska gas pipeline route during the continuing political jockeying among the three competing gas transportation systems for certification by the federal government.

But missing from the documents submitted to the legislature by the administration is pertinent information recently developed by the State Department of Revenue which shows that the proposed Alcan pipeline route — which the administration says is its second choice — offers vastly more superior benefits than shown by the earlier study on which the state's choice of El Paso's proposed All-Alaska route was based.

The new data reveals, for example, that the Alcan pipeline can be in operation more than a year earlier; would cost nearly $2 billion less; and could delivery North Slope gas to lower 48 markets far more cheaply than El Paso's proposed pipeline-tanker system.

At the same time, the missing data shows, the Alcan pipeline would result in far less wasted oil than the El Paso system because it would economically permit reduced volumes of gas production during the early development of the Prudhoe oilfield, thus resulting in the recovery of greater volumes of oil over its producing lifetime.

These data are mysteriously absent from the massive documentation which the administration has provided the legislature to guide its review of the governor's proposed royalty gas sale contracts.

The suppressed information is contained in a recent unpublicized addendum to the comparative economic study of the three competing pipeline systems which was prepared by the State Revenue Department and released last November. Extensive data from the initial study are contained in the documents submitted to the legislature, but the information from the addendum — which was completed late in December — is not, presumably because it would undermine, rather than bolster, the state's decision in favor of the El Paso route.

The study addendum describes a scenario which its author calls the "Alcan incremental volume build-up case." In that scenario, the pump stations for the Alcan pipeline would be built in three incremental phases, permitting a volumetric throughput starting at 1.35 billion British Thermal Units, or BTU, per day, during the first year of operation; increasing to 1.8 billion BTU per day during the second year of operation; and reaching its maximum throughput of 2.7 BTU during the third year of operation.

One major advantage, alluded to earlier, deriving exclusively from the incremental volume build-up case is its low initial throughput, which would permit both the state and the producers to monitor and estimate better the effect of early gas production upon ultimate oil recovery. Since the amount of oil which can be recovered from the Prudhoe formation is inversely proportional to the level of gas production, low initial gas production would help to ensure the fullest ultimate recovery of oil. As the oil is depleted, gas production can be gradually stepped up — without inhibiting oil recovery — to accommodate the incremental build-up of the Alcan gas pipeline's capacity.

This kind of critical energy and economic conservation can be realized only by means of the Alcan incremental volume build-up scenario. Every other option has the opposite effect of wasting substantial volumes of energy resources.

Another major advantage deriving from the incremental build-up case is the lower initial capitalized cost of the Alcan system, which would permit an estimated over-all savings of $1.7 billion over the cost of the El Paso system. And because initial construction time requirements would be shorter, the Alcan system could begin operation one to 1½ years earlier, according to the study addendum.

Finally — and perhaps most importantly — calculations show that the estimated average delivered price of North Slope gas over a 25-year production period would be substantially lower than the El Paso system could achieve. And since the deregulation of gas prices by Congress appears inevitable by the time any system begins operation, the much lower transportation costs achieved through the Alcan system would result in proportionately higher wellhead values and, in turn, greater state royalty and severance tax revenues.

Since, in the economic world of give and take, there is no free lunch, there is one temporary disadvantage accruing to the Alcan incremental build-up scenario. While the average delivered price of Prudhoe Bay gas over the 25-year period is estimated at $1.88 per million BTU, its cost during the first two years of production would be very high, ranging from $3.10 down to $2.69 per million BTU, before beginning a precipitous decline over the ensuing years to $1.22 per million BTU.

Hammond administration officials will doubtless argue that the data from the study addendum were not included in the documents which they submitted to the legislature because of doubts that the Federal Power Commission would allow the high prices which the gas would command during the first two years of operation. But that argument ignores, first of all, the virtual certainty that natural gas prices will be deregulated before any of the three systems goes into operation; and secondly, it assumes a value judgment which only the legislature is legally entitled to make, based upon the fullest and best information available to it.

There is another aspect of the administration's decision to support the El Paso pipeline which has been ignored or deemphasized and that is the fact the best El Paso case put forward

–Continued on page 12

Perspective . . .

–Continued from page 4

by the administration assumes that the state would own and operate the entire LNG tanker fleet needed to carry liquified gas from Point Gravina to the West Coast. It further assumes that 80% of the $2½ to $3 billion needed to finance an eight-tanker LNG fleet would be taken from the state's permanent fund.

There's little doubt that the Tenth Alaska Legislature will approve the governor's royalty gas contracts, thus reaffirming the Ninth Legislature's resolved support for the El Paso route. To do otherwise would be impolitic, particularly in light of the results of a current poll released last weekend by the Hammond administration.

It purports to show that 53% of Alaskans favor the El Paso route, while only 11% prefer the Alcan route.

How could it be otherwise when two successive state administrations have manipulated, distorted and even suppressed the true facts and circumstances surrounding the gas pipeline question?

Southern, Tenneco Begin Tentative Lobby Efforts

By MARK PANITCH
Washington Correspondent

WASHINGTON—The two gas pipeline companies that hope they share the majority of Alaska's north slope royalty gas are taking their first tentative steps to encourage Congress and the Carter administration to support a trans-Alaska gas pipeline proposed by the El Paso Natural Gas Co.

Alaska signed preliminary agreements to sell its royalty gas last November.

The two companies, Southern Natural and Tennessee Gas Transmission, known as Tenneco, expect to work through lobbyists, local utilities and congressmen whose districts they serve to influence the gas pipeline selection process.

At stake for the two companies is about two trillion cubic feet of the state's more than three trillion cubic foot royalty share. The balance would go to El Paso. With both companies, but especially Southern, hard hit by the unusually cold winter in the East and South the royalty gas is fast becoming an increasingly valuable prize.

But so far the most visible lobbying effort in favor of the state's official position continues to be headed by Gary Frink, a lawyer-lobbyist on contract to the Organization to Manager Alaska's Resources (OMAR).

Frink has two full-time employes, a lawyer and a researcher, working on the Alaska gas issue. He has strong ties to the congressional Democratic establishment and to organized labor as well.

Both Tenneco and Southern plan Washington lobbying efforts, but the two companies appear to be taking somewhat different approaches to the issue.

Both companies appear, at least somewhat, to take the position that they can not begin an intensive campaign until their agreements for royalty gas are ratified by the legislature. That process began Monday with joint House-Senate hearings in Juneau.

Tenneco has hired a Washington law firm to represent it on the Alaska gas issue, with a former high-ranking Democratic Senate staff member apparently in charge of the lobbying effort.

The company already has a well staffed and efficient Washington office. It remains to be seen what effect the change in administration will have, though, since the company reportedly had excellent connections to the departed Nixon-Ford administration. The appointment of the Democratic lawyer could offset other political disadvantages.

Walter Stark, Southern vice president for public relations, said his company has no immediate plans to set up a Washington office for the Birmingham-based operation. "The matter has to be approved by the state legislature" before we can do anything, he said. Southern executives are in Washington "nearly every week," he said. He indicated there are no immediate plans to hire anyone to work full-time on Alaska, although "I anticipate doing a lot of work in Washington myself."

There was one thing he was definite about, though. "The people in the Southeast are very enthusiastic about getting some of that Alaska gas."

Southern serves all or part of Mississippi, Alabama, Georgia (including Plains, President Jimmy Carter's home), South Carolina, Tennessee, Louisiana and Florida.

There have been meetings between Stevens and his staff and both Tenneco and Southern officials. There have apparently been fewer contacts with Sen. Mike Gravel and his staff.

Frink says he has not been contacted by either Tenneco or Southern and there are no arrangements so far to coordinate their lobbying campaigns. He says he found out that Tenneco had hired a lobbyist to work on Alaska gas from an acquaintance at a chance meeting.

While about three trillion cubic feet of royalty gas could go to Southern, Tenneco and El Paso, there is still another 23 trillion cubic feet available for commercial sale by the producers after the state takes its one-eighth royalty.

ADN 1/19/77

Quick action seen on royalty gas sale

From Our Juneau Bureau

JUNEAU — With state Senate President John Rader pushing for quick action, the legislature may approve as early as mid-February contracts to sell Alaska royalty natural gas in exchange for support of an all-Alaska gas line.

Public hearings on the contracts will be held Jan. 31-Feb. 2, and Rader, D-Dist. J, predicted that within a day or two following the hearings, contracts would go to House and Senate committees for study.

RADER warned a special royalty gas committee Tuesday, "I'm concerned about public reaction to any unseemly delay in this matter." The Senate president has said he considers approval of the contracts one of his top priorities for this legislative session.

Senate and House royalty gas committees will conduct joint hearings in Juneau, and state officials and legislative consultants will be asked to evaluate the contracts.

Gov. Jay S. Hammond late last year contracted with three petroleum companies to sell Alaska's share of the natural gas which is to be pumped from Prudhoe Bay, in exchange for the companies' support of a trans-Alaska route for the pipeline. Three routes have been proposed for a pipeline, and the Federal Power Commission will make its recommendation of a route to President Carter in several months. The administrative law judge of the FPC will make his recommendation at about the same time the state is conducting hearings into the contracts.

IF THE trans-Alaska route is not chosen the state's contracts with Tenneco Alaska, Southern Natural Gas and El Paso Natural Gas would not be binding.

The legislature will pay three out-of-state consultants to help it examine the contracts and question administration officials.

Joe Kilgore will represent Walter Levy Associates, which is on a $45,000 retainer with the legislature. Rush Moody, a Washington attorney and former FPC commissioner, will be paid for his participation in the three-day hearings. And Carl Swanson, of Boston - headquartered Jensen Associates, an energy planning and economic analysis firm, will be paid $19,000.

THE PRESIDENT may make his gas line route decision by Sept. 1, and Congress then has 60 days to take action on the proposal.

Here are the three gas line proposals: El Paso is pushing for authority to build a pipeline from Prudhoe Bay to Prince William Sound; Arctic Gas is seeking permission to build a pipeline from the gas field into Canada and then down to the midwestern United States, and Northwest Pipeline Co. wants to build a pipeline about as far south as Fairbanks parallel to the oil pipeline route and then following the Alaska Highway to the Lower 48.

Rader's estimate of early action on the contracts is echoed by House Speaker Hugh Malone, D-Kenai. Malone said Tuesday he expected the contracts to be acted upon by the legislature at least by the end of next month.

Litt decision 'hard to overturn'

By ROSEMARY SHINOHARA
Daily News Staff Writer

The Federal Power Commission will find it hard to overturn the recommendation of administrative law judge Nahum Litt in favor of Arctic Gas Co. in the view of a California gas company executive who sits in the middle of the controversy.

Keith McKinney, vice president and general manager of both Pacific Alaska LNG and Western LNG Terminal Co., will be responsible for the southern end of El Paso Natural Gas Co.'s pipeline and tanker project to haul North Slope gas, if it is approved.

AT THE SAME TIME, parent and sister companies of his company are part of the Arctic Gas consortium. "I'm neutral," McKinney said in an interview. His Western LNG Terminal Co. has a contract to provide a Southern California terminal for El Paso if it wins.

He believes the full FPC, which makes the next move in the gas pipeline controversy, could make minor changes, but will do nothing major to alter the conclusions reached by Judge Litt.

"I think because of the very careful job he's done, it would be surprising if his decision, at least as to transportation mode, didn't hold up," McKinney said.

THE ALCAN PROJECT proposed by Northwest Pipeline Corp. of Salt Lake City never matched the others in sophistication, and McKinney said he thinks it unlikely the Northwest proposal could be "resurrected to overcome a Litt decision."

The day the Litt decision came down, the Pacific Lighting Gas Development Co., a relative of McKinney's companies, approached Atlantic Richfield Co. to discuss purchasing ARCO's North Slope gas.

Pacific Lighting and ARCO had negotiated a sales commitment earlier, but because the arrangement called for Pacific Lighting to advance substantial amounts of money ahead of time, the California Public Utilities Commission opposed it.

THE LACK OF sales contracts between the owners of Prudhoe Bay gas and gas distributors was cited by Litt as a problem for the deliberation on which transportation system would be best.

"It will be essential for them to sell it (the gas) before too long," McKinney said. Before transportation systems can be finally settled, the destination of the gas has to be determined. Litt also indicated that gas companies which will receive the gas will need to participate in financing the transportation project.

Western LNG Terminal Co., became involved in the El Paso project because the company was planning two other liquefied natural gas (LNG) terminals in California to handle Cook Inlet natural gas and Indonesian gas.

EL PASO was looking up and down the western coastline for a terminal site at the same time the Pacific Lighting companies were planning the other two terminals, McKinney said.
terminals, McKinney said.

By handling all of the terminals, Western LNG Co. may be able to combine them, for a total of two terminals. None of the projects have received final approvals from the California state government, or from Alaska's government, which must approve the Cook Inlet LNG project.

But with the natural gas shortages being experienced by the cold weather states in the East this winter, California officials seem anxious to assure supplies won't run out in their state, McKinney said.

THE PERMIT PROCESS in California will probably be expedited so the new gas supplies can be on line in 1980, he said.

"If we don't get some new gas supplies by the end of 1980, we'll be out of gas for some customers that need it whether it's cold or not," he said.

California already favors the projects—it's a question of how many terminals will be built, and where they will go, McKinney said.

ADN 2/7/77

Compare .....

Gas shortage cost: 1.5 million jobs

WASHINGTON — Between 1.2 million and 1.57 million persons — most of them in Ohio and New York — have been laid off their jobs because of the natural gas shortage, new federal and state reports indicate.

A report given White House energy advisor James R. Schlesinger over the weekend shows gas-shortage unemployment in at least 17 states, ranging from about 1,000 each in Mississippi and Wisconsin to an estimated 250,000 in New York and 550,000 to one million in Ohio. The report is based on estimates prepared by the Commerce Department and by state agencies.

ADN 2/8/77

A similar, 300-bed jail — at a cost of $38 million — was proposed by the Hammond administration last year as part of a $30 million bond package. That was pared to $10 million by the legislature, and only $2 million was allotted for the Anchorage jail.

STATE VOTERS defeated the bond proposition at the polls in November.



Wonzo, with his parents Mr. and left, receives a check for winning test. Billy led all carriers by sell- iptions. Presenting the check are Hugh Fleischer, co-chairmen of Newspapers, a citizens organiza- horning paper gain new circula- a party for Billy and other top offices earlier this week.

Gas contracts may aid state

By G. MICHAEL HARMON
Associated Press Writer

JUNEAU — The president of Arctic Gas Co. agreed Thursday that the sale of state royalty gas to gain political support for the all-Alaska pipeline route of arch-rival El Paso Natural Gas Co. will have "some impact" in the lower 48.

"In all candor and in my opinion, the contracts are pretty good from the standpoint of what the state wants," Robert Ward told legislative hearings on the administration - negotiated contracts with El Paso, Tenneco and Southern Natural Gas Co.

Ward said there was "no question" that El Paso, like any of the three competing pipeline firms, would be helped by the the commitment of Alaska's one-eighth royalty share of Prudhoe Bay natural gas, but added that he could not quantify the potential impact on the upcoming federal route decision.

"They've got to have some impact," said Ward, whose firm is proposing a pipeline route from Prudhoe Bay across the Arctic Wildlife range and then down through Canada to the Midwest. "Anybody who says they won't is wrong. Whether they are necessary, I don't know. I'm not convinced they will help that much, but they won't hurt."

Ward also said he thought the state was "pretty well protected under the contracts," in getting the highest price for its gas.

But he also said there was "no question" that Congress would endorse his firm's proposal while acknowledging that Arctic faces major problems in winning Canadian approval of its route.

Ward's assessment was in conflict with other testimony Thursday from Morris Thompson, vice president of Northwest Pipeline Corp., who said the contracts were a bad deal for the state and would not be decisive in the route decision.

Northwest's proposed Alcan pipeline route would extend from Prudhoe Bay to Fairbanks and then down the Alaska Highway to Washington state.

Thompson said the sale of Alaska's royalty gas could have played a role in the pipeline route decision before passage late last year by Congress of a gasline

(Continued on Page 2)

Lt. Governor will campaign for Alaska line

Alaska Lt. Gov. Lowell Thomas Jr. will carry the state's position favoring a "Trans - Alaska, All - American system" to transport North Slope natural gas to market to Washington Feb. 15 and 16.

Thomas said Thursday he plans to spend one - half hour with Interior Secretary Cecil Andrus, and he also will visit the Treasury and the Transportation Departments.

The trip to the nation's capital will be a prelude to a promotional tour Thomas plans to make in mid - March on behalf of El Paso Natural Gas Co.'s proposal for a trans - Alaska gas pipeline and tanker system.

Thomas said he will spend up to 30 days campaigning for the project on a trip that will be partially financed by himself, and partly by the state.

(Continued on Page 2)

• Royalty gas

(Continued from Page 1)

procedural bill, but not now.

"Now the executive branch makes the selection with Congress having only 60 days to vote it up or down," Thompson. "And I feel any selection by the President will be approved.

"What impact will political clout have upon a regulatory agency (the Federal Power Commission) and a new President?"

Croft Questions Royalty Gas Sale Ethics

By G. MICHAEL HARMON
Associated Press Writer

An influential state lawmaker has called on Gov. Jay Hammond to answer "serious ethical questions" about his proposal for the sale of Alaska's share of Prudhoe Bay natural gas.

Sen. Chancy Croft, D-Anchorage, issued the invitation Tuesday in voicing major reservations about the Hammond administration recommendation to peddle the state's royalty gas to three firms in exchange for their support of El Paso Natural Gas's proposed all-Alaska pipeline.

"I see a lot of serious ethical questions about the contracts," said Croft, a member of a special Senate committee appointed to review the deal. "The major question is whether it's a good public policy of the state to sell its resources for political influence.

"I think we (the legislature) will want to examine very closely whether that's the way America's largest resource extracting state should handle its public policy."

Croft, a former state Senate President and a potential candidate for governor in 1978, said Hammond never has addressed the ethical issues raised by the proposed contracts currently up for approval by the legislature.

"I would like to know why this administration feels the only way the desires of the people of Alaska can be implemented is by hiring special interests to lobby in our behalf," Croft said. "I want to know how the administration feels about that."

Croft also said he was concerned because the proposed contracts between the state and Tenneco Alaska, Inc., Southern Natural Gas Co. and El Paso Natural Gas Co. were the result of secret negotiations

"We may or may not have gotten the highest possible price for our gas in the contracts, but even assuming we did, the fact remains that we made a secret deal without competitive bidding and that the thing that supposedly the state got was political influence," Croft said.

Croft also raised questions about "open ended provisions of the contract which in effect allows the administration to shift the state's position without any further review by any public body."

"Apparently the state's position is to support the El Paso route," Croft said. "But once the legislature gives its approval of these contracts, they would allow the administration to shift its support to any route without any public imput."

In another criticism, Croft said the contracts should have included a requirement that the state's royalty gas be "taken to tidewater in Alaska."

"I think we ought to insist that whoever purchases our royalty gas be required to bring a major portion of that gas to tidewater in Alaska because of the ability that would give us to use our resources to the maximum extent possible," Croft said.

Croft said the Hammond administration also has not addressed the question of gas pipeline impact on Prudhoe Bay oil reserves and production.

"There's a fairly wide range of figures but ballpark estimates have concluded that taking gas out of Prudhoe Bay in excess of two billion cubic feet a day will have a fairly substantial impact on future oil production," Croft said. "Even to the degree of jeopardizing five to 10 per cent of recoverable reserves.

He said El Paso will need to pump at least 2.5 million cubic feet a day to keep its project in the black.

"I want to see how the administration addresses that problem because the oil companies have no firm water drive commitment at this point," Croft said

But despite his concerns, Croft said he he would "have to predict at this point that the contracts are going to be approved" by the legislature.

The special Senate committee and a like panel in the House have scheduled joint hearings on the proposed contracts for next week.

Martin Defends Gas Sale Pact

SEATE 2/8/77

By G. MICHAEL HARMON
Associated Press Writer

To reject administration-negotiated contracts for the sale of Alaska's one-eighth share of Prudhoe Bay natural gas, the legislature "must accept the risks that aren't worth taking," Natural Resources Commissioner Guy Martin said Monday.

Martin said the pacts represent a good deal for Alaska even if lawmakers cannot quantify what the state will receive in the form of political support for the proposed all-Alaska natural gas pipeline route.

Martin made the comments as special House and Senate committees concluded six days of joint hearings on the administration-negotiated contracts with three major gas transmission companies in return for their support for El Paso Natural Gas' proposed Prudhoe Bay to Gravina Point pipeline route.

Saying he was appearing as the legislature's "advisor and negotiator," Martin said he had heard nothing during the hearings "that would persuade me on balance that these contracts do not best achieve a series of crucial and important objectives for the state."

In addition to the question of "political clout" for the all-Alaska gasline, Martin said other provisions of the contracts which require the purchasers to pay the state the highest price charged by any producer at Prudhoe Bay and provisions which allow the state to take back whatever gas is needed for in-state demands are equally important.

"To reject these contracts, Martin declared, "you have to be willing to accept the risk that the additional help afforded by the buyers either won't be any help at all or won't help enough and your rejection of these contracts will be viewed as a rejection of the all-Alaska route itself.

"Given the fact that the contracts will be void if we lose, given the fact that they clearly are of extreme importance to our congressional delegation, given the fact that they are void if the take back scheme is not approved federally, given the fact that they allow us to do all we can to develop in-state uses for the gas —given all these facts I don't think the risk of rejecting additional assistance makes a great deal of sense."

Martin said the contracts represent a "balanced package of terms on key objectives for the state."

Although he acknowledged that lawmakers are not going to be able "to get a quantative idea of what these companies are going to do," Martin said he had a good idea of their plans.

"I think each of them will mount substantial efforts in support of the trans-Alaska line in Congress," Martin said.

Lt. Gov. Lowell Thomas Jr. told the hearings that the kinds of support outlined by Martin already were showing results, presenting the committees with copies of a resolution by the Alabama legislature in support of the contracts and the El Paso route.

The chairmen of the House and Senate special committees planned to let the hearings "sink in for a couple of days" before scheduling separate meetings to draft their recommendations to their respective chambers.

Natural Gas Distributors May Gain Windfall Profits

PITTSBURGH (AP) — Natural gas distributors may reap up to 100 per cent increases in first-quarter profits because of this winter's bitter cold, say utility officials and investment analysts.

But they say a call-to-arms by outraged consumers would be premature because the profit bulge is likely to disappear amid shortages later in the year.

"Profits will be astronomical," said a spokesman for the Buffalo, N.Y.-based National Fuel Gas Co., which serves 665,000 customers in Pennsylvania, New York and Ohio. "But the main reason for that is because we're selling most of our gas in the first quarter."

Foster Corwith, a natural gas specialist for Standard and Poor's investment service, said he expects some companies to report first-quarter profit increases of 100 per cent over last year

H.A. Offutt, treasurer for fourth-ranked Consolidated Natural Gas Co. in Pittsburgh said his firm is now pulling gas out of storage that normally wouldn't have been used until March.

"Sure, we're selling more gas now, and we're going to make profits on it, but unless we can find additional supplies for the last three quarters we're going to be losing then," he said.

These developments have not been lost on investors. Prices for natural gas stocks began a steady rise when it became apparent the unusually cold winter would mean increased gas sales and profits.

For example, while Standard and Poor's index, which measures the activity of 500 stocks, changed little from Dec. 1 to Jan. 26, the index for natural gas distributors' stocks jumped from 77.26 to 87.13.

But Corwith said utility stocks may have peaked because investors are already looking ahead to what will probably be a more normal winter next year. "This is a one-time spurt. It's not the type of growth that can be sustained," he said.

Not only are utilities selling more gas, they're selling more of it now to their most profitable customers — residential users.

According to Standard and Poor's, the average rate for residential users over the 12-month period ending September 1976 was $1.91 per million British thermal units. For industrial customers, the rate was $1.22 per million BTUs.

Because of the freeze that has hit the eastern half of the country, gas deliveries to thousands of industrial users have been curtailed to provide enough gas for home use.

2/5/77

Round 1 ends in gas battle

By PAUL NUSSBAUM
Our Juneau Bureau Chief

JUNEAU — The first round in the battle of the gas contracts is over. The second starts Monday.

House and Senate special committees listened for five days to testimony — much of it conflicting — about three proposed contracts to sell Alaska's one-eighth share of the Prudhoe Bay natural gas to gas companies in exchange for support for an all-Alaska gas pipeline from the North Slope.

NOW THE SPECIAL committees will conduct whatever further examination they wish to make of the contracts before the proposals are turned over to the Senate Resources, the Senate Finance and the House Finance committees for further study.

After the committees are through with the contracts, the proposals will come before the full membership of both houses for a vote.

The objects of all this scrutiny are three contracts by Gov. Jay S. Hammond to sell the state's royalty gas to Tenneco Alaska Inc., Southern Natural Gas Co. and El Paso Natural Gas Co. In turn, the companies have agreed to do all they can to support a trans-Alaska gas pipeline.

Most legislators still predict the contract will win eventual approval, although not as quickly as had been anticipated before the week-long hearings.

"They have turned out to be much more controversial than I thought they would be," a weary Senate President John Rader said Friday evening. He had predicted before the hearings began that the contracts might win approval as early as the end of February.

By Friday, he said he did not expect approval to come that quickly.

Rader chairs the Senate's special committee investigating the contracts. The committee will meet Monday to hear testimony from state officials, who are anxious to refute what they consider damaging presentations offered by some witnesses during the week.

By week's end, bleary-eyed legislators who had listened to the testimony were less certain that the contracts would have any effect on the eventual selection of the gas pipeline route.

"Do you really think it's going to make any difference?" Sen. Clem Tillion, R-Halibut Cove, said Friday. "I think a cold winter in Pennsylvania is going to have more effect than any contracts in Alaska."

Testimony at mid-week by University of Alaska economist Dr. Arlon Tussing reinforced doubts that many legislators had about the weight the contracts may carry. Tussing flatly told the committee hearings there was nothing anyone in the state could do that would have any effect on the gas line route decision.

But some, like Tillion, said they would vote to approve the contracts even though they suspect the contracts will prove meaningless. In a state where popular opinion is solidly behind a trans-Alaska route, to veto the contracts would be politically foolish, they say.

Gas share may slip from state

By PAUL NUSSBAUM
Daily News Staff Writer

JUNEAU — Unusually cold weather in the Lower 48 and resultant natural gas shortages may make it harder for Alaska to do as it wishes with its one - eighth share of the Prudhoe Bay natural gas, legislators were told Thursday.

"When a man in Cleveland, Ohio, is sitting in his house where it's 62 degrees because the gas company can't provide enough gas, and he hears Alaska wants to withhold natural gas to make plastics or for other use, it's a hard case to make," Natural Resources Commissioner Guy Martin told a special House Royalty Gas Committee Thursday evening.

"TO MAKE a terrible pun, the climate for what the state wants to do is very bad," Martin said.

The Hammond administration is seeking legislative approval of contracts to sell Alaska's royalty gas to three petroleum companies in exchange of their support of an all - Alaska natural gas pipeline.

Full - scale hearings on the proposed contracts will begin Monday.

IN PREPARATION for those hearings, legislators questioned Martin Thursday and expressed concern that unprecedented congressional permission for Alaska to withdraw its gas for use as it wishes might be repealed.

Martin acknowledged that several congressmen, including Rep. John Dingell, D-Mich., have said they will seek repeal of the amendment which would allow Alaska to withdraw its gas for intrastate use.

"Aren't we telling them that we're going to take back 100 per cent of the gas if we want to — because they passed the amendment?" committee chairman, Rep. Clark Gruening, D-Dist. 7, asked.

IF THE AMENDMENT is repealed, legislators are worried that any contracts signed with gas companies for Alaska royalty gas might be invalid.

Martin urged legislators to grant speedy approval of the proposed contract to add weight to the state's push for a trans - Alaska gas route. The Federal Power Commission is to make its recommendation for a pipeline gas route to President Carter by May 1, and the FPC will get a recommendation for an administrative law judge by Feb. 1, state officials anticipate.

"We don't mean to pressure the legislature ... but the train is leaving the station and the timing of the federal decision is being made now," Martin told the committee.

Litt Decision Upsets Alaskans

ANCHORAGE (AP) — The endorsement by a Federal Power Commission hearings judge of the Arctic Gas project for movement of Prudhoe Bay natural gas brought swift responses from Alaskan officials.

Administrative Law Judge Nahan Litt said Tuesday the proposal, which would cross the Arctic National Wildlife Refuge and then swing through Canada to market, is "superior in almost every significant aspect when comapred to El Paso."

The state supports the route proposed by El Paso-Alaska, which would parallel the trans-Alaska oil pipeline to Gravina Point. The gas would then be liquified and carried south by tanker.

A third proposal from Northwest Pipeline Corp. is considered by many Alaskans to be a good second choice. That route would parallel the oil pipeline to a point south of Fairbanks, and then swing east along the Alaska Highway.

Gov. Jay Hammond said Tuesday the decision is a bad one for Alaska, adding the state will appeal Litt's decision to the full commission.

"It selects the route which nearly all Alaskans have concluded is the worst environmentally and economically," he said.

Hammond also noted Litt's decision ignores many problems which could arise if a route through Canada is selected.

"The Canadian political picture is at best cloudy and the land claims issue very real," he said.

Litt's decision assumes Canadian officials will not let the unresolved Native land claims stand in the way of the pipeline, saying "it is unlikely Native claims will significantly modify the Canadian government's energy decisions."

El Paso Vice President John Bennett, contacted in Washington, D.C., said, "I would not even characterize it (the Litt decision) as a major setback."

In the first place, Bennett said, "Our construction time is five years from the date of approval. The judge says Arctic Gas will require six years to bring it down, which is a year longer than ours without even considering such delays as the settlement of Native claims and other realities in Canada."

He called Litt's endorsement "the first of a series of decisions and probably the least important of the series."

Gas Line Study

By The Associated Press

The state commissioned a $34,020 study Thursday to assess three competing gas pipeline routes for potential in-state use of Alaska's royalty natural gas.

The study of the commercial, residential and industrial opportunities presented by the El Paso, Alcan and Artic gas company proposals will be conducted by by Battelle Pacific Northwest Laboratories of Richland, Wash., Commerce Commissioner Tony Motley announced.

Boucher Testimony On Gas Sale Decries Lack Of Industrial Plans

By The Associated Press
And Empire Staff

Hasty legislative approval of contracts for the sale of Alaska's royalty natural gas would violate laws aimed at insuring "when we export our oil and gas we do not export jobs and the future of this state as well," former Lt. Gov. H. A. "Red" Boucher will testify in a text prepared for delivery this afternoon to the state's gas hearings.

Boucher, the owner of an Anchorage-based consulting firm, said the administration-negotiated contracts are "not in accord with the mandates that the legislature has previously laid down" on royalty gas sales.

State law, he said, specifically requires that prior to the sale of any of Alaska's royalty gas detailed studies be made not only as to the immediate needs of our state but as to its "present and projected intrastate domestic and industrial needs."

"What we should be talking about, and what the administration has chosen to avoid discussing," Boucher said, "is the future of a petro-chemical and related industrial base for Alaska.

"We have not yet given any appropriate analysis, much less the detailed analysis required by the law, of what Alaska's long range related industrial needs may be."

Boucher said the state may not need its royalty gas now, but claimed that no effort was made to "solicit those industries that could utilize our resources for development in Alaska."

Boucher acknowledged the contracts include provisions which would allow Alaska to reclaim its gas if an Alaska industrial demand arises, but said "it would be a dubious proposition to advance that we could build a petro-chemical industry when we have already mortaged the building blocks."

He added the state might be making a sale to advance political support for the all-Alaska El Paso route with companies that cannot materially help Alaska, a point made in hearings Wednesday by economist Arlon Tussing of the University of Alaska.

"Unless our proposed allies can guarantee that they can control the decisions of our president and our national officials we have gained nothing and sacrificed much and frankly I'm not sure the state should be allied with those who could make such a guarantee," Boucher said.

He argued the state need not commit its royalty gas yet, even if the asumptions supporting the contract are correct. He said such a sale could be delayed until the full Federal Power Commission has had time to make a decision on line selection later this spring, possibly giving Alaska an indication of what Canadian decisions will develop.

Boucher basically proposed the contract be renegotiated to guarantee access to all gas liquids and to attempt to further plans for in-state industrial development.

Boucher is just one of several witnesses expected to oppose the ratification of the pact who will be testifying this afternoon as the Joint House-Senate Gasline Review Hearings enter their fourth and possibly final day. Supporters of the pact, notably the Organization for Management of Alaska's Resources, also are set to speak today.

Economist Says Gas Sale Won't Affect Route Choice

By CHUCK KLEESCHULTE
Empire Staff Reporter

The decision on which route will be selected to transport Alaska gas to the lower-48 states is almost solely dependent on Canadian wishes, one of the state's leading economists said Wednesday.

Dr. Arlon R. Tussing, a professor of Economics at the University of Alaska at Fairbanks, late Wednesday shocked lawmakers when he argued the state's sale of its one-eighth share of Prudhoe Bay reserves will not affect the outcome of which line will eventually be built.

Tussing also argued the proposed royalty sale contracts could hurt the state by locking it into provisions of a contract made before any decision on gas deregulation is reached.

Tussing based his predictions, made before the third day of joint House-Senate hearings into the proposed sale, on the fact that Arctic's proposal is vastly more logical and already the clear favorite of American decision makers.

"There is just no amount of lobbying that will make it possible for El Paso to be selected over a buried trans-Canadian route. It's just inconceivable Congress will vote down a Canadian system that makes that much sense," Tussing said.

"The advantages of a trans-Canadian line are overwhelming as compared to an LNG system, but that doesn't mean Arctic will win," said Tussing, who felt the Arctic proposal will be derailed by Canadian objections as a result of native land claims.

Tussing said he felt a beefed-up, redesigned Northwest pipeline, Alcan route will eventually be selected in negotiations between American and Canadian officials, if Canada does allow any line to run across its territory.

Tussing then described the sole reason for the sale of the state's gas as being for solely "internal political interests."

"I don't see what the state could possibly gain by selling its gas now," Tussing said.

The expert in gas matters, an advisor to three Canadian provinces and a former member of the state's Oil and Gas Royalty Board, then bluntly instructed legislators on the reasons for the proposed sale.

Tussing added the contracts, while generally "worthless" might contain technical flaws and do contain two policy problems. He argued the state shouldn't have sold all of its royalty gas, but should have kept at least 25 per cent of it to sell to Northwest, if the Alcan line wins approval.

Also he said by keeping the gas the state would be hedging its bets by having some gas to sell at higher prices if unforeseen higher prices are allowed for gas.

"Another danger is that you might get stuck with this contract if somehow El Paso does win," Tussing testified.

Tussing's testimony was in direct conflict with that of Michael C. Holland, manager of El Paso Alaska Gas, delivered earlier on Wednesday. Holland argued that quick ratification of the proposal would "represent one of the most significant actions by any parties in the lengthy process of disposing of North Slope gas."

The discrepancy in views angered some of the lawmakers present.

"I resent the implication that all of us are simply playing a great game. Doesn't the wishes of our fellow Alaskans, or our Congressional delegation or the parallels to the oil line mean anything?" asked Sen Mike Colletta, R-Anchorage, Senate Floor Leader.

Tussing denied that the present case represents a parallel to the oil line debate which was decided in 1973 by a shy one-vote margin. He said in 1973 no viable corporate alternative existed to the trans-Alaska oil line, while in 1977 several viable gas routes exist.

After Tussing testified, Sen. Chancy Croft, D-Anchorage, while still predicting final House-Senate approval for the pact, said he was certain Tussing's presentation would have a strong effect on the joint committees.

"He brought together a host of concerns which had been welling up in the minds of many of us," Croft said.

Rep. Clark Gruening, D-Anchorage, head of the special House review panel, agreed with part of the political arguments made by Tussing. He refused, however, to characterize the pact as a "political ploy by the governor. "The pact might well have the results Tussing implied, but that doesn't mean the governor's arguments for the contract are necessarily unsound," Gruening said.

Politics Of Sale

"Suppose you were the governor being attacked on all sides by the Anchorage Times, Anchorage business concerns and OMAR (Organization for Management of Alaskan Resources), all yelling you haven't been supporting development strongly enough. And suppose you are convinced El Paso has little chance for approval.

"You might be concerned that when Arctic wins they will all blame you because you didn't support El Paso. It then makes good sense to conclude the contracts which can't hurt you much and call their bluffs," economist Arlon Tussing, said.

"Now the governor can come back to the legislators and say he followed your mandate. You look at the contracts and decide you're giving up too much and don't approve them. Where is the finger going to point when El Paso loses, at you, But the governor in either case will get points by saying he did the best he could, or for his leadership in getting you to approve his contracts.

"That's the fundamental significance of the contracts," Tussing said.

Consultants Satisfied With Gas Contracts

2/1/

By CHUCK KLEINSCHULTE
Empire Staff Reporter

The prospects of relatively quick legislative approval for the sale of the state's share of North Slope royalty gas brightened considerably late Friday as three outside consultants hired by lawmakers gave the administration-negotiated pacts a nearly clean bill of health.

"Overall you have very good contracts before you. They protect you under both a regulated and deregulated market—they will stand you in good stead," said Dr. Carl Swanson, vice president of the Boston-based energy consulting firm of Jensen Associates, Inc.

Rush Moody Jr., a former commissioner of the Federal Power Commission (FPC), now a Washington lawyer and energy consultant, told lawmakers the state had negotiated a "unique" contract and had struck an "excellent bargain" in several respects with the three firms proposing to buy the state's one-eighth share of Prudhoe Bay reserves.

"In some ways you have struck too good of a bargain for the state. I can't tell you whether to accept or reject the pact, but if you wait until a route decision is reached, I can tell you the companies will have little reason to give you the same terms again.

Moody quit the FPC in 1975 in a dispute over the future of the nation's energy regulation.

Moody shocked officials by telling them the state may need to soften the pact in the future in order to help secure financing for the El Paso line, if it is accepted by Congress.

He said he felt financial firms would be reluctant to fund the El Paso line as long as the state take-back clause remains.

"I don't want to borrow trouble, but if I represented the banks that clause would clearly be a red flag which I would want cleared up, removed," Moody said.

Michael Holland, representative for El Paso Alaska, dismissed the fear saying the financial institutions know of the proposed clause and still intend to back the project, since it is based on the transporting of only seventh-eighths of the gas rather than full deliveries.

Senate President John Rader, D-Anchorage, chairman of the Joint House-Senate Gasline Review Committee, said after the fifth day of testimony he felt the chances for contract approval were good.

"I think there'll be some opposition. Reasonable men can differ over the contracts—they've proven far more controversial than I suspected—but I think the overwhelming weight of evidence calls for their approval.

Members of the two committees met again this morning to gather rebuttal testimony from the state's Commissioner of Natural Resources Guy Martin and from assistant state attorney general Fred Boness, the key negotiator of the pacts with the Tennessee Gas Transmission Co., a subsidy of Teneco Inc., Southern Natural Gas and Elpaso.

Moody said the state has gained much by getting the transmission firms to give the state the opportunity to take its gas in-kind without having to pay for the privilege and made a good deal by not selling all of its potential North Slope gas. The contract calls for the state to sell 2.6 trillion cubic feet over the 20-year life of the pact, less than the 3.2 tcf of state royalty gas estimated on the slope.

Other favorable provisions include the right of the state to take back its gas for in-state uses on a one or two-year notice schedule, the potential for the state to remove all the gas liquids from the stream, the 15 per cent of the gas capable of fueling a petro-chemical industry, Moody said. The state also has solid termination clauses built into the contract, Moody said.

Swanson and Moody both admitted the state could lose some future in-state revenue under the pricing provisions of the contracts, but both men said the probability of that occurring is extremely low.

Moody and Swanson said the state was well protected by the contracts as long as the FPC regulates the price of gas. But in the case of deregulation, both men said the state could be locked into receiving a lower price for its gas than the other working interests on the North Slope.

(Cont. On P.3)

(Cont. From P.1)

That circumstance would occur only if the FPC used the date when contracts were signed as the measure of who would be allowed to raise prices after deregulation occurred.

Swanson, under intense questioning by Sen. John Huber, D-Fairbanks, and other members of the panel, estimated the chance of that occurring at "less than 50 per cent" probably close to 10 per cent. Moody said such a practice would require the FPC to return to a policy abandoned in 1969—an event Moody termed "highly improbable" since the policy would hurt chances for new gas exploration.

Both disputed the contention voiced Thursday by Morris Thompson, the vice president of the rival Alcan gas pipeline company, that the state could lose up to $800 million by approving the contracts since the wellhead price of gas, Thompson claimed, would be dependent on transportation costs for the gas.

"I heard both sides of the debate and I admit there's truth on both sides," said Moody who added, however, that since the FPC will continue to regulate gas transmission practices, he felt no single relationship between transportation and wellhead price would exist.

Moody and Swanson urged lawmakers to correct some ambigious language in the contracts prior to approval, either by signing a letter of intent with the transmission firms to iron out the meanings involved or by amending the contracts. Moody further warned lawmakers that the pact highlighted a problem with the state's severance tax law—noting a loophole he said needed to be corrected before gas starts to flow from the North Slope.

He told lawmakers that under present statutes transmission firms are not required to pay severance taxes on the state's one-eighth share of the gas once it is taken in-kind and not exported. Moody said the law should be changed to require an in lieu of tax payment to prevent state revenues from dropping in the case of state use of the gas.

Lawmakers Friday also were told the contract would help the chances for approval of the El Paso route in Washington.

Representatives of the Organization for Management of Alaska Resources (OMAR) plus Moody and Dr. Richard Kilgore, director of research for W.J. Levy Consultants, legislative advisors since 1969, all said the state could be materially helping the chances for Presidential and Congressional acceptance of the El Paso line.

Following the Friday hearing, the committees are breaking up and dividing further consideration of the pacts. In the Senate the Natural Resources Committee, headed by Sen. Kay Poland, D-Kodiak, will hold hearings on the contracts, while in the House the Finance Committee, chaired by Rep. Steve Cowper, D-Fairbanks, will take over consideration of the pacts.

State Reaffirms El Paso Decision

By CHUCK KLEESCHULTE
Empire Staff Reporter

Members of the Hammond Administration late last week repeated their contention that selection of the all-Alaskan El Paso natural gas line will produce the most benefits for the state and thus is the route the state should back.

State Commissioner of Natural Resources Guy Martin reiterated the state's support for the El Paso line prior to the start this afternoon of three days of joint House and Senate hearings on whether the state's one-eighth share of North Slope natural gas should be sold to three firms. The firms have pledged to support the El Paso route.

Martin made the statement in dismissing the importance of an appendix to the state's economic study of the three proposed gas lines. The study, compiled by the state's Department of Revenue, was released in early December after Gov. Jay Hammond Nov. 12 announced conclusion of a proposed sale of the state royalty gas to three firms: Tennessee Gas Co., a subsidary of Tenneco Inc., Southern Natural Gas Co. and El Paso.

The appendix, given assumptions most favorable to the Alcan trans-Canada route, indicated that the Alcan line could deliver gas to the lower-48 states at a price cheaper than the Arctic or El Paso routes, especially at low levels of North Slope gas production.

But Martin last week said the Hammond Administration hasn't seen any data to shake it from its support for the pipeline route roughly paralleling the 809-mile oil pipeline.

"We just haven't seen anything to materially change our analysis that the El Paso route is by far the best for the state," Martin said.

He added that the state position is based on the assumptions that some added expense to lower-48 residents is acceptable provided the pipeline will benefit the state greatly, that construction of the liquified natural gas facilities in Alaska will make an important contribution to the state's taxbase and that having access to the gas at tidewater increases the state's opportunity to develop industry.

"Our conclusion is based on the weighting we assign to different variables. Right now we think our priorities are right and our support for the El Paso route is strong," Martin said.

Martin Friday also issued an appeal to legislators to take quick action on the royalty gas sale, a sale which will net the state added lobbying support in selling the El Paso line to both the President and later Congress.

"We don't mean to pressure the legislature, but the train is leaving the station and the timing of the federal decisions is being made now," Martin told a preliminary session of gasline hearings being held by a House committee. The full hearings open today starting at 2 p.m. at the Hilton Hotel.

Martin added that one reason for legislative speed is that the recent spell of frigid weather in the East and Midwest has renewed moves to repeal Alaska's special permission to withdraw its royalty gas from interstate commerce for use in domestic industrial development.

"When a man in Cleveland is sitting in his house where it's 62 degrees because the gas company can't provide enough gas, and he hears Alaska wants to withhold natural gas to make plastics or for other uses, it makes for a tougher case to argue," Martin said according to an Associated Press dispatch.

Federal Power Commission (FPC) Administrative Law Judge Nathum Litt is expected to announce his tentative decision on which line the FPC should support Tuesday morning. Following Litt's decision the full five-member commission must make its decision prior to May 1.

New Gas Power Wielded By Feds

WASHINGTON (AP) — Federal authorities are wielding their new emergency natural gas powers in an effort to keep gas flowing to homes and hospitals throughout the East.

The Federal Power Commission's first emergency allocation order Thursday diverted surplus West Coast gas to the Transcontinental Gas Line Corp. of Houston for distribution along the gas-starved Eastern seaboard from North Carolina to New York.

FPC Chairman Richard Dunham said the gas — about 150,000 cubic feet per day — was intended for the states of Washington and Oregon, but utilities and industries there can replace it with other fuels or gas in storage.

The FPC's Bureau of Natural Gas reported Thursday that some pipelines were down to a two-day supply of gas for their top priority customers, including homes, health facilities and small businesses.

The allocation powers that President Carter sought and received from Congress on Wednesday allow natural gas to be rationed only from low-priority users such as industries to high-priority customers.

The FPC also acted Thursday to allow interstate pipelines to purchase gas from the more expensive, unregulated intrastate pipelines in Texas and elsewhere. Intrastate pipelines deal in gas that is produced and consumed in the same state. That gas is not regulated by the federal government or under federal price controls.

Dunham said it was too soon to tell how much gas would be made available or what effect it would have on consumer prices.

The FPC emergency rules allow interstate pipelines to buy gas at prices up to $2.25 per thousand cubic feet without prior approval, or at even higher prices if they reflect all the seller's added costs for switching to other fuels.

Some ofthe gas switched from Oregon and Washington was costing up to $2.75 per thousand cubic feet. But the amount involved in the allocation was only a fraction of the nearly 100 billion cubic feet of gas burned daily in the United States this winter.

The FPC's regular price ceiling on interstate gas is $1.44. Prior to the emergency, some intrastate gas was selling within production states for as much as $2.25.

Dunham said that although natural gas moves through pipelines at only 20 miles per hour, the emergency gas deliveries will be expedited by trading shipments of gas along the pipeline. The East will receive the West Coast surplus without waiting for that gas to physically travel across country, he said.

Anchorage Daily N

Emergency bill to move natural gas

WASHINGTON (AP) — President Carter, signing his first legislation since his inauguration, approved the emergency natural gas bill Wednesday night and said its first use will be to transfer billions of cubic feet of the fuel from California to eastern states hard-hit by the bitter winter.

"I'm very proud to have a chance to sign this first law into being because of its importance to our people," the President said.

"I would like to declare that a natural gas emergency does exist."

In the Oval Office signing ceremony, Carter also put his signature on orders officially declaring the emergency and directing the Federal Power Commission and other agencies to begin sending natural gas to the states that need it most.

The ceremony, in which Carter used four pens and distributed them to congressional leaders in attendance, took place only hours after Congress put the finishing touches on the bill. The House approved the measure 336-82 and the Senate passed it earlier by voice vote.

Although the bill was a compromise between versions passed in each chamber earlier in the week it provides Carter with nearly everything he had sought.

Carter said he was informed by Gov. Edmund G. Brown Jr., of California that because of strict conservation measures, 10 billion cubic feet of natural gas are available to eastern states experiencing an unusually fierce winter.

"Without this legislation, transfer would have been completely impossible," Carter said.

The President also said he was told by Mexican President Jose Lopez Portillo that Mexico would try to send quantities of oil and gas to the United States to help alleviate the emergency.

Carter did not specify the amounts.

The legislation gives Carter the power to declare national or regional natural gas emergencies and to order gas moved from state to state to keep homes and hospitals warm.

Designed to spread out the shortage more evenly, the bill would not provide immediate aid to areas where gas supplies are running dangerously low. Energy officials indicated that any emergency gas transfers probably will involve shifting gas from states west of the Mississippi River to those in the frigid East. And gas only moves about 15 miles per hour in pipelines.

The bill also will do nothing for factories closed by the gas shortages. It gives Carter authority to move gas to protect life and property but not to reopen schools and factories.

State may switch gas line support

By PAUL NUSSBAUM
Daily News Staff Writer

JUNEAU — Administration officials, quizzed Monday during full-scale legislative hearings on proposed royalty gas sale contracts, stressed that they are leaving a back door open to switch support from an all-Alaska natural gas pipeline if it becomes apparent the trans-Alaska line will not be approved.

State officials also agreed that potential inducements to bring petrochemical industry to the state might be lessened by provisions of the contracts which forbid the sale of the state's surplus royalty gas to any but three companies.

THE HAMMOND administration is seeking legislative approval of three contracts to sell the state's one-eighth share of Prudhoe Bay natural gas to three gas transmission companies in exchange for their support of a trans-Alaska gas pipeline.

Today, officials of the three companies — Tenneco Alaska, Southern Natural Gas and El Paso Natural Gas — will testify before the joint House and Senate Special Committee hearings.

State Atty. Gen. Avrum Gross and Natural Resources Commissioner Guy Martin were grilled for three hours by the legislators about terms of the proposed contracts.

BOTH SAID they expect a Federal Power Commission law judge to recommend today that the gas line be built by Arctic Natural Gas through northern Canada and then south the U.S. Midwest.

"But the issue will not be foretold by a decision by the FPC law judge — even if it is an adverse one," Gross said.

The Arctic Gas route is the one least favored by the state, as it runs through the Artic Wildlife Refuge and — state officials say — could be delayed for years by Canadian Native land claim disputes. The trans-Alaska route is being advocated by El Paso Natural Gas, and a third route is being pushed by Northwest Pipeline Co.

THE THIRD route, which would go south to Fairbanks and then follow the Alaska Highway to the Lower 48, would get the state's approval if the administration pulls its support from the El Paso route.

Martin said that would happen under two conditions: if future "emergence of facts" would change the administration's evaluation of the routes, or if "we find El Paso simply cannot prevail."

Rep. Clark Gruening, D-Dist. 7, who chairs the House Special Committee on Royalty Gas, pointed out that the contracts represent "the largest sale since Prudhoe Bay," and he urged legislators to "hold no sacred cows in examination" of the contracts.

Gas Lobby Efforts Probed

By CHUCK KLEESCHULTE
Empire Staff Reporter

Lawmakers Tuesday continued their search to quantify exactly what benefits the state will net from sale of Alaska's North Slope royalty gas. For at least several members of the special House-Senate Joint Gas Review Committee disappointment was one of the main results.

"We keep asking what we're going to get and they just keep saying in effect, go ahead and approve the contracts and then we'll show you," said Sen. Kay Poland, D-Kodiak, head of the Senate's Natural Resources Committee.

Frustration was shown by several members as the heads of Tennessee Gas Transmission Co., Senior Vice President Robert Thomas, and of Southern Natural Gas, President Peter Smith, were grilled by lawmakers for five hours during the second day of three-scheduled days of hearings into the proposed sale of Alaska's one-eighth share of Prudhoe Bay reserves.

The bulk of questions Tuesday attempted to pin down how much money and effort the companies plan to commit to lobbying efforts in behalf of the all-Alaska, El Paso gas route the state supports.

"The whole issue appears to boil down that if we commit our gas now we are taking a chance of losing some benefits in potentially higher prices if we wait and sell later on. We are balancing that against the influence we'll gain from the companies by going with them now."

"So," said Rep. Clark Gruening, D-Anchorage, head of the House review committee, "We need to get a firm idea what we're going to get in return. Right now no one is really sure."

Thomas, speaking for Tennessee, a subsidary of Tenneco Inc. which will gain 50 per cent of the state's gas, up to 1.3 trillion cubic feet, said his firm has yet to produce even a working budget on how much it will spend to convince President Jimmy Carter and later Congress to select the El Paso land-water route over the two trans-Canadian routes: Arctic's and Northwest's Alcan routes.

The Arctic proposal Monday cleared the first hurdle in the selection process by being tapped as the best line by Federal Power Commission Administrative Law Judge Nahum Litt.

Thomas during his testimony said his firm would "commit all the resources necessary" to fight for the selection of El Paso's route. But he said while Tenneco has yet to commit a sizable workforce to the lobbying effort pending ratification of the royalty pact, Tenneco will not attempt ever to buy "political influence" simply by spending money.

"No amount of so-called political clout or pressure is going to determine the federal decision on this matter. We are convinced that the decision will be made on the merits of the issues. It is essential that all the issues be throughly discussed...and that's what we'll be doing," Thomas said.

Smith, likewise, said his firm has yet to commit sizable numbers of its staff to the project awaiting the ratification of the pact. Smith made an estimate, however, that Southern who will receive 650 billion cubic feet of gas under the contract might spend an additional $100,000 in outside lobbying expenses besides committing its whole public relations staff to backing the El Paso plan.

Smith said his firm would spend most of its time, an effort already underway in part, to convince gas-starved Southeast residents to support the El Paso route. He said the benefits of the project have already been explained to most Southern governors, all members of Southern Congressional delegations and to all the utilities which buy gas from the transmission firm.

Sen. Chancy Croft, D-Anchorage, a critic of the proposed sale negotiated by the Hammond Administration, asked Tenneco to submit data on the amount of money it has spent to lobby the state's legislature to support the gas contract plus all money spent to influence outside parties—especially money spent since the Nov. 12 announcement of the proposed contract.

Questions Tuesday continued to surface over the need for an "escape" clause in the contract, a provision allowing the three firms to keep their gas supply if they support the state, if the state ever switches its support to another line such as the Alcan project.

State Sen. John Huber, D-Fairbanks, asked both firms whether they had asked that the clause be included in the pact and both said they had not—that the clause had been included at the state's request. On Monday Guy Martin, commissioner of the state's Department of Natural Resources, had said the state wanted the clause to protect its future "flexibility" to the greatest extent possible.

Smith after the hearing, however, said his firm now would object to removal of the clause if proposed by the legislature. Thomas said his firm is opposed to making any adjustment in the proposed contract.

"If we are sent back to renegotiate the contract it would take too long and the state would lose the benefits it could receive. Also, any of the companies might be tempted to raise a number of issues on other points in the contracts," Thomas warned.

The clause has caused some fear among lawmakers that it might limit the incentive of the firms to push totally for the El Paso line. Both companies representatives tried hard, however, to dispel such fears saying their support for the El Paso line is strong.

Tenneco, in fact, questioned whether it would switch to support any other line even if the state did. The company said such a switch might harm its credibility in Congress, important to the conglomerates other business dealings.

Earlier in the day, representatives of Tenneco had been questioned closely about their lobbying techniques in other gas deals. Thomas in response promised his firm would engage only in practices which are completely legal under all state and federal laws.

Joint committee chairman Sen. John Rader, D-Anchorage, expressed support for the contract and gas purchasers after the session.

"I believe these fellows desperately need the gas and I think they'll do whatever it takes to get it. They have a clear incentive to work hard for us," Rader said, "and after the FPC decision we need all the troops we can get."

The hearings, with 19 witnesses scheduled for today, are being conducted at the Hilton hotel.



GASLINE CONSIDERATION—Rep. Charles Parr, D-Fairbanks, (left) glances at his notes, while Rep. Clark Gruening, D-Anchorage, and Senate President John Rader, D-Anchorage, listen to testimony presented Tuesday during the second day of hearings into the proposed state sale of North Slope natural gas. Gruening and Rader are both chairman of respective House and Senate committees looking into terms of the sale of the state's one-eighth share of Prudhoe Bay reserves. The hearings are continuing today and probably will extend into Thursday.

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Lawmakers Question Sale Of Royalty Gas

By CHUCK KLEESCHULTE
Empire Staff Reporter

Alaska lawmakers this week have been busy gathering a host of questions and beginning Monday they'll attempt to ferret out some answers concerning the terms of Gov. Jay Hammond's proposed sale of Alaska's one-eighths share of Prudhoe Bay natural gas.

"I have a lot of questions about the sale, concerns I'd guess you would call them. I'm just not sure how I feel about the sale right now. I'll have to wait to see how I'll vote until after the governor explains his side," said Rep. Charles Parr, D-Fairbanks, a member of the special five-member House panel reviewing the sale.

Juneau's state Sen. Bill Ray echoes a similar response, typical of the feelings of many of the state's senior lawmakers. "I have some reservations. Some of them may be because I don't fully understand the contract, others may be because I question the basic premise of the sale. In any case, it will be next week before I even start to make up my mind."

In the absence of formal opposition to the pact, individual lawmakers with an assist from former state Lt. Gov. H.A. "Red" Boucher have been generating their own questions. The biggest one centers over the general practice of the state selling a natural resource to generate political support for one of its economic objectives.

Sen. Chancy Croft, D-Anchorage, is in the forefront of legislators who have questioned the morality of the state selling its gas predominately to gain lobbying support in Congress for an all-Alaska El Paso gasline instead of the two overland gas routes which will run through Canada.

Gov. Jay Hammond in announcing the sale Nov. 12 said the main objective of the state in entering into the pact with Tennessee Gas Transmission Co., a subsidary of Tenneco Inc., El Paso and with Southern Gas Co. was to garner political support for the El Paso line.

"The major question is whether it's good public policy of the state to sell its resources for political influence," Croft said Tuesday.

Ray went one step further this week questioning whether it's ethical for the state to favor a line, El Paso, which might well deliver gas to Americans in the lower-48 states at the highest cost of the three proposed lines.

"It's a natural resource of Alaska and of all the country. As Americans it seems we're almost committed to try to bring gas to the south at the cheapest possible price," Ray said.

Under studies by the state's Department of Revenue, the El Paso line likely will deliver gas south at a gate-city price of $2.07 per million BTU's (British Thermal Units), 7 cents higher than for Alcan and possibly as high as 17 cents higher than could be delivered by the Arctic Gas system.

For the chairman of the House Gasline Review Committee, Rep. Clark Gruening, D-Anchorage, the main problem with the pact, besides the question of its ethics, is simply its length—whether the state should enter into any agreement which ties up the state's gas supply for 20 years or until 2.6 trillion cubic feet of state gas is removed from the slope.

"The pact tries to protect the state against the events which could occur during its life, but 20 years is a long time given changing conditions," Gruening said. The pact as it now stands contains two clauses where the state, for in-state use, could take back a percentage of the gas sold on one year's notice and take back all the gas, nullifying the contract, on two year's notice.

Two clauses of the contract have raised the most concern among lawmakers, the main clause being one which allows the three gas firms to keep their gas supplies if the state ever finds it necessary to support a different line, if the companies shift their support to the new line the state favors.

"How likely are those companies going to be to go all out for an El Paso line if the companies think they'll get the gas if either El Paso or Alcan win final approval. They get the best of both worlds," said Boucher, the leadering critic of the royalty gas pact.

The Teamsters Union Local 959 last week confirmed that while they are a strong supporter of the concept of an all-Alaska line and of the royalty sale since it in general supports the El Paso plan, they are still opposed to the inclusion of the "escape clause" in the royalty contract.

"Our objection to the proposed contract deals only with that one clause, it just doesn't give the firms the incentive to lobby for it as hard as they should," Jeff Barry Sr., business representative for Local 959 in Anchorage and director of the Teamster political action arm ALIVE, said.

Juneau Rep. Jim Duncan agreed that the clause might represent a problem with the contract. "I think that it is a flaw in the pact, but I really don't know if it is serious enough to threaten adoption of the whole contract," Duncan said.

Other lawmakers had similar problems with the contract. Rep. Parr feared that the clause would produce real credibility problems for the state if it ever was invoked. "Here we'll be going all out for the El Paso line and the three firms hopefully will be to. Then if we ever change our minds everyone is going to be forced to go to Congress and try to explain why the line we said was best no longer is best.

"It might make us look like fools," Parr said.

Rep. Bill Miles, D-Anchorage, had a slightly different complaint.

Miles said that the contract, at present, gives the governor the sole power to switch state support to a different line, a provision he feels is dangerous without some provision for legislative review and acceptance.

State Commissioner of Natural Resources Guy Martin Thursday noted both of the concerns saying the administration placed the clause in the contract simply to give it an added measure of flexibility. He said, however, that the odds were so extremely high that the clause would never be used as to make the possibility almost totally remote.

"I think we would switch only if there was a clear public feeling from the legislature, the governor and the Washington Congressional delegation that our choice (El Paso) had no chance of winning and I don't think we'll ever be in that kind of a situation," Martin said.

FPC Judge Gives Nod To Arctic Gas

By MARK PANITCH
Washington Correspondent

WASHINGTON—Proposals by the El Paso Natural Gas Company and the Alcan Pipeline Company to move North Slope natural gas across all or much of Alaska were ranked as second and third choices today by a Federal Power Commission administrative law judge who called the Arctic Gas plan to build a pipeline east of Prudhoe Bay into the Canadian Mackenzie Delta area "superior in almost every significant respect."

The decision in favor of Arctic Gas, Judge Nahum Litt said, was based on environmental, technical and financial grounds. Arctic, Litt said, could deliver the most gas at the lowest price in the shortest time with the least damage to the environment.

The El Paso proposal to build a Trans-Alaska gas line connected to a gas liquifaction system on Prince William Sound was called "a viable plan which technically can be built in an environmentally sound manner."

The Alcan pipeline plan to build a line to Fairbanks, then east along the Alaska Highway was dismissed by Litt.

"No finding from this record supports even the possibility" than Alcan could be certified, Litt said.

Both of Alaska's U.S. Senators, conservation organizations and El Paso immediately criticised Litt's position, saying he failed to listen to much of the testimony that was critical of Artic Gas.

Senator Mike Gravel called the decision "the wrong choice," and cited El Paso claims for quicker construction at a lower cost to support his position.

Sen. Ted. Stevens, R-Ak., said Litt had "ignored many factors."

Stevens said the biggest problem to be faced is the Canadian question, "there are two governments here making two separate decisions."

A spokesman for the conservation organizations which have generally supported the Alcan proposal said Litt's decision adopts a "short-sighted view."

He said the decision could promote a "national debate over the future of the Arctic National Wildlife Range. "There are viable alternatives to Arctic Gas."

John Bennett, head of the El Paso Alaska Company, said "I don't see how he can say that their six-year plan will bring gas faster than our five-year plan."

Gary Frink, lobbyist for the Organization to Manage Alaska's Resources, said the decision "ignores the facts." The Alyeska project, he said, "proved winter construction in the Arctic is impossible."

Litt repeatedly said the state's arguments were self-serving, based more on the desire for economic development than the national interest.

He based his decision on two major factors. First, that there will be extensive future oil and gas development in the wildlife range which will require a pipeline through that area.

Second, he said the Canadian Mackenzie Delta reserves are adequate to support construction of a pipeline through that area. At least two Canadian inquiries are now studying that question.

Arctic, he says, is superior to El Paso because it goes to the Mackenzie area. It is superior to Alcan, he says, because it won't have to be expanded to handle Mackenzie gas and goes directly through that region.

Litt's opinion assumes that Alcan will have to build a second line through the Mackenzie area and will have to enlarge to handle future North Slope gas reserves.

Both these assumptions were contested by El Paso and Alcan during the hearings when they were advanced by Arctic.

The members of the Federal Powere Commission will make an official FPC recommendation to President Jimmy Carter around Mar. 1.

Under legislation passed last year by Congress, Carter has until next fall to send a route recommendation to Congress which Congress can either or approve or disapprove.

Solons Probe Gas Sale Pact

By The Associated Press
And Empire Staff

State lawmakers say they want the answer to one simple question during hearings on administration-negotiated contracts for the sale of Alaska's royalty share of Prudhoe Bay natural gas—"what are we giving up and what are we getting in return."

Rep. Clark Gruening, D-Anchorage and chairman of a House special committee, coined the phrase Monday as his panel joined a similar Senate committee in the first of a planned three-day round of hearings on the gas contracts.

But other lawmakers quickly picked up on the theme in subjecting administration officials to some of the toughest questioning they have yet had to face on the issue.

The administration of Gov. Jay Hammond is seeking legislative approval for contracts to sell the state's royalty gas to three major natural gas transmission companies in return for their support of a so-called allAlaska gas pipeline route.

The hearings were to continue today with testimony from the three firms—Tenneco Alaska, Inc., Southern Natural Gas Co. and El Paso Natural Gas Co.

"This is the single largest sale of Alaska's natural resources since the Prudhoe Bay lease sale," said Gruening. "But the principle reason for the contracts is to effect a political decision in Washington and not to generate revenue.

"So, we want to know what we are giving up and what we are getting in return."

Under questioning premised on the Gruening theme, high-ranking administration officials made two disclosures which placed qualifications on the widely-held suppositions that the contracts would give the state the highest price possible for its gas

In a sharp exchange with Sen. Chancy Croft, D-Anchorage, Guy Martin, commissioner of the state's Department of Natural Resources, admitted the state at present theoretically may be able to gain a higher price for its gas by selling directly to intrastate gas utilities—companies which do not sell gas across state lines and thus aren't regulated by the Federal Power Commission.

But Martin said such an action would cause the state to turn its back on the main purpose for making the sale now, gaining political support in Washington for an all-Alaska gas line.

Martin this morning added the state has considered attempting to negotiate such a pact, possibly with California-based utilities, but that such an agreement he felt was impossible to negotiate as a practical matter at the present time.

Martin during the exchange with Croft said that if the price of natural gas was deregulated by Congress then it was clear the state could gain a higher price for its gas than it will net from the proposed pact by demanding a "front end" premium payment from purchasers. Under FPC control, however, such payments are illegal Martin said.

"Then we could have gotten a higher price than in these contracts?" Croft asked.

"We've never denied that," Martin replied, "but not for the objectives we have of gaining support for the all-Alaska route."

"But is it true that the sale does involve the sale of our gas at a lower price?" Croft demanded.

"That's a gross overstatement," Martin said, who then explained that the administration felt it could not base its policies on an assumption that deregulation will come. "It just may or may not happen soon enough," Martin said.

In response to questioning by state Sen. Kay Poland, D-Kodiak, Martin said the "takeback" provisions in the contract, clauses which allow the state the right to regain control of its gas, gives the state the right to use the gas in everyway except one. The state under the contracts may not take gas from the purchasers and then turn around and sell the gas to private industry which would then liquify the gas and export it to other markets.

The state will be able to withdraw all the gas needed to support petrochemical development in the state except for liquification purposes.

Martin and Atty. Gen. Avrum Gross also were questioned heavily on how much impact the support of the Tenneco, El Paso and Southern could have on the pipeline route decision, but could give the panel no hard assurances on results.

Royalty gas buyers undecided on lobbying

By PAUL NUSSBAUM
Daily News Staff Writer

JUNEAU — After two days of testimony, state legislators say they still don't know what prospective buyers of Alaska's royalty natural gas plan to do to support an all - Alaska gas pipeline route.

Senate and House special committees, meeting jointly in the Hilton Hotel here, questioned officials of two of the three prospective buyers for more than four hours Tuesday. The hearings will continue today.

THE HAMMOND administration has signed contracts with three natural gas distribution companies to sell them the state's one - eighth share of Prudhoe Bay natural gas, in exchange for support of a trans - Alaska gas pipeline. The contracts are not valid unless approved by the legislature.

Officials of Tenneco Alaska Inc. and Southern Natural Gas. Co. said they could not tell the legislators how much they would spend lobbying for an all - Alaska route or specifically whom they would seek to persuade. Officials for the third company, El Paso Natural Gas Co., will be quizzed when the hearings continue today.

"To date, nobody has told us what they will do in terms of lobbying or building influence," Rep. Clark Gruening, D- Dist. 7, chairman of the House Special Committee, said. "We don't know what effect they may have . . . or if they're just going to ride it out."

OFFICIALS of both companies Tuesday told the legislative committees they would be able to give the lawmakers more specifics once the contracts were approved. Both said they would commit all the time and money they thought necessary to win approval of a trans - Alaska route.

Peter Smith, president of Southern Natural Gas, said he expected his company to spend in excess of $100,000 . . . "but we don't have a specific budget saying we'll spend a certain amount."

Rep. Larry Carpenter, R- Fairbanks, countered, "To tell us you're just going to go out and spend what it takes is not a realistic response." Carpenter is a public relations representative for Alyeska Service Co., and he said campaigns designed to influence people usually have established price tags before they're started.

REP. RUSS MEEKINS, D-Dist. 7, pressed Tenneco senior vice president Robert C. Thomas to tell the committees "what we are gaining now that we can't get in the future."

Thomas said the state's overriding benefit is the effort to secure a trans - Alaska gas pipeline: "Are you going to have a trans - Alaska route in the future if you don't act now?"

Officials of both companies said they have a vested interest in getting the El Paso trans - Alaska gas route approved, as they would then be able to pass on the costs of lobbying for the route to their customers.

SOUTHERN and Tenneco urged the committees to act quickly on the contracts so the companies can begin working on a full - scale effort to convince Washington D.C. that the El Paso route is the best one.

"If President Carter doesn't receive comments from this state and others, he will continue to be bombarded with information that says the midwest won't get gas unless a trans - Canada route is approved," Tenneco's Jared G. Carter said.

"What are you going to do?" Gruening asked.

"It depends on when the contracts are approved," Thomas replied.

Smith said Southern has influence with "distribution companies, Kiwanis Clubs, Chambers of Commerce, state legislators, public utility commissions, governors and . . . the strong and effective congressional delegations from the southeastern United States."

Study Details Arctic Benefits

Alaska could earn substantially more from its royalty share of Prudhoe Bay natural gas under the Arctic Gas pipeline proposal if Congress deregulates the industry, a new legislatively financed study claimed today.

With deregulation, the study estimated the "netback value" to the state of its royalty gas delivered in Los Angeles at $1.66 per million BTUs under the Arctic Gas route as compared to $1.22 per million BTUs under the all-Alaska El Paso route favored by the state.

Sold in Chicago, the study said the "netback value" to the state would be even higher under the Arctic Gas proposal, $1.66 per million BTUs for Arctic-delivered gas as compared to 94 cents for gas deliered by El Paso.

The projection was included in an economic analysis of administration-negotiated contracts for the sale of the state's share of North Slope gas, currently the subject of hearings by special legislative committees.

But the estimate contained in the study conducted by Jensen Associates, Inc. of Boston deals only with the price of gas under deregulation and does not take into account the in-state economic impact of the routes which would be much higher for El Paso than Arctic.

The "netback value" comparison also not mention the Alcan route proposed by Northwest Gas Co.

The projection was based on a formula using the price of alternate fuels minus the cost of transporting the gas to market.

"The theory is that the price of natural gas at the market (e.g. Los Angeles) would tend toward a level related to the price of alternate fuels, and that the field price resulting would be the market price less the cost of transmission," the Jensen study said.

And because the transportation costs of Arctic Gas allegedly are less than those of El Paso, the study said, the state could charge more for its royalty gas in the field under deregulation.

State officials, however, have challenged Arctic's estimates of transportation costs, claiming that the project will experience high cost overruns.

2—Anchorage Daily News, Saturday, January 29, 1977

U.S., Canada sign pipeline treaty

WASHINGTON (AP) — The United States and Canada signed an agreementFriday designed to ensure that any pipelines carrying oil or natural gas destined for one country across territory of the other not be taxed in a discriminatory manner.

"This removes a technical obstacle to a final decision as to a gas pipeline" to carry natural gas from Alaska's Prudhoe Bay across Canada to the United States, a State Department official said.

The Federal Power Commission is considering proposals to build a natural gas pipeline either through Canada's Mackenzie Valley or along the same route as the Alaska oil pipeline, or a third route, using the Alcan Highway through Canada.

The agreement would require that any taxes or royalties levied on another country's pipeline by the country through which it runs be comparable to those assessed against one of its own pipelines.

The agreement will not go into effect until it is ratified by both countries.

State gas rights in jeopardy if FPC decision followed

By ROSEMARY SHINOHARA
Daily News Staff Writer

Alaska's motives in supporting a trans-Alaska gas pipeline, and its powers to control its royalty gas, were called to question Tuesday by a Federal Power Commission law judge who opted for Arctic Gas Co. from among three competitors to build a North Slope natural gas transportation system.

Judge Nahum Litt issued a 430-page report in Washington, saying he found the Arctic Gas consortium's trans-Canada pipeline proposal to be "superior in almost every significant aspect" in comparison to the trans-Alaska pipeline and tanker system proposed by El Paso Natural Gas Co.

THE JUDGE said the third competitor, Northwest Pipeline Corp., didn't even have an application worth considering.

And Litt slipped into the report an assertion which, if upheld, would be of great concern to Alaska: he contends the FPC, not the state, has full jurisdiction over the state's royalty gas.

"He said the FPC could reach deep into the state's intrastate power. If the FPC carried out what he said is the law, the state intrastate power would be jeopardized," Guy Martin, state commissioner of natural resources, said in a telephone interview.

THE STATE disagrees with that assertion, and would almost certainly go to court if it were carried out, Martin said.

Ironically, while Alaska's governor has frequently been called a "no-growth advocate," Judge Litt concluded that the state administration supports the El Paso proposal because it wants to encourage industrial development, and not for environmental considerations.

Judge Litt believes the state's position on environmental matters "clearly has been influenced by economic considerations," an FPC statement said.

MARTIN said while it appeared obvious that Litt would choose Arctic, he found three elements of the decision unexpected:

— That the judge supported Arctic as strongly as he did, "and went to the lengths he did to defend it." In the process, the commissioner believes Judge Litt treated too lightly problems in crossing the Arctic Wildlife Refuge in the northeast corner of Alaska, and in using a snow road for construction.

— That he presented "such an extraordinary condemnation" of the Northwest Pipeline proposal for a pipeline along the Alaska Highway.

— That he made sweeping judgments in the arena of public policy, such as advocating repeal of the provision passed last fall by Congress to stipulate that Alaska has control of its royalty gas, and saying that a treaty with Canada is not important if the line goes through Canada.

"I WOULDN'T be surprised to see the opponents, particularly Northwest Pipeline, raise charges of bias," Martin said.

Northwest Pipeline's chairman, John G. McMillian, did just that in a statement about the decision. The judge was forced to consider Northwest's Alcan Pipeline proposals — which entered the competition last summer, several months into the hearings — "but it was apparent . . . during the hearing that he refused to give Alcan an objective review," McMillian said.

McMillian called Litt insensitive to environmental concerns, and said the judge went beyond his purview in making judgments about what is taking place in Canada, which must also approve the Arctic project if it is to be built.

(Continued on Page 2)

• State gas rights

(Continued from Page 1)

"LITT ALSO appears to have concluded that desecration of the Arctic National Wildlife Refuge was a plus for the Arctic Gas Project, in spite of the fact that the National Environmental Protection Act clearly states that every effort must be taken to insure the preservation of wilderness areas for future generations," McMillian said.

A spokesman for El Paso, the third competitor, said the Litt report meant death for the Alcan proposal. "He put Alcan to sleep," El Paso's Mike Holland said. "We predicted several months ago Alcan would not survive. Alcan may still be an irritant, but we now consider that Arctic is the main competition."

Holland, in Juneau for legislative hearings, said El Paso still thinks it has "a hell of a good chance. In the end, we'll pull it out."

ROBERT W. WARD, president of Arctic, said the company believes it significant that the only alternative to Arctic being considered in Canada — the Alcan proposal — has been found unworthy of consideration by Litt.

Ward said Arctic is pleased and honored by the Litt decision. "Judge Litt is far and away the single person most capable of an informed, impartial judgment in this matter."

Litt made his recommendation based on 1½ years of hearings, which produced 253 volumes of transcripts and about 1,000 exhibits.

Parties concerned have about two weeks to send the judge their replies to his recommendation, and then he makes his final decision. The full Federal Power Commission has until May 1 to act on the recommendation, and President Carter has until Sept. 1 to rule, unless he requests an extension. Congress must then approve or disapprove Carter's ruling.

'Catch' in gas line ruling

Hammond, delegation blast support of Canadian pipeline

Alaska Gov. Jay S. Hammond and the state's three members in Congress universally decried a Federal Power Commission judge's decision to support the Arctic Gas Co.'s project for North Slope gas, and geared for a strong lobbying effort to come.

"The decision is a bad one for the state of Alaska," said Hammond.



Hammond

THE GOVERNOR said it is "more crucial than ever" that the legislature approve royalty gas contracts before it. The gas contracts, to go to three companies who pledge to lobby for Alaska's stance in favor of a trans - Alaska gas pipeline, are the state's administration answer to the need to get other states on the bandwagon.

"There is no time to lose if we're going to turn this around," Hammond said.

Rep. Don Young, R- Alaska, called the Federal Power Commission outdated, and said, "there's no way on this green earth" that Congress and the President will allow the gas pipeline to go through Canada. The FPC "can only visualize a pipeline within the continental U.S., they've never dealt with a foreign country," Young said.

"I'm sure the wisdom of our good friend Jimmy Carter and his new spirit will change the picture," Young said.

Sen. Ted Stevens, R-Alaska, called it a blow, and said the judge ignored or discounted some of the more important concerns. But he said, "I was pleased that Judge (Nahum) Litt agreed that the El Paso line is viable and could be certificated."

A trans - Canadian route would result in the loss of several billion dollars in taxes to the country, Sen. Mike Gravel, D-Alaska, said. "Fewer Americans will be hired than is the case for the Alaska route, and the largest share of pipeline taxes would go to Canada rather than the U.S."

The nation's current shortage of natural gas dictates that another route be chosen, since Canada must also approve the Arctic route, and that could lead to delays, the Congressional representatives said.

State legislators, many of whom spent most of the day in hearings on proposed sale of royalty gas to gain further support for the El Paso route (Story — Page 8), said an all - Alaska route is still a contender but that the state is not likely now to switch its support to the Northwest proposal.

"It looks like we're committed to El Paso to the bitter end," Rep. Joe McKinnon, D-Dist. 9, said during a break in the royalty gas hearings.

Rep. Clark Gruening, D-Dist. 7, who chairs the House special Committee on the sale of state royalty gas, said there was "nothing unexpected" in Litt's decision. But Gruening said the law judge underestimated the effect of Canadian internal problems on the Arctic route.

"If they can't get it together in Canada, El Paso is the only choice."



(c) 1977, Christian Science Monitor

Hammond also criticized Litt for ignoring the problems of building a gas line through Canada.

"The Canadian political picture is at best cloudy, and the land claims issue very real," the governor said.

All-Alaska gas line has risks, lawmaker says

JUNEAU (AP) — The disclosure of a major dispute between the state and oil industry over natural gas production rates at Prudhoe Bay demonstrates the need for greater public awarness of the potential risks of an Alaska gas pipeline, says oilman-lawmaker C.V. "Chat" Chatterton.

Chatterton, an Anchorage Republican, says legislative debate on the sale of state royalty gas in support of an all-Alaska pipeline route has failed to adequately address serious conflicts between early gas production and the ultimate maximum recovery of North Slope oil reserves.

And despite some political risks, Chatterton is using his 30 years of experience in the petroleum business, including four years of work for a drilling contractor at Prudhoe Bay, to point out those risks and conflicts.

It was Chatterton's questioning as a member of a House special committee on the contracts which led to the disclosure of a state computer study which concluded that oil industry proposals for the early delivery of two billion cubic feet a day of Prudhoe Bay natural gas to the lower 48 could result in the loss of up to a 1.6 billion barrels of oil.

In response to Chatterton's probing, Natural Resources Commissioner Guy Martin reiterated his pledge to use the state's conservation statute to the maximum extent to guard against any unacceptable loss of oil recovery because of gas production.

But Chatterton says he still has fears about "what would happen if we had a gas pipeline today and President Carter ordered all-out production because of the shortage in the lower 48."

"Would our conservation statute hold up under that kind of pressure?" Chatterton says he wonders. "I just want to put my concerns on the record so people will know the facts.

"The polls show that 80 per cent of the people in the state want the all-Alaska gas pipeline and as a red-blooded Alaskan so do I, but I want to make people aware that if we have an early gasline we may be jeopardizing ultimate recovery of oil."

Chatterton says the state's refusal to approve the Prudhoe Bay operators' plan for the delivery of two billion cubic feet of gas as soon as a pipeline is built also raises questions about the motivation of the producers and the ability of private industry to fund the project without a goverament subsidy of some form.

In oil industry talk, Chatterton said, "sacrificing ultimate recovery for maximum early profits is called 'gutting the field.' "

He also said the state's demand for a commitment from the producers for a massive water injection project as a prerequisite to insuring a two billion cubic feet a day offtake rate may make it difficult to finance a gas line from traditional sources.

All-Alaska gas line gets boost

ADN 2/11

WASHINGTON (AP) — A Transportation Department report released last month in the waning days of the Ford administration favors an "all - Alaska" pipeline as the best way to bring arctic natural gas to the lower 48 states.

Under the plan, proposed by El Paso Alaska Co., a natural gas pipeline would be built parallel to the Alaska oil pipeline from Alaska's North Slope to a seaport at Gravina Point. The gas then would be liquefied and shipped by refrigerated tanker to California.

The opinion differs from one expressed last week by a Federal Power Commission judge who recommended a 4,000-mile pipeline across Canada to transport the gas from North Slope reserves.

The Transportation Department recommendation was in a report Jan. 12, "National Transportation — Trends and Choices for the year 2000."

Outgoing Transportation Secretary William T. Coleman said at the time that much of the report might be changed by the administration of President Carter. The new transportation secretary, Brock Adams, has not indicated a preference for any of the three proposals that have been made for transmitting the North Slope natural gas.

The Jan. 12 report said the "all-Alaska" plan proposed by El Paso appeared to be the most viable for these reasons:

—It could be put into operation sooner because it does not require Canadian approval, and it can be constructed faster because it would parallel the trans-Alaska oil pipeline and would be smaller in diameter than the Alaska-Canadian pipeline.

—The delivered price of gas by LNG tanker would be comparable to the pipeline price, considering likely Canadian taxes and the cost of moving the natural gas from the U.S. border to consuming areas.

—The U.S. would collect more money in taxes and would not be affected adversely in its balance of payments.

—The trans-Alaska line would bring Fairbanks gas and Alaska industry.

—Because the cross-Canada pipeline would require regulatory approval of two governments and negotiation of the equity share of each company, delays might be substantially longer than for the all-Alaska system.

The report concluded that "either system may find it difficult to meet the 1981 timetable projected earlier."

Regulatory procedures and a long construction timetable are expected to prevent any gas from flowing from the Arctic until the mid-1980s.

FPC Administrative Law Judge Nahum Litt last week recommended a proposal by the Arctic Gas Study Group.

Inside today

Alaska Living	6,7	Opinion	4
Ann Landers	7	Sports	8,10
Comics	14	Sun, Tides	19
Crossword	17	Television	15
Money	13	Want Ads	16-19
Obituaries	2		

Stevens raps FPC gas stand

WASHINGTON (AP) — Sen. Ted Stevens said Thursday that the Federal Power Commission had "its head in the ground" in issuing a preliminary recommendation that natural gas from Alaska should be transported across Canada instead of through Alaska.



Stevens

Canada does not want such a pipeline to cross its heartland and efforts to build it could delay the Alaska gas from reaching the lower 48 states for 15 years or longer, the Alaska Republican asserted.

AT A NEWS conference, Stevens said President Carter should reject the Canadian route and select an all-Alaskan one instead.

Or, at the minimum, the President should seek assurances when he meets with Canadian Prime Minister Elliot Trudeau later this month that the Canadian government will try to expedite the project if a trans-Canada route is ultimately adopted, Stevens said.

Stevens criticized last week's recommendation by FPC Administrative Judge Nahum Litt that gas from Alaska's Prudhoe Bay fields should be transported in a 4,175 - mile pipeline through Canada that branches into western and upper midwestern states.

THE RECOMMENDATION rejects two alternate routes, including one favored by Stevens that would carry the gas across Alaska in a pipeline parallelling the trans-Alaska oil pipeline and then transport it by ship to California. The other route also crossed Canada.

"I'm trying to suggest that the FPC has its head in the ground as far as the act we passed last year," Stevens told reporters.

The 1976 law, which sets a timetable for decisions on selection of a pipeline route, was designed to speed the Alaska gas to gas - scarce areas in the lower states, not to delay the process further, Stevens said.

UARY 14, 1977 10 PAGES TODAY 25 CENTS

SEAE

State At Odds With Oilmen

By G. MICHAEL HARMON
Associated Press Writer

Oil industry proposals for the earliest possible delivery of massive amounts of Prudhoe Bay natural gas to the lower 48 states have been quietly but firmly squashed by the State of Alaska.

The dispute, which may place Alaska interests in direct conflict with national energy demands, centers on major differences between state and oil industry officials over how best to manage the North Slope reservoir's 19.5 billion barrels of oil and 26.5 trillion cubic feet of natural gas.

Oil industry officials say their plan "provides for expeditious and economic development of the total energy resources at Prudhoe Bay consistent with good oil and gas conservation practices."

In challenging the proposal, however, state officials say the operators' plan may be motivated more by a "disincentive to produce oil because they have a surplus on the West Coast and an incentive to produce gas because it's very dear right now."

At the center of the intense but unpublicized debate are two conflicting documents obtained by The Associated Press—the industry's "operating plan" for exploiting Prudhoe Bay reserves and a sophisticated state-financed computer "prediction of reservior fluid recovery" from the field.

In its proposed operating plan, the industry has asked the state to guarantee the delivery of at least two billion cubic feet a day of gas by mid-1982, about five years after this summer's planned start-up of the trans-Alaska oil pipeline and the earliest possible date projected by the oilmen for completion of a natural gas pipeline and conditioning plant.

But state officials, who have been involved in confidential negotiations with the Prudhoe Bay producers over the operating plan for more than three months, have steadfastly rejected the industry management scheme on the premise that it violate's Alaska's tough conservation statute for the maximum production of both oil and gas.

In it's computer projection, the state contends that the delivery of two billion of cubic feet a day of natural gas under the industry plan could cause the loss of as much as 1.6 billion barrels of oil, a significant figure in light of the acknowledgement by both sides that under the best of circumstances ultimate oil recovery from the field will total a maximum of only 40 per cent of the oil in place.

In an effort at compromise, the state says it could allow the gas delivery rate proposed by the oilmen if they will commit themselves to a massive water injection plan at the North Slope field.

While acknowledging the injection of water from the Arctic Ocean could help offset the loss of field pressure from early, large-volume production of gas, industry officials say they cannot and will not commit themselves to the $1 billion-plus cost of a source water injection project without several years of field history.

In contrast, the industry plan says field history is not needed for the state to guarantee early, massive gas offtake rates, an inconsistency noted by the state in rejecting the operating proposal.

The operating plan submitted by majority owners of North Slope reserves, British Petroleum, Atlantic Richfield, Exxon and Sohio, repeatedly emphasizes that "state approval of the gas offtake plan is needed now to insure that FPC (Federal Power Commision) certification, final design, financing and construction of the pipeline can proceed on schedule."

It defends the proposed offtake rates on the grounds that they would "immediately increase current energy to the consumers and current income to the owners."

State Natural Resources Commissioner Guy Martin says that considering the massive investment the oil industry has in Prudhoe Bay, including $7 billion in trans-Alaska oil pipeline costs alone, he was not surprised that the industry has balked at financing the massive water injection project or may be willing to sacrifice long term oil production for early gas profits.

"They would love it if the state would give them a guarantee, but we won't," Martin says. "It may be they have a disincentive to produce oil because they have a surplus on the West Coast and an incentive to produce gas because it's very dear right now.

"But I think they know that in order to get the levels of gas production they are talking about under our conservaton statute, it is going to be necessary for them to have to have a water injection plan."

Without a commitment for massive water injection, Martin says the state probably will not set an initial gas offtake rate of more than about 1.6 billion cubic feet a day, a figure that is below the threshhold of feasibility for two of three competing gas pipeline projects.

And even with water injection, Martin says the state won't give the industry any absolute guarantees in advance for the estimated 20-year life of the field. Long-range production levels, he said, will not be set without the supporting evidence anywhere between two and six years of field history.

Martin concedes that the state position may not be popular with gas pipeline developers who say they need such a guarantee to solicit financing for a project that may cost from $6.6 to $8.5 billion. But he believes the Alaska conservation decisions will hold up even under expected intense pressure from the oil industry, gas pipe developers and the political muscle of lower 48 consumers.

"Our position is that the state will take whatever action is necessary under our conservation statute to see that there's no unacceptable waste of oil recovery," Martin said. "There's just no question about our authority to cut off gas production if that recovery is threatened."

State at odds with gas plans

By G. MICHAEL HARMON
Associated Press Writer

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All-Alaska gas line risks
Page 2

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And even with water injection, Martin says the state won't give the industry any absolute guarantees in advance for the estimated 20-year life of the field.

Senate panel okays gas sale

JUNEAU (AP)—A special Senate committee Friday announced its approval of contracts to sell Alaska's share of Prudhoe Bay natural gas without conducting a public meeting to vote on the administration-negotiated deal.

The committee decision was revealed on the Senate floor after Sen. Mike Colletta, R-Anchorage and floor leader of the ruling Republican coalition, "bicycled" a favorable report around the halls to panel members for their signatures.

Missing from the report was the signature of Sen. Chancy Croft, D-Anchorage, who expressed anger at the lack of a hearing to debate the panel's recommendation.

"When you're talking about a contract to sell all of Alaska's royalty gas, it should have at least been handled in a formal meeting, an announced meeting," said Sen. Chancy Croft, D-Anchorage.

Normal procedure calls for House and Senate committees to debate and take action on legislation in public.

But Senate President John Rader, who served as chairman of the special committee, said he saw no reason for a public vote, and claimed that no one expessed objections to not holding a formal meeting.

"I didn't think a further meeting was necessary, nor did anyone request one," Rader said. "We've had meetings ad nauseum."

The committee took six-days of public testimony on the contracts, but Rader specifically prohibited members from expressing their opinions during the hearings.

The lack of an open debate and vote allowed committee members to escape having to explain the logic of their decision.

Despite Rader's denial, Croft said he told the Senate president that he did not approve of the way the committee report was handled.

The committee report showed that Sens. Rader, Colletta and Clem Tillion, R-Halibut Cove voted to approve the contracts while Sen. John Huber, D-Fairbanks, said he had no recommendation. Croft refused to sign the report.

Huber said he objected to committing all of the state's share of Prudhoe Bay royalty gas.

"I wonder if it's necessary to dedicate all of the gas," Huber said. "If we should go in business with El Paso do we need to give them that 25 per cent?"

Huber favors the state financing part of the all-Alaska route, and he is having legislation drafted now.

Huber said he generally opposes "bicycling" legislation, but said he did not object this time because he will get a second chance to debate the contracts in the Senate Resources Committee.

Floor battle looms on royalty gas bill

ADN 2/23/77

By G. MICHAEL HARMON
The Associated Press

JUNEAU — A Senate floor fight loomed Wednesday over a last-minute maneuver to attach a potentially deadly amendment to contracts for the sale of Alaska's royalty share of Prudhoe Bay natural gas.

The stage for the Senate's first substantive battle of the session was set in the Finance Committee on Tuesday when Republican Chairman John Sackett of Galena joined three loyalist Democrats to attach a qualifying amendment to the contracts to sell the state's estimated 2.6 trillion cubic feet of gas to three transmission companies in exchange for political support for an All-Alaska gas pipeline.

The amendment pushed by Sen. Chancy Croft, D-Anchorage, would automatically terminate the contracts if Congress repeals section 13-B of the Alaska Natural Gas Transportation Act of 1976 before the Federal Power Commission acts on the pacts.

Section 13-B of the act, which establishes the procedure and timetable for federal approval of competing Prudhoe Bay gas pipeline routes, gave Alaska the unprecedented right to take its gas off the interstate pipeline for intrastate use without FPC approval.

Croft said the amendment was needed "to protect the state's interests" despite a specific provision in the contracts to allow Alaska to take back its gas from the purchasers when in-state needs arise.



Tillion



Croft

But Sen. Clem Tillion, R-Halibut Cove, countered that the amendment was a "brilliantly conceived effort to kill the contracts" without specifically voting to reject them.

Tillion based his contention on a tentative opinion from Atty. Gen. Avrum Gross that the legislature has no authority to qualify the contracts, but can only vote them up or down.

Gross said the administration of Gov. Jay S. Hammond will consider a Senate vote to amend the pacts the same as a rejection.

Tillion claimed that the administration has the votes in the Senate to defeat the amendment but acknowledged that the ballot will be close.

Croft said the amendment was offered to counter fears about the impact of a repeal of 13-B on the ability of the state to reclaim its royalty gas once it enters an interstate pipeline.

"If Congress repeals 13-B before the FPC approves the contracts, then the state loses control of its gas," Croft said.

Gross, however, categorically disputed the Croft claim, contending the contracts have "no impact on 13-B and vice versa."

Gross acknowledged that the repeal of 13-B would cause the state "real problems," but said those problems would exist whether or not the contracts are approved.

"Let's assume that Congress does repeal 13-B before the FPC approves the contracts," Gross said. "How does this amendment protect us?

"Whether we've got the gas because we never sold it in the first place or whether we've got it under the recall provisons of the contract—in either case we've got to get FPC approval to take it off an interstate pipeline for in-state use if 13-B is repealed."

(Continued on Page 2)

Senate Passes Gas Pacts (Again)

HCNE 4/25/77

By The Associated Press

In an instant-replay vote, the Senate today granted lopsided approval to contracts for the sale of Alaska's royalty share of Prudhoe Bay natural gas.

The Senate stamped its endorsement to contracts with three gas transmission companies on identical 14-5 votes.

Passage came after the Senate beat back yet another effort by Sen. John Huber, D-Fairbanks, to amend the pacts.

Huber's amendment was aimed at the recent disclosure that obscure federal regulations could prohibit the state from taking back its royalty gas for in-state use once the contracts are signed.

But Senate President John Rader, D-Anchorage, carried the day with the argument that the federal government had the power to take and keep Alaska's gas "contracts or no contracts."

Huber, however, charged that his argument didn't sway any votes because the ruling Republican coalition in the Senate was "locked in by a bound caucus" ordered by Gov. Jay Hammond.

The repeat Senate vote was forced Thursday on a parliamentary maneuver by Huber.

Huber delayed final passage when he moved to reconsider Wednesday's 15-5 Senate vote to approve the contracts with three gas transmission companies. And then when he failed again Thursday to amend the pacts he issued a "call of the house," a motion that requires all members not officially excused to be present to vote.

However, Sen. Pete Meland, D-Sitka, had left for a weekend at home and a vote could not be taken. Meland won't be on hand today either but he has an official excuse which will satisfy requirements for a call of the house.

Meanwhile in the House, the Finance Committee conducted a lengthy hearing on the contracts Thursday.

SOUTHEAST
ALASKA EMPIRE

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Senate OK's Gas Contract Pact, Attention Switches To House

Arguing ratification of contracts calling for the sale of Alaska's royalty gas will have no "substantive political impact," House Speaker Hugh Malone, D-Kenai, Wednesday said he probably will vote against the pacts unless they are substantially amended before reaching the House floor.

Malone, however, assured proponents of the three pacts, which mark the sale of Alaska's one-eighth share of North Slope reserves, that he will make no effort to bind fellow Democrats to his decision. He said all lawmakers are free to follow their own dictates when the final floor vote does come.

Malone's statement comes as attention shifts to the House following the Senate's vote Wednesday to approve the pacts with Tennessee Gas Transmission Co., a subsidary of Tenneco, Inc., Southern Natural Gas and El Paso Alaska.

The Senate voted to approve the pacts following four hours of floor debate by a lopsided 15 to 5 margin.

Sen. John Huber asked for reconsideration but ratification is expected to stand.

Malone's statement comes as the House Finance Committee, chaired by Rep. Steve Cowper, D-Fairbanks, takes up consideration of the pacts late this afternoon. House leaders said a vote, depending on Finance Committee action, could come as soon as Friday and likely before next Tuesday.

"Since the Congress and President are bound to make a decision on the basis of the national interest, in fact they will be derelict in their duties if they don't, I don't know how we'll be able to gain meaningful political support by approving these contracts," Malone has said.

He noted the contracts don't specify a minimum amount of support the companies must supply to the state, and leave too many loopholes in the pacts where the state, in Malone's view, could be harmed by granting approval now.

"I just don't think we are going to be harmed by not signing the pacts. They are premature, they're not in the best interest of the state, and while I could change my mind, right now I don't think I'll vote for them," the House Speaker said.

Juneau's Rep. Mike Miller, House majority leader, recently said he still hasn't made up his mind on how he will vote on the pacts. Miller added Democratic leaders have no idea how party members will vote as the leadership has made no effort to "count noses," specifically trying not to turn the issue into a partisan political battle.

Supporters of the El Paso all-Alaska project, the principal beneficiary of contract approval, Wednesday expressed uneasiness that the issue just might be turning into a partisan battle between Democrats and the Hammond administration over the pacts negotiated by the governor.

"I just hope that the fact that the House committee voted along party lines does not mean the issue is going to become a political potato. That would be the worse possible event for everyone," said Mike Holland, a senior Alaska representative of El Paso.

Holland's fear was prompted by the release Monday of a report by the special House Gasline Review Committee, headed by Rep. Clark Gruening, D-Anchorage. The committee, on a 4 to 3 vote, along party lines released a report critical of the contracts.

But Guy Martin, commissioner of the state's Department of Natural Resources, before the Senate vote, expressed confidence the pacts would be approved.

Strongest debate in the Senate Wednesday concentrated on an amendment which would have terminated the pacts if a key section of federal law was repealed by Congress before the Federal Power Commission had approved the pacts. The amendment finally was defeated on a 14-6 vote.

The contracts then were approved with Republican Sen. John Sackett, Galena, joining Democratic Sens. Chancy Croft and Pat

Policy profiles

On selecting the oil route

ADN 2/23/77



By JOHN HAVELOCK
(Second in a series of columns on pipeline routing policy)

During the battle over the routing of the pipeline system to move Prudhoe Bay oil, the need for a gas line was well-known, but not much mentioned.

For one thing, the decision did not seem to be an imminent necessity. For another, the opponents of the trans-Alaska pipeline system (TAPS), a core of whom were opposed to hydrocarbon development, were ready to exploit any diversionary opportunity to the fullest. TAPS proponents in the state and nationally were forced into single-minded concentration on those factors which related to TAPS authorization.

THE SINGLE GREAT policy casualty of this polarization was that the principle environmental impacts of TAPS, those that were a part of or flowed from socio-economic consequence, were inadequately addressed. The environmentalists concentrated on the very small risk and modest consequences of some oil leaking out of the system on the fragile tundra. Those who could foresee the real problems were not about to feed amunition to "the enemy."

The analysis of state benefit in the TAPS route was not complicated. The state's technocrats looked primarily to the benefit in well-head based revenue, benefits flowing to the state treasury, thence presumably to be distributed in tax reductions (or deferred tax increases) and increased services reaching a broad range of Alaskans. From this perspective the TAPS route was the only route because it gave promise of a flexible delivery system — the oil would be delivered anywhere and not just to a pipeline outlet and market in the mid-west, a market power, which could end up controlling the wellhead price.

TAPS also was the only proposal that showed any promise of being completable within a reasonable period of time. The transcontinental line was totally speculative. There was every reason to suppose that if the TAPS route was defeated on the proposition (or ruse) that a trans-Canadian routing was preferable, we could expect an attack to be mounted against that route too in due course.

NO DOUBT the trans-Canada route would have satisfied some opponents of TAPS, but not those who were against oil production in general or Arctic production in particular. TAPS was clearly the better system from the perspective of state management.

For the state managers, the fact that the TAPS system involved a major construction project in the state rather than outside it was a cost rather than a benefit. The construction phase would result in major increases in demand and cost of services of state and local government and create a massive influx of new people. Excess inflation was a high risk. The quality of life for existing residents, not tied into the construction industry at the management level, was going to decline until the program was over.

The finished project was to be highly automated. A couple of hundred permanent jobs when it was all over just didn't make it worthwhile.

TRUE, MORE PROPERTY would be in the state to tax but this revenue would be distributed unevenly in human terms, enriching localities that happened to find themselves next to a pipeline that called for no services, the usual counterpart of taxation. These revenues would reduce the tax potential at the well-head on production and income almost to the same extent as the revenue increase from the tax on property.

Of course, the state management perspective is a minority position in the politics of the state. The alliance of those who see their self-interest in an enhanced public sector role in distributing benefits is not inconsiderable, but it is not the dominant political-economic power.

The Alaska equivalent to the "military-industrial complex" is the construction complex - powerful construction companies, powerful construction trade and transport unions, supported by a host of beneficiaries with a profit stake in wholesale and retail supply and transportation. Not every member of a construction union or employe of a wholesale or retail supplier or transportation company has a stake in the complex. Normal state economic activity is sufficient to keep most of such people happily employed. Those who have a stake are those unemployed who have good prospects for employment in the extra activity, most of whom are outside the state, and those who will share (disproportionately) in the growth through managerial promotions or profits.

In the case of the oil pipeline route, the coincidence of construction interest and state treasury interest made for a happy marriage with the TAPS route. But was this bliss to continue in the policy and planning of gas transportation marketing? Not necessarily so.

Mr. Havelock served as chairman of the state pipeline coordinating committee in 1972-3.

SEAE
2/25/77

Trudeau— No Gas Promises

OTTAWA, Canada (AP) — Prime Minister Pierre Elliott Trudeau said Thursday he has not promised President Carter his government will approve the building of an Alaska gas pipeline through western Canada.

Under questioning in the House of Commons, Trudeau said that in his meetings with Carter this week he pledged only that the Canadian government would try to reach a decision on the controversial pipeline by September.

This would be done to coordinate with the U.S. decisionmaking timetable, Trudeau said.

Commons member Tommy Douglas, an opposition New Democrat, said news reports indicated the Liberal prime minister's assurances to Carter amounted to a "tacit understanding that Canada will proceed with a pipeline."

Trudeau replied, "Anyone who played the stock market on the basis of these rumors would run the risk of financial embarrassment."

The New Democrats say they oppose the building of a pipeline because of potential economic and environmental dislocations.

Carter is required by law to make a decision by Sept. 1 on competing proposals to ship Alaska gas to U.S. markets. A U.S. Federal Power Commission hearing judge has recommended in favor of a route through the Mackenzie River Valley.

Canada "won't stand in the way of pipelines as long as issues affecting Indian land claims and environmental and economic problems are settled," Trudeau said.

He noted that a Canadian court report on the effects of a pipeline on Indian and other native groups in the region is expected this spring, and a Canadian National Energy Board report reviewing the pipeline applications will be ready this summer.

Trudeau refused to guarantee Parliament would vote on the pipeline, saying it would be brought before Parliament only if time allows. He said the matter could be discussed by a Commons committee.



NO PROMISES—Canadian Prime Minister Elliot Trudeau denied yesterday that he and President Carter reached any agreement on routing of a pipeline for Alaska gas through Canada. (AP wirephoto)

Arctic Line Fight

By MARK PANITCH
Washington Correspondent

WASHINGTON—A Canadian Eskimo leader Thursday told a House subcommittee that no gas pipeline would be built across his people's Mackenzie Delta territory until a Native claims settlement is completed.

The leader, Sam Raddi, head of the Committee for Original People's Entitlement, based in Inurik, Northwest Territories, appeared along with ranking Alaska state officials, conservationists and spokesmen for three gas pipeline companies before the House Interior Public Lands subcommittee.

The subcommittee is investigating three competing proposals to move an estimated 26 trillion cubic feet of natural gas from Alaska's North Slope to market in the contiguous states.

Raddi said, "There will be no pipeline in the western arctic until the government of Canada settles the land claims with the Inuvialuit (Eskimos).

"This pipeline is a private interest that will be trespassing on our lands if our rights and land claims are not settled by that time," he said.

The question of Canadian Native claims has become a major issue in the debate here over which of three proposed routes to move Alaska gas should be approved. However, this appears to be the first time that any Canadian Native leader has appeared to state the Native position firsthand.

Raddi's statement was unequivocal and apparently contradicted previous statements by Arctic Gas officials and by a Federal Power Commission administrator [illegible] that Canadian Native claims [illegible] minor and easily resolved issues.

He stated a philosophical [illegible] lawsuits to defend Native rights [illegible] to a question from a member [illegible] Don Young, D-Alaska, [illegible] that Eskimos would take to the [illegible] approaches failed.

He also said FPC Administrative Law Judge Nahum Litt had "prejudiced the process of negotiating land rights between the government of Canada and the Inuvialuit."

Two weeks ago, Litt issued a preliminary FPC decision supporting the Arctic Gas plan.

Raddi's implied threat was partially backed up by Alaska Attorney General Avrum Gross who reminded the subcommittee that "in 1969 few people in Alaska thought that a disorganized group of people [illegible] land could grind the world's largest project to a halt. A lot of people went bankrupt on that assumption. I don't think we would make the same mistake twice. I think they have learned from the Alaska experience and will be even more effective."

Gross and Lt. Governor Lowell Thomas Jr. both testified that state support was strongly behind the El Paso plan to build a trans-Alaska pipeline connected to a liquified natural gas system on Prince William Sound.

Both Gross and Thomas agreed the Alcan pipeline plan to build along the Alyeska corridor to Delta Junction, then east along the Alaska Highway was "a good second choice."

They agreed also that the state could not support the proposed Arctic Gas project across the North Slope of Canada and then south along the Mackenzie Valley, because it offered no opportunity for the state to get access to its royalty gas.

Representative John Seiberling, D-Ohio, told Thomas the state couldn't have it both ways, on the Arctic National Wildlife Range. There has to be a real desire to protect the range for its own sake, not for political expediency, Seiberling said.

In response, Thomas said he could "support making the Arctic National Wildlife Range a wilderness. To go out on a limb, I think the governor would too."

Seiberling chairs a subcommittee which will soon start working on legislation to end the land freeze imposed after the Alaska Native Claims Settlement Act, and to decide which d-2 lands should be included in National Parks and other conservation systems.

A panel of conservationists argued that their main concern was protection of the wildlife range, which they called the "jewel" of the federal wildlife system.

Brock Evans, director of the Sierra Club's Washington office, said Arctic Gas claims that its pipeline would be a "thin sliver" across the range fails to meet the real problems.

"To best understand what is at stake," he said, "visualize a famous painting, such as the Mona Lisa. Then visualize a slash all the way across the upper middle part. 'It's only a small slash,' those who want to make the slash say, 'see the picture is still there and you can enjoy the rest of it'."

SEAE
2/24/77

Stevens View—

Carter Favors Arctic Gas

ANCHORAGE (AP) — Sen. Ted Stevens says he believes President Jimmy Carter favors the Arctic Gas project for transporting Prudhoe Bay natural gas to markets in the lower 48 states.

The Anchorage Times Washington Bureau interviewed Stevens, the Senate's minority whip, after a meeting Wednesday of the joint congressional leadership with Carter.

"I have the definite impression the President leans toward the Arctic Gas line," the Alaska Republican said. "I told him my problems with that. I mentioned the law we passed last year, setting up a time frame for the decision and the possibilities for delay" with a trans-Canada line.

Stevens said he got the impression that Carter supports the Arctic Gas project "from the comments he made about how the all-American route would cost more if we did it alone.

"I think he is misinformed. He left me with the impression that he thinks there is extra gas in the MacKenzie Valley that can be brought into the United States."

Stevens said Carter also told congressional leaders about his recent meetings with Canadian Prime Minister Pierre Trudeau.

"The President left me with the impression that Trudeau had been somewhat frank about his problems with the environment and Native claims," Stevens said. "The President said he knows there are three routes proposed and he is keeping his options open."

"We must articulate our case to the government agencies and to people like Interior Secretary Cecil Andrus," Stevens said, advocating a strategy concentrating on government agencies which will make recommendations to Carter before July 1. Many Alaskans support the so-called all-Alaska route.

The Arctic Gas project would cross the Arctic National Wildlife Range and then head south through Canada en route to midwest markets.

A proposal from El Paso Natural Gas Co. would route a pipeline south through Alaska to Gravina Point on Prince William Sound, paralleling the corridor of the trans-Alaska oil pipeline. The fuel then would be liquified for tanker transport south to the West Coast.

A third proposal from Northwest Pipeline Corp. would follow the oil pipeline south to a point below Fairbanks. That route, considered by many state supporters of the El Paso route to be a compromise proposal, would then follow the Alaska Highway south through Canada to markets in western and Midwest states.

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...ould a bill ...form of a ...ation to be ...t overruns ...the trans- ...be ap- ...y was in ...riation to ...mmission.

...the board of regents of the University of Alaska pass the Senate?—CSSB 46, sponsored by Croft: Ray, yes; Meland, yes; Ziegler, yes (Y 20, N 0).

Feb. 22: Question: Should a bill relating to employment on the Alaska Marine Highway system, one which already has passed the Hose, be approved in the Senate?—HB 45: Ray, yes; Meland, yes; Ziegler, yes (Y 19, N 1).

Feb. 22: Question: Should a House resolution proclaiming Alaska Telecommunications Day be approved?—HJR 23: Ray, yes; Meland, yes; Ziegler, yes (Y 20, N 0).

Feb. 23: A whole series of votes were cast on whether the Senate should approve three resolutions calling for the sale of the state's share of North Slope natural gas to three transmission firms. The first vote was on an amendment to SCR 3, the amendment calling ...Ziegler, no (Y 6 N 14).

An amendment 3, relating to removal of a clause in the contracts regarding the "switching" provision, then was considered: Ray, no; Meland, no; Ziegler, no (Y 4, N 14).

An amendment 4 relating to a reduction of the percentage of state gas sold to the Tenneco firm, reduction from 50 per cent to 40 per cent, then was voted on: Ray, no; Meland, no; Ziegler, no (Y 1, N 19).

A fifth amendment then failed by a similar 19 to 1 vote, while a sixth went down to defeat 16 to 4. A final vote on the resolution then was taken. Ray, yes; Meland, yes; Zeigler, yes (Y 15, N 5).

On SCR 4, the sale of state royalty gas to El Paso, amendments were offered, but not accepted. The final vote totals were: Ray, yes; Meland, yes; ...buildings and facilities be approved?—SB 123, sponsored by Ferguson: Ray, yes; Meland, yes; Ziegler, yes (Y 20, N 0).

Feb. 24: The issue of amendments to the proposed royalty gas contracts being considered on reconsideration came up for a vote. The amendment by Huber called for a $1 billion damage payment to be added to the contracts. Ray, no; Meland, absent; Ziegler, no (Y 1, N 17, A 2).

Feb. 25: Question: Should a bill relating to radiation protection be approved?—SB 45, sponsored by the Governor: Ray, yes; Meland, excused; Ziegler, yes (Y 16, N 3, E 1).

Feb. 5; The royalty gas contracts were then again before the body on reconsideration. After an attempt at an amendment failed all the contracts were approved on a 14 to 5 vote with Meland excused.

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Voice O...

Thank Yous

(Editor's note: the fo... three letters were selecte... among seven submitted ... edito. They are from stu... Harborview Grade Scho... other correspondents wer... James, Danny Kerr, Pete ... and Jeff Mathews.)

Dear Editor:

We sure did appreciate ... let us come to the newsp... fice. We really enjoyed i...

Stacy K...
Representing Mrs. Snc...
3rd Gra...

Dear Editor:

We really enjoyed our v... you. It was fun seeing th... tape that came from S... learned a lot on this trip. ... very much for helping u... about yours and other jo...

Your...
Greg...
Representing Mrs. Snow...
3rd Grade...

Dear Editor:

We really enjoyed the t... took us on. It was fun to ... press print papers. And tha... for showing us around.

Sin...
Shayn...
Mrs. Snov...
3rd Grad...

Thoughts

Dear Editor:

I had forgotten how bu... the road to convalescenc... there are also some exhil... rest stops and viewpoint... of time to think about t... we have traveled so f... wonder about the one... Also, a golden opportunit... reacquainted with my w... has stood by me all thes...

Nature has also taken ... During the twelve days ... the hospital we gained an... daylight. And, our rhub... daffodils have wakene... their winter sleep (sure h... are not rushing the seaso...

But, I did not plan this l... bore readers with rhet... believe that we learn fro... experience, and some o...

...ard decisions are made on committee, the ...he floor action.

Mike Miller

...tal Moving

...d about—but the capital is going to move Fri...

...n a nicer way.

Juneau time (five minutes after noon in ...s) the House Commerce Committee is going ...71—the "Alaska Bottle Bill"—and not only ... members and visitors take part in the ...ans in Fairbanks, Anchorage, and scores of ...mmunities.

...projecting the committee, via television and ...

...via TV ever since the start of the Tenth ...'s new is the live, statewide radio coverage. Listeners and viewers all over the state will ...ee long distance Zenith number and actual- ... committee hearing!

...e way to move the government to the peo...

...e a first, a forerunner, of what we feel will ...ng procedures for many bills under con- State Legislature.

...se testifying via long distance on the bottle ... Governor Tom McCall who was governor ... the bottle bill concept in 1972. Governor ...t the invitation of the University of Alaska ...dly consented to share with the legislature ...e his perceptions of how the bottle bill is ...e.

...carry the broadcast, I'm told. I hope you'll ...

...ple have called me asking what my House ...unity historical districts, is all about.

... a municipality to designate certain areas ...nce an area is so designated, property ...uld qualify for low-interest (6.5 percent) ...o historic appearance.

...nes, and Skagway would be prime exam- ... could benefit under the bill. So would ... historic old Girdwood (near Anchorage), ...nd many many other locales.

... however, that full planning and zoning ...ill, with local municipal authorities. This ...e bills where "big brother" dictates the ...

...ea such as South Franklin Street could ... partly as a result of this bill. Best of all, ... the state involved. We're investing our general fund monies anyway. Why not make the loans available to Alaskans who will use the money to make our communities more attractive and interesting?

From Sen. Bill Ray

Gas Pact Decision

One of the most difficult determinations for a legislator to make is to correctly identify the (1) cause, (2) effect, and (3) accurate interpretation of a decision that has already been made for him. My reference point is the administration's contractual agreement for the sale of the state's royalty gas.

The legislature requested the governor to enter into agreements with prospective purchasers. At the same time they formed select committees to study and analyze the impact, or resultant consequences, such a sale would have on the people of our state.

After months of investigation and countless hours of recorded testimony, during which time the administration was secretly reaching their own agreement with buyers, no accord (only discord) resulted within the committees.

The administration came forward with their proposals, as requested, and asked for prompt ratification. Our congressional delegation, unified for once, added their clamor to the urgent need for rapid legislative approval of the contractual arrangements. Predictions of reprisal by Congress for the ultimate routing of the gas pipeline were inferred.

Finally, actual debate on the measures reached the Senate floor.

Clear and concise arguments were presented on both sides of the question. There were the usual "fluff", "cheap-shots" and "showboating" that generally accompanies a proposal of this magnitude.

A latitude of convenience is given and understood by the body when incisive play and counter-play takes place on an issue which has not been pre-determined through caucus disposition.

Uncommitted, I listened intently to the arguments from both sides. Actually I found myself nodding in agreement when particular points were made, both pro and con.

When the debate was over and it was time to vote, my affirmative decision was reached on:

1. The federal government through congressional action can invalidate, in the matter of a national resource (which our gas is), any contractual agreement affirmed by a state;

2. The state could not "reservoir" its royalty gas in view of the national energy crisis;

3. Plans for feeder-line draw-off for state use are actually nebulous with no firm commitment for the same.

On the opposite side of the coin, I resent the secrecy which resulted in what appears to be ineptness in the administration's handling of the contractual agreements.

This assumption is supported by what many believe is national political favoritism sought by a member, or members, of the Hammond administration. This is not a personal indictment of the governor himself, other than that if he doesn't know what has happened—perhaps he soon will.

However, if this supposition does become fact, and he was a willing party to it, then he stands self-indicted.

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SEATE 9/2/77

Trudeau Favors Route Planned By Alcan Gas Pipeline Company?

By MARK PANITCH
Washington Correspondent

WASHINGTON—State visits by foreign leaders add a touch of glamor and color to Washington, even under President Jimmy Carter's new "informal" ground rules. But such visits rarely accomplish anything substantial. They are usually just fancy courtesy calls, the stratospheric equivalent of a friend who was "in the neighboorhood and decided to drop by."

Canada and the United States are so closely linked on so many economic fronts, though, that it would have been almost impossible for visiting Prime Minister Pierre Elliot Trudeau and President Carter to talk about anything without touching a topic of economic or political concern. The single biggest issue, however, is probably the question of whether Alaska North Slope gas will go through Canada on its way to markets in the rest of the U.S.

So Alaskans, and others concerned with how the 26 trillion cubic feet of Prudhoe Bay gas will get to market hoped the Trudeau visit here would shed some light on official Canadian thinking. They were right. But for those supporting the proposal to build a trans-Alaska gas pipeline, the news was not encouraging.

Despite his obvious preoccupation with possibility that Quebec Province might break away from Canada, Trudeau demonstrated that he was up to speed on the gas issue as well. He showed a clear grasp of the U.S. decision-making timetable. He assured Carter privately and reporters publicly that Canada would make a decision in time to coordinate with the year-end deadline that Congress has imposed on the President.

"We realize that we have to give a final answer by the end of the year. We realize that no answer really is an answer. No pipeline through Canada then means the El Paso route. Its a more costly route and it has certain disadvantages for Canada. But I'm sure there will be an answer—and that it will be advantageous to both countries," Trudeau said.

At the same time, Trudeau repeatedly mentioned that the gas belonged to the United States and was destined for American consumers. "Canadians want to be as helpful as possible to get American gas to American consumers," he said.

A News Analysis

While symbolic interpretation can be a dangerous pastime, a good case can be made from these statements that Trudeau is leaning toward the Alcan proposal to build a pipeline south to Delta Junction then east through Canada along the Alcan highway.

El Paso's plan, he noted, has "certain disadvantages for Canada," a reference to Canadian uncertainty about the environmental impact of increased oil traffic along its Pacific shores and a desire to minimize further tanker traffic.

Since the Arctic Gas plan envisions constructing a pipeline east from Prudhoe Bay to the Mackenzie Delta and then south along the Mackenzie Valley carrying both U.S. and Canadian gas, Trudeau's reference to "American gas" may have been a signal that that plan is in trouble too.

Of the three competing proposals, Alcan was the only one mentioned in a favorable or neutral light. El Paso was disparaged and Arctic was never mentioned by name either by Trudeau or the senior officials traveling with him who briefed reporters.

"We looked at all the various alternatives including the Alcan route," he said. "There is great interest on the part of the President in the pipeline."

Another event, seen as a symbolic endorsement by Alcan supporters and downplayed by opponents, was the appearance at the White House state dinner of John McMillian, head of the Alcan company. McMillian is a well-connected Democrat, a member of the Democratic National Finance Committee and a friend of former Democratic National Chairman Robert Strauss.

There is some indication that McMillian's invitation to the White House was simply a political reward for service during the campaign. But it is difficult to avoid the fact that he has an overwhelming interest in Canada. He was seated at a high prestige table with Vice-President Walter Mondale and Canadian Minister of External Affairs Donald Jamison. As one Canadian remarked, "the other companies were conspicuous by their absence."

With billions of dollars at stake, no one will be sure of the final decisions until they are announced. Lobbying for each of the three projects will continue either until the final moment or until one of them drops out of the competition.

But the signs during this visit by Trudeau were clear enough for one strong El Paso supporter to say privately that "nothing hopeful" emerged from the meetings between the two leaders.

Most Students Comply With Immunization Law

Nearly all Juneau elementary school students have been shot, but older students seem reluctant to follow suit.

The shooting is part of a state-ordered immunization program for Alaska students. No students may attend school today if they have not been immunized.

The state immunization deadline expired yesterday. Students who turn up at school today and have not been immunized are being sent home.

Approximately 50 high school students had yet to be immunized as of this morning. Coordinator of Pupil Personnel Services John Symons said he believes "some are sick and some are on vacation," but he did not know how many.

High School principal Bob Weiss said his teachers have a list of the students who have not received their shots. Those students are being sent by teachers to the nurse's office, Weiss said.

Weiss said students who are unimmunized are being informed that they will receive F's for each day they spend at home. Symons has warned that students out for more than 15 days because of a failure to be immunized will be charged with truancy.

A trickle of high school students were being sent home today. At Floyd Dryden Junior High School "four were turned away, and there are eight students at Marie Drake (Junior High) who are not complying," Symons said.

Symons said he did not know how many students from the Alternative School were out because of immunization problems.

In contrast to the high school and junior high schools, the program was proceeding nearly flawlessly at the elementary school level.

"We are concerned about three (elementary students)," Symons said. All other elementary school children, if "not sick or not on vacation," have been immunized, he said.

Symons added that the problem with the three who have yet to be immunized may be solved by this afternoon. He said all three are "afternoon kindergarten kids." It is possible they were immunized yesterday and the school has yet to receive the records.

With approximately 5,450 students in the school system and only a small minority still in need of immunization, Symons said "we are in very good shape."

Weather

Mixed rain and snow tonight with a few periods of mixed rain and snow on Thursday. Southeast winds to 30 mph this afternoon diminishing on Thursday. Outlook for Friday: Showers.

Low tonight, mid 30's, 2 C.; high tomorrow, near 40, 4 C. Sunset tonight, 6:30 p.m., sunrise tomorrow, 7:49 a.m. High yesterday, 38, 3 C.; low last night, 35, 2 C. 24-hour precipitation as of 11 a.m., trace.

Tides

THURSDAY'S TIDES

High	0:39 a.m.	14.6 ft.
Low	6:25 a.m.	2.7 ft.
High	12:32 p.m.	16.3 ft.
Low	6:50 p.m.	-1.0 ft.

ome To State Hoop T

Alcan Unveils SEAE New Proposal

By CHUCK KLEESCHULTE
Empire Staff Reporter

Dissatified with the outcome of a hand, officials of the Alcan Pipeline Co. Tuesday moved to reshuffle the deck in their competition to win permission to build a gas pipeline from Alaska to the lower-48 states.

John G. McMillian, chairman of Northwest Pipeline Corporation, parent of the Alcan project, said in Juneau Wednesday his firm has submitted alternative construction plans to the Federal Power Commission (FPC) designed to overcome objections to his firm's project.

The new plans call for construction of a 48-inch diameter pipeline instead of the 42-inch line first proposed. While the revised plans call for the pressure of the line to remain the same at 1,260 pounds per square inch (psi), the larger diameter line will increase substantially the capacity of the line and increase the line's efficiency as well, McMillian said.

"One criticism of our line was the feeling that it wouldn't have enough capacity to carry all the gas found in northern Alaska. We disagree with that, but we're willing to give them anything they are willing to pay for.

"The optional system will give us greater flexibility than our initial project and it ought to satisfy those who feel the larger system is more appropriate," McMillian said.

The new plan requires Alcan to construct 300 miles of new pipeline along a mew, straighter pipeline corridor through southern British Columbia and central Alberta in Canada. The line is required since use of segments of the existing Westcoast Transmission Co. and the Alberta Gas Trunk lines is ruled out under the revised design.

The new plan, submitted last month to the National Energy Board of Canada for its consideration, will up the price of the project by $1 billion bringing the Alcan cost estimate to $7.3 billion. The line is still considered the cheapest of the three competing gasline projects.

McMillian said the revision will allow the Alcan project to carry a maximum of 3.4 billion cubic feet (bcf) of gas daily, roughly the same as will be carried by El Paso's "all-Alaska" land-sea pipeline system. The figure represents an increase of 1 bcf daily over the capacity of the initial Alcan design and represents a speed up in the timetable for that gas production.

Under the initial plan, Alcan would have began operations moving only 1.2 bcf of gas daily, carrying higher volumes of gas over a three-year period. McMillian Wednesday said the new system will be able initially to carry 2 bcf daily, the present estimate for gas production from the Prudhoe Bay fields, and could be hiked to maximum capacity within one year.

"Actually we're willing to build maximum capacity from the word go, but we still can't find any reason to do so," McMillian said. The Texan added that his line can be completed and in service in just over three years. He predicted an Oct. 1, 1981 completion date if final approval for the line in the U.S. and Canada is given by the end of this year.

McMillian explained the new line is an "express" line moving gas at a uniform pressure rather than having to reduce pressures when the gas flowed through pipelines belonging to Alcan's three Canadian partners. That change plus one financial change in allocations of the cost of the line, McMillian said, should help reverse some of the criticisms leveled at the project last month by FPC Administrative Law Judge Nahum Litt.

Judge Litt in a preliminary recommendation to the full five-member FPC selected the other buried pipeline route, the Arctic Gas project, as the best project, with El Paso's project second and the Alcan project a distant third.

McMillian called Litt's criticism of several segments of the Alcan plan "unfounded and unfair." He said it was based on Litt ignoring parts of the nearly 45,000-page FPC hearing record and forming his own conclusions not grounded on fact.

McMillian said he was encouraged by the statements of Canadian Prime Minister Pierre Elliot Trudeau during his recent visit to Washington. He argued that Trudeau's statements to President Jimmy Carter implied that Canada would be permitting construction of some type of overland pipeline route. He said that route would be the Alcan route, one which follows the trans-Alaska oil line to Delta Junction in Alaska and then follows the Alaska Highway corridor south into British Columbia.

He made that statement because of the problems he foresees Arctic having with native land claims in the Yukon and the Mackenzie Delta and because of stiff resistence to the El Paso project in California—the site for the firm's gas regasification plant.

"We just don't think of El Paso as competition. The race is between Arctic and us and nothing that is being done locally can affect the outcome. Alaska can do anything it wants. It just will be feeding hay to a dead horse," McMillian said referring to the recent approval of the sale of Alaska royalty gas to three firms including El Paso Natural Gas.

McMillian warned the state that if it intends to have impact on the pipeline decision it had best be prepared to switch its support from the El Paso project to the Alcan project immediately after release this spring of the Berger Commission report, the Canadian investigation committee looking at native land claim issues.

Poland Urges Veto Of Royalty Gas Contracts

By The Associated Press

Sen. Kay Poland, D-Kodiak, Thursday demanded the Legislature request that the governor not sign contracts approved by lawmakers last week for sale of Alaska's Prudhoe Bay royalty gas.

Poland, who voted for the contracts, said she was appalled at the recent disclosure by Tenneco Inc., the firm slated to receive 50 per cent of Alaska's one-eighth share of royalty gas, that it impropertly transferred large amounts of gas from interstate customers to more profitable intrastate markets in Texas.

The revelations appeared in documents filed with the Securities and Exchange Commission and were first reported in Tuesday's edition of the New York Times.

"It's a mystery to me to see how we can expect a company with such a tarnished reputation to have political clout," Poland said in a speech from the Senate floor today.

Under terms of the contracts narrowly approved by the Legislature, Tenneco, El Paso and Southern Natural Gas would receive Alaska's royalty gas in exchange for their lobbying efforts for an all-Alaska gasline route.

"I didn't like them (Tenneco) anyway," Poland said. "Their attitude (during hearings on the contracts) was 'give us the gas and then we'll see what we can do.'"

Poland said she would bring the issue before the Senate Resources Committee, which she chairs.

Policy profiles

Political economics and the pipeline route



By JOHN HAVELOCK
(The third column on pipeline routing policy)

The state government's choice of a trans - Alaska route for delivery of Prudhoe Bay oil made perfect sense from the perspective of both the institutional interests of the state and the state's politically potent construction industry.

There was a rustle of interest in a Canadian route among Alaskan environmentalists. They would become more of a factor in the politics of Alaska pipeline routing after the election of 1974. But the environmentalists were no match for the economic lineup supporting the trans - Alaska pipeline system (TAPS) route in the early 1970s.

WHEN APPLICATIONS for gas pipelines, one across Canada, the other tracking TAPS, were filed in 1973, there was a moment of uncertainty among the state's top political leadership. There was some suggestion that members of the state's congressional delegation might have conversationally conceded the gas to the Midwest in the heat of the TAPS promotional effort. In one form or another, the delegation pronounced its judgment reserved.

Whatever casual promises or assumptions may have been stated by Alaskans, it was obvious that Midwestern and Eastern congressmen saw their regions as having an established proprietary interest in the gas. The regional muscle came through very clearly later in the Alaska National Gas Transmission Act of 1976.

Section 5(b) of that act requires that any approved system include provision assuring "direct pipeline delivery of Alaska natural gas . . . both East and West of the Rocky Mountains." Section 5(c) requires that in the routing decision, consideration be given to the volumes of Alaska gas available, alternative fuel sources, prices and costs to each region of the United States. There is no doubt that the power exists to subordinate all Alaskan interests to congressional perceptions of the national interest in any head to head contest.

THE ALL-OUT EFFORT on TAPS authorization left the state poorly prepared to respond to gasline routing questions. No serious preparatory work had been undertaken by the state with regard to the analysis of economic costs and benefits of gas marketing and delivery systems. The extent of the state's institutional and proprietary interests was unknown. Even the most preliminary data on the cost of each system and its effect on the wellhead value of the oil, the key determinate of the Alaskan interest, was unavailable.

In order to avoid taking on too many taxpaying powers at once, the gas industry was left out of the reordering of oil and pipeline taxes which occurred in 1973. In Alaska the gas industry enjoys perhaps the lowest tax structure among the major producing states of the United States. With the tax contribution of the gas industry unknown, another key ingredient was missing.

Whatever the perspective from the state's institutional interests, there was no room for two ways of thinking from the perspective of the state's construction industry.

THE CLEAR DISTINCTION of the El Paso, trans - Alaska route was that it would carry with its authorization an economic super - boom roughly comparable to the TAPS venture in its impact on Alaska. The Arctic Gas, trans - Canada route would certainly have a big impact on Alaska. Supply systems through Alaska would bear the burdens and gather the profits from supporting much of the construction in northern Canada. A billion dollars would likely be spent on gathering systems and pipeline in Alaska itself.

But the internal logic of the construction industry does not support boom over super - boom. As the huge cost overruns on the TAPS project indicate, the bigger the play, the greater the profits. The state's construction industry wanted the El Paso route.

Super - boom conditions highly favorable to one set of economic interests are not necessarily good for all. During the TAPS construction period, other sectors of the economy and individuals relating to them felt the overstrain of the transportation and supply system. New regional inflation reversed the long term trend which had been bringing the Alaska cost of living closer each year to the national pattern. Governmental costs soared at state and local levels, stimulating ideologically based demands for cutbacks in state service. The public didn't see the connection between 600 per cent overruns on TAPS and cost overruns in government.

The circumstances that required the state to throw its weight behind TAPS were not present in the case of gas pipeline routing. But the strength of the construction industry in the domestic politics of Alaska did not require the industry to wait upon the identification and balancing of competing interests, domestic or national.

JUNEAU IS QUICKER to catch on to the tunes of local politics than Washington. The state administration gave the all - Alaska and sea route for gas an unequivocal endorsement. The congressional delegation bent to the pressure. Within a few months, pretenses of examining the issue "objectively" collapsed under the gathering weight of home - front political reality.

Alaska moved solidly behind the El Paso proposal. Domestic political considerations had precluded the development of a pipeline routing policy based on a rational appraisal of long - term costs and benefits for all Alaskans and the accommodation of Alaska and national interest.

the small society — by Brickman



Tenneco 'tarnished'

ADN 3/11

Fight brews on gas pact

JUNEAU (AP) — Sen. Kay Poland, D-Kodiak, Thursday demanded the Legislature request that the governor not sign contracts approved by lawmakers last week for sale of Alaska's Prudhoe Bay royalty gas.

Poland, who voted for the contracts, said she was appalled at the recent disclosure by Tenneco Inc., the firm slated to receive 50 per cent of Alaska's one-eighth share of royalty gas, that it improperly transferred large amounts of gas from interstate customers to more profitable intrastate markets in Texas.

The revelations appeared in documents filed with the Securities and Exchange Commission and were first reported in Tuesday's edition of the New York Times.

"It's a mystery to me to see how we can expect a company with such a tarnished reputation to have political clout," Poland said in a speech from the Senate floor.

Under terms of the contracts narrowly approved by the Legislature, Tenneco, El Paso and Southern Natural Gas would receive Alaska's royalty gas in exchange for their lobbying efforts for an all-Alaska gas line route.

"I didn't like them (Tenneco) anyway," Poland said. "Their attitude (during hearings on the contracts) was 'give us the gas and then we'll see what we can do' "

Poland said she would bring the issue before the Senate Resources Committee, which she chairs, to determine what method should be used to request that Gov. Jay S. Hammond not sign the contracts.

Doyon backs Alcan gas line

Doyon, Ltd., of Fairbanks, third largest of the 12 Native regional corporations, Thursday announced it is endorsing the Alcan natural gas pipeline project proposed by Northwest Pipeline Corp.

Doyon became the first Native regional corporation to shift from the "all-American" project proposed by El Paso Natural Gas Co. The Alaska Federation of Natives, representing all 12 corporations, endorsed El Paso's project more than a year ago.

Tim Wallis, president of Doyon, said during a news conference that the Alcan route would give Doyon two possibilities for transporting any natural gas found in the Kandik Basin lands owned by Doyon.

The Kandik Basin of Interior Alaska is one of the most promising onshore structures in the state for exploration of oil and gas. Doyon could hook into Northwest's pipeline either to the west or to the south. It could join El Paso's pipeline to the west.

Tenneco Admits Gas Transfers

3/8/77 SEME

By MARK PANITCH
Washington Correspondent

WASHINGTON—Tenneco Inc., one of three large pipeline companies slated to share Alaska's Prudhoe Bay royalty gas, has admitted in documents filed with the Securities and Exhange Commission that it improperly transferred large amounts of gas from interstate customers to more lucrative intrastate markets in Texas.

Alaska Sen. Mike Gravel said he would have no comment while spokesmen for the other members of the state's congressional delegation, Sen. Ted Stevens, R. and Rep. Don Young, R., said they were unavailble.

The revelations appeared in documents filed with the SEC as part of Tenneco's proposal to take over the Monroe Auto Equipment Company. According to the documents, Tenneco's pipeline division diverted the gas to the company's Channel Industries Gas Company subsidiary in Texas.

The diversion may have gone on since 1958, according to the filing. But the document said that the "Tenneco's records concerning (these diversion) may be incomplete."

The New York Times reported in today's editions that the amounts of gas involved in the possibly illegal diversions may be as much as 350 billion cubic feet.

In the documents, Tenneco said "certain volumes of gas purchased by Channel have been produced from anchorage or reservoirs at one time dedicated to interstate commerce under contracts between various producers and the company's inter-pipeline divisions.

"It appears that such gas was released under a variety of procedures, some of which involve transactions which may have failed to meet all the regulatory requirements under the Natural Gas Act."

On Feb. 28 Tenneco asked the Federal Power Commission to legitimize the diversions when it filed a petition asking if "additional regulatory authority" was needed for them. The FPC has not yet responded.

The diversions came to light when the Standard Oil Company of Illinois, AMOCO, sued Tenneco for failing to provide gas promised in a contract. During the course of the court action the diversions either were discovered or were about to be discovered and Tenneco admitted them.

In another section of the filing, Tenneco provided an illustration of the profits that may have been made by the diversion when it compared the 1975-76 average interstate gas price of 30-46 cents per thousand cubic feet with the intrastate price of 48-71 cents.

Recently the FPC has raised the interstate price of gas found since Jan. 1, 1975 to $1.44 per thousand cubic feet. The intrastate price has gone as high as $2.25.

Last week the Alaska State Legislature approved contracts for Tenneco, Southern Natural Gas and El Paso Natural Gas to sell the three companies the state's one-eighth share of Prudhoe Bay Natural Gas. Tenneco is to receive 50 per cent of the royalty gas.

SOUTHEAST ALASKA EMPIRE

WILLIAM S. MORRIS III—PRESIDENT and PUBLISHER
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Production Manager

Gas Pains

From the beginning the sale of Alaska's royalty gas was clouded by charges and counter-charges. The state legislature fumbled with the issue for weeks before approving the sale of our royalty gas to three firms in exchange for a rather nebulous commitment on the part of the buyers to support the El Paso all-Alaska route in Washington, D.C.

The grand finale came in the house where one of the contracts was approved, on reconsideration, by one vote. That one vote came from Rep. Fred Brown, a Democrat from Fairbanks, who lamely explained that between votes he finally got around to reading the contracts and decided they weren't so bad after all. The sale contracts emerged from the legislature after Mr. Brown switched from 'no' to 'yes.'

Cynics have suggested that Mr. Brown, the lowest vote-getter in the Fairbanks delegation, was persuaded less by the merits of the contracts than by the politics of the contracts. Whatever Mr. Brown's reasons, and we have our suspicions, the end result was that it tied the state into a lobbying partnership with one firm whose credibility slipped dramatically this week.

In a story from the Empire's Washington correspondent, we reported Tuesday that Tenneco, the firm which bought 50 per cent of our royalty gas, has admitted in documents filed before the Securities and Exchange Commission that they improperly transferred gas from market to market to hike profits. Their admission is not likely going to win friends and influence Congress in the wake of the natural gas emergencies in the East and Midwest. In fact, Alaska's gas partner, Tenneco, looks more like a villain than a credible lobbyist.

The Tenneco disclosure shocked state Sen. Kay Poland so much she demanded from the floor of the senate that the legislature ask Gov. Jay Hammond not to sign the contracts. "It's a mystery to me to see how we can expect a company with such a tarnished reputation to have political clout," she said. Political clout was what the legislators thought they were buying when they sold billions of dollars worth of the state's gas.

Instead of buying political clout with the Tenneco contract it now appears legislators bought a political liability. Gov. Hammond lobbied long and hard for the contracts his administration drafted but hopefully he will not be blinded by the politics of the issue, as Mr. Brown so obviously was, and sign them over the protests of legislators like Sen. Poland.

The best course for the governor would be to turn the contracts back to the legislature for a vote of reaffirmation. If he doesn't, Tenneco could become an albatross around the state's neck, not a benefactor, in the fight for the state's choice in the pipeline route battle.

The $4 billion bet

State officials prepare to commit Alaska's royalty natural gas to an intra-state pipeline, despite belief Canadians have upper hand.

by John Greely

Juneau

A state cabinet officer was sitting around his dinner table with a group of friends recently when the subject of the North Slope natural gas pipeline came up.

"I'll bet you a hundred bucks," the commissioner said, "that the line goes through Canada."

There were no takers because that was the prevailing attitude here as Alaska prepared to place its biggest bet yet—$4 billion worth of state-owned Prudhoe Bay gas wagered that the pipeline will traverse Alaska instead.

Gov. Jay Hammond made the wager in November, when he completed negotiations with three national pipeline companies to buy the royalty gas in exchange for their support of a trans-Alaska pipeline route, the favorite of Hammond and many Alaskans.

Hammond's announcement of the proposed contracts came on Nov. 12, the final day for interested parties to make a pitch to the Federal Power Commission (FPC) on behalf of their favorite pipeline route.

In a statewide radio address, the governor told the people "studies should not go on forever," and, if Alaska ever hoped to have any say in the [illegible] national debate engulfing competing plans to ship North Slope gas, now was the time to act.

Nearly nine months earlier, on Feb. 24, 1976, Sen. John Rader, D-Anchorage, started pressuring Hammond to sell at least a portion of the royalty gas to generate political support for the route.

"If Alaska hopes for any chance for a trans-Alaska gas pipeline, it's time to act now," Rader declared as he encouraged his colleagues to fork over $50,000 for Hammond to launch negotiations with gas buyers.

Now, it's Feb. 24, a year later. Rader is Senate president and pushing with vigor for ratification in his chamber of the gas deal Hammond worked up.

There are all kinds of interested parties cheering him on—Tennesse Gas Transmission Co., which gets 50 per cent of the royalty gas; Southern Natural Gas Co., which gets 25 per cent; El Paso Natural Gas Co., which gets the other 25 per cent to put through the pipeline it hopes to build from Prudhoe Bay to the Gulf of Alaska; the Anchorage Chamber of Commerce, which is looking to extend the economic boom started by the oil pipeline; and the state's entire congressional delegation, which is lobbying virtually alone in Washington for the trans-Alaska route.

But there are some legislators and other interested parties who still are wondering if now is the time to act, even though Hammond appears to have cut a pretty good deal he was pressured into making.

The deal goes like this:

—Tenneco, Southern and El Paso attempt to build what their spokesmen call a "national constituency" for the Alaska route to influence the president—who must recommend a pipeline corridor to Congress by Sept. 1—and influence Congress, which must render final decision 60 days later;

—In turn, the firms receive all the "surplus" royalty gas at Prudhoe Bay, estimated to be about 2.6 trillion cubic feet, or 10 per cent of the total reserve;

—The price paid to the state for this gas is to be the highest going rate at the time of production;

—The state may take back all of the gas with two years' notice for use within Alaska;

—If that happens, the buyers have a first option to buy surplus gas that's available later, up to 150 per cent of the volumes which they lost from any take-back;

—All bets are off if Congress does not approve a trans-Alaska line, or if no pipeline route is selected by the end of 1978, or if the Federal Power Commission decides the state can't take its royalty gas out of interstate commerce;

—However, if Hammond decides to switch his support to another pipeline—such as the Alaska highway proposal, his second choice—the gas buyers can keep their royalty shares by joining him.

The potential pitfalls in the deal are many and varied, depending on your point of view. They include:

—A general fear that the state is buying the proverbial pig in a poke because during lengthy hearings in early February the companies could offer no concrete illustration of how they intend to build a "national constituency;"

—Specific suspicions that the state should retain some of its royalty gas because no one knows how much is "surplus" to in-state needs, it may be able to get a better price for it later and, in any event, El Paso doesn't need any more inducement to lobby on behalf of its own project;

—A general fear that bycommitting the royalty gas to interstate commerce, the state may not be able to recover it, and by submiting itself to FPC pricing structures in the contracts, the state is usurping its long-standing claim to independence on other gas issues;

—A general fear that the take-back provisions may make investors in the trans-Alaska project skittish, if not downright reluctant to pony up $10 billion or more;

—A specific suspicion that Hammond is setting everybody up to switch his support later to the Alaska Highway pipeline favored by environmentalists, without coming back to the legislature for approval.

Overriding all of these fears is a general abhorrence to bartering an immensely valuable non-renewable resource for political chits, even if the trans-Alaska route is the best one for the state.

But, the legislature asked for it and even laid the groundwork in 1974 for resource issues of this kind to be settled in its own political arena.

Three years ago, former Gov. William A. Egan was putting the finishing touches on a deal to sell much of Alaska's royalty oil at Prudhoe Bay for petro-chemical development in the state.

So the legislature created a special board to review such contracts and made them subject to approval of both houses.

The practical impact of the law adopted by a then-Republican legislature was to keep a then-Democratic governor from making a dramatic move just before he stood for re-election.

Now, here is John Bennett, president of El Paso's Alaska subsidiary, joined by the firm's legion of lobbyists, the Organization for Management of Alaska's Resources (OMAR), telling legislators to hurry up—there's no time for amendments to the contract.

Even former Secretary of State Bob Ward, now president of Arctic Gas Co.—the powerful consortium which claims to have spent $100 million so far in advancing its route through Arctic Canada to the midwest states—was conceding the gas contracts would have "some impact" on the national debate.



Rep. Clark Gruening



Sen. John Rader

And along comes Sen. Ted Stevens, warning legislators in a special joint session that rejection of the contracts "would be a serious and possibly fatal blow" to the Alaska line.

Stevens even went a step further, suggesting the state consider financing all or a portion of the $1.8 billion conditioning plant needed to prepare Prudhoe Bay gas for shipment.

It will take four, maybe six, years to build that plant, and if El Paso's main claim to superiority—that it can deliver gas to the lower 48 sooner than its Canadian opponents—is to hold water, we'd better get cracking on that conditioning plant, Stevens said.

Meanwhile, Alaska's Teamsters Local 959, former BIA Commissioner Morris Thompson, Dr. Arlon Tussing and Nahum Litt were raising all sorts of doubts.

The Teamsters joined the call for some sort of state financing of the pipeline. In addition, they told legislators there was a petition drive underway to get 30,000 people on record against the contract clause allowing Hammond to switch his allegiance to another pipeline route.

Union officials, highly conscious of the thousands of new members corralled with construction of the oil line, don't want Hammond abandoning El Paso during the middle rounds.

Thompson, now leader of the group pushing the Alaska Highway pipeline, hit hard at a possibility raised by state consultants that Alaska could lose millions of dollars in severance taxes by taking its gas in kind, rather than in value, without including protections in the contracts.

Tussing, a noted economist and petroleum expert, labeled the entire sale issue a meaningless political exercise because the state can do nothing to help a trans-Alaska route in the midst of international hardball politics.

"There is no chance for a trans-Alaska pipeline," Tussing told legislators, "so long as there is a chance of a trans-Canada pipeline and there is nothing that Alaska or El Paso or any of the purchasers can do to influence the decision from the United States in that respect."

The decision rests "at the highest levels of the Canadian government," Tussing said, and President Carter and Congress "are going to wait for this."

And then there was the decision of Litt, the FPC's administrative law judge, who concluded after 18 months of examination that the Arctic gas route application was vastly superior in all respects to El Paso's or Alcan's.

If that were not bad enough for El Paso supporters, Litt took repeated swipes at the authority of the state to withdraw royalty gas for its own use. He also said "little weight" could be given to the endorsement by Tenneco and Southern of El Paso's application.

"As is conceded in the briefs," Litt said, "these companies have signed agreements with Alaska to purchase royalty gas, and thus were contractually bound by Alaska to support El Paso."

So, Litt wasn't impressed by the lobbying power bought with promises of royalty gas.

Of course, he's not supposed to be a politician, but his weighty recommendations may be examined closely by the politicians who will make the final decision.

Amid all these doubts, Rader was marshalling his forces for expected approval of the contracts this week in the Senate. An affirmative vote would put added pressure on the House, were the most outspoken critic of the contracts, Rep. Clark Gruening of Anchorage, was raising hell.

Early this week, Gruening's special committee on the gas sale voted along party lines to reject the El Paso contract, saying it was not needed to bolster support for the Alaska line. The Democrat also vowed to fight all three contracts on the floor.

However, Gruening's battle appeared to be a losing one.

Too many resolutions have been adopted in past years supporting the El Paso line. Too many interested parties are backing the gas sale. Too few legislators want to bear the onus—justified or not—for aborting a motherhood issue like an All-Alaska Gas Line.

Thus, the contracts likely were headed to their ultimate fate at the hands of the FPC.

But before that body considers them, it will have to clear its agenda of another item, the pipeline routing.

The commission may even want to delay a vote on the royalty contracts until owners of the rest of the Prudhoe Bay gas come forth with purchase agreements of their own.

Those owners—Exxon, ARCO, Sohio and others—are hedging their bets until the political and economic picture is much more clear.

ADN 2/14/77

Official warns of gas sale

JUNEAU (AP)—A high-ranking California official has urged the Alaska Legislature to disapprove contracts for the sale of state royalty gas, hinting that his state may be able to pay a premium price for the precious commodity.

Richard L. Maullin, chairman of the California Energy Resources Conservation Commission, called for rejection of the contracts in a Jan. 31 letter to Senate President John Rader of Anchorage, chairman of joint legislative hearings on the pacts negotiated by the administration of Gov. Jay S. Hammond.

The contracts would sell the state's one-eighth royalty share of Prudhoe Bay natural gas to Tennessee Gas Transmission Co., Southern Natural Gas Co. and El Paso Natural Gas Co. in return for the firms' pledge to generate political support for El Paso's proposed all-Alaska gas pipeline route.

But even though California is El Paso's biggest customer, Maullin said the state was opposed to the El Paso project because it would make the state 90 per cent dependent on liquified natural gas (LNG).

El Paso wants to transport North Slope natural gas through a pipeline from Prudhoe Bay to Gravina Point on the Gulf of Alaska coast, transform the gas into a liquid and then ship it by tanker to California.

A bigger line for Northwest?

2/10/77

Northwest Pipeline Corp., sponsor of an Alaska Highway route to ship North Slope gas to market, says it is recalculating the size of its proposed 42-inch pipeline in response to requests from Canada's National Energy Board, Morris Thompson, the firm's Alaska representative, said Monday.

Northwest came in a distant third in the analysis of a Federal Power Commission administration law judge on which of three proposed projects should be chosen to transport North Slope gas.

NOTING THAT the law judge criticized Northwest's planned pipeline as being "undersized," Morris Thompson, the firm's representative here, told the Anchorage Chamber of Commerce Monday that the company believes it is adequately addressing questions of size in presentations before the National Energy Board.



Morris Thompson

Northwest was a latecomer in Federal Power Commission proceedings on a gas pipeline route, having submitted its application in July of 1976. "We feel Judge (Nahun) Litt didn't thoroughly review our presentation," Thompson said.

Northwest and Arctic Gas Co., which proposed a pipeline down from the North Slope through Canada's MacKenzie River Valley, must obtain approval of the Canadian government as well as the U.S. government before they can move forward.

Thompson said he believes an overland route will be chosen — and that means either the Northwest or the Arctic project. The third competitor, El Paso Natural Gas Co., wants to build a combination pipeline and tanker system.

An overland route will win because it would mean direct deliveries to the heavily populated Midwestern and Eastern states. Congressmen viewing the projected oil glut on the West Coast will not put gas on the same coastline, Thompson predicts.

Indications of various state governments, and the FPC law judge and staff decisions also point to selection of an overland route, he said.

State House final test

APN 2/24/77

Senate okays gas contracts

By PAUL NUSSBAUM
Our Juneau Bureau Chief

JUNEAU — Contracts to sell Alaska's royalty natural gas face one final hurdle before they come to a vote in the state House. The contracts were given a major boost Wednesday when they won approval in the Senate by a 3-1 margin.

The contracts to sell the state's one - eighth share of natural gas to three transmission companies face stiffer opposition in the House, where they are expected to come to a vote either Friday or Monday. The last committee to examine the contracts, the House Finance Committee, will consider the three proposals today. The committee chairman said he expects the committee will be "pretty well divided."

THE SENATE action Wednesday came after protracted debate, during which Senate President John Rader relinquished his chair to urge passage of the contracts on the floor of the Senate.

Time's running out—OMAR
Page 2

Over opposition led by Sen. Chancy Croft, D-Anchorage, each of the three contracts was approved by the Senate, 15-5. Croft championed an amendment which would have repealed the contracts if Congress took away provisions that give Alaska the unprecedented right to take its gas off an interstate pipeline for intrastate use without federal approval.

Joining Croft in support of the amendment were Sens. Frank Ferguson, D-Kotzebue; John Huber, D-Fairbanks; Pat Rodey, D-Anchorage; John Sackett, R-Galena, and Kay Poland, D-Kodiak. Poland however voted to approve the contracts after the Croft amendment was defeated, 14-6.

SUPPORTERS of the contracts said the amendment and four others introduced by Huber, were merely moves to delay or kill the contracts.

Under the contracts, negotiated by Gov. Jay S. Hammond's administration, Alaska would sell the state's estimated 2.5 trillion cubic feet of Prudhoe Bay natural gas to three gas transmission companies: Tenneco Alaska Inc., Southern Natural Gas Co., and El Paso Natural Gas Co. In exchange for the gas, the three companies are to throw their lobbying efforts behind selection of an all - Alaska natural gas pipeline proposed by El Paso.

House opponents of the contracts contend that passage of the measures won't carry much weight with Congress or the Federal Power Commission and that the state surrenders flexibility to use its gas by committing it now. Supporters of the contracts say the pacts could make the difference between selection of a trans - Alaska route or selection of some other gas line route.

CROFT SAID afterwards he thinks the Senate opposition may "strengthen the resolve" of those in the House who oppose the contracts.

"I think it would have been a lot closer if there had been a secret vote," Croft said. "A lot of people voted for it because they thought a vote against the contracts would be seen as a vote against the El Paso line. It's not."

In speaking against Croft's amendment and for the contracts, Rader called it a "bad argument well made."

"WE'RE LIKE a frightened animal, a rabbit, standing in front of a hawk, immobilized by fear," the Senate president said after relinquishing the presidency temporarily to floor leader Mike Colletta, R-Anchorage, in order to enter the debate. "The worst thing we could do is sit here quivering and let the hawk pick us up and carry us off. Perhaps no hawk will carry us off; perhaps good fortune will protect the fools and idiots in the Alaska Legislature."

The three contracts will be reviewed today by the House finance Committee, and chairman Steve Cowper predicted Wednesday that the vote in that committee "will be pretty well divided."

REP. CLARK Gruening, D-Anchorage, is a member of the committee and as chairman of the special committee which reviewed the contracts in the House, is expected to carry some weight with the Finance Committee. Gruening opposes

(Continued on Page 2)



UA Regents tap interim president

FAIRBANKS (AP) — The University of Alaska Board of Regents Wednesday named Dr. Charles O. Ferguson, chancellor of the UA's Southeast branch, as interim president of the financially troubled school.

Ferguson, whose appointment

Commissioner Bill Allen of the state Department of Administration, who was among the university's critics when the cash flow problem was disclosed, was present for the Board of Regents meeting.

Allen is now engaged in what he has

consideration.

He said Ferguson had indicated that he would take the post, depending on what conditions were attached by the regents.

Fate added: "He is not a candidate (for the presidency). He has

House puts off gas contract vote

By PAUL NUSSBAUM
Our Juneau Bureau Chief

JUNEAU — The state House won't vote on three contracts to sell Alaska's royalty natural gas until early next week. The chairman of the House Finance Committee — where the contracts are now being examined — said he wants the weekend to study the contracts further.

The Senate will vote a second time on the gas contracts today after Sen. John Huber, D- Fairbanks, asked for reconsideration. Huber argued Thursday that the contracts not be adopted without an amendment, and when that amendment failed, he forced the Senate to postpone a vote until today with a parliamentary maneuver.

THE SENATE PASSED the contracts, 15-5, on Wednesday, and even the opponents of the contracts say the Friday vote won't be much different.

Huber issued a call of the House Thursday after his amendment failed for the second day in a row, requiring all members not officially excused to be present to vote on the contracts. Sen. H. D. "Pete" Meland, D-Sitka, had already left for home.

Meland, though, has been officially excused from Friday's session, and the contracts are expected to breeze through the Senate for the second and final time.

NATURAL RESOURCES Commissioner Guy Martin urged the House Finance Committee Thursday to give its approval to the contracts and move them on to the full body for a vote.

Martin attacked a report prepared by the House special committee on the gas contracts, and he said the "report was really a long list of problems, though it purported to be a balanced analysis."

Finance Committee Chairman Steve Cowper, D-Fairbanks, said no vote would be taken on the contracts until next week, "because the chairman needs the time to look these things over."

THE HAMMOND administration and members of the state's congressional delegation continue to urge quick passage of the contracts to boost political support for a trans-Alaska gas pipeline from the North Slope.

If the contracts are approved, the state's one - eighth share of the Prudhoe Bay natural gas would be sold to three transmission companies in exchange for their support of an all - Alaska route.

Rep. Clark Gruening, D-Anchorage, who chaired the House special committee on the contracts, leads the fight against the contracts in the House. Opponents of the contracts in the House are expected to concentrate their efforts on the contract which would sell 25 per cent of the state's gas to El Paso Natural Gas Co. El Paso is the company seeking approval from the federal government to build a pipeline through Alaska.

HOUSE OPPONENTS reason that the El Paso contract should be rejected because it will garner no more support from El Paso than the company is already giving its own line and that the state will have more flexibility to do what it wants with the uncommitted gas.

Martin called such reasoning "slightly preposterous."

"If the state makes the sale to Southern (Natural Gas Co.) and to Tenneco (Alaska Inc.) and not to El Paso, it would basically be a vote of no confidence," the natural resources commissioner said. "It would be entirely unwise not to sell to El Paso."

Gas route impasse predicted

Canada's Prime Minister Pierre Trudeau and his Liberal Party are in such "terrible political trouble" that a decision in favor of the Arctic Gas pipeline proposal would be risky, economist Arlon Tussing told the Bartlett Democratic Club Thursday.

At the same time, Tussing is confident that the U.S. government, from the Federal Power Commission to Congress and the President, will choose the Arctic Gas route.

TO OVERCOME the impasse, a working group of Canadians and Americans will probably be able to agree on an overland pipeline route — and that could very well be an Alcan Highway route, Tussing believes.

A University of Alaska professor, he served as chief economist for the U.S. Senate's national fuels and energy policy study, and is a consultant to the U.S. Senate Interior Committee.

Earlier this month, Tussing startled the state legislature in testimony that said it was futile for Alaska to try to influence the North Slope gas pipeline route decision by selling its royalty gas to companies that agree to lobby for the state's choice of routes.



Arlon Tussing

WHILE HE BELIEVES the U.S. will overwhelmingly choose Arctic Gas, the Native land claims issue and the fact that Canadians won't need to develop their Mackenzie River Valley gas reserves for another decade, make it unlikely that Canada's government will jump in to support Arctic Gas, Tussing said.

Arctic Gas proposes to tap the Mackenzie reserves as well as North Slope gas in its trans - Canada pipeline from Alaska to the Lower 48 states.

Prime Minister Trudeau must hold national elections by 1978, and since his Liberal Party is in deep trouble, it would be a risk to make a decision that would alienate a sizeable segment of the population Tussing said.

THE TWO-YEAR INQUIRY into social and environmental impacts of a gas pipeline in the Mackenzie River Valley by Justice Thomas Berger in Canada is about to conclude with a recommendation by Berger.

Should that recommendation be for a delay in Mackenzie Valley development until land Native claims are taken care of, the Canadian government would be hard put to "run roughshod over it," the economist said.

"It's a matter of political reaction from the bleeding heart vote in the urban areas."

ON ANOTHER Canada pipeline issue, Tussing said the premiers of both British Columbia and Alberta said in his presence that if Americans were worried about the provinces interfering in a U.S. pipeline, each would be willing to sign the treaty between Canada and U.S. national governments guaranteeing non - interference.

Tussing said in meetings during December and January, the premiers indicated they recognize the sovereign powers of the national government concerning interprovincial and international pipelines, and the premiers said they have no intention of imposing discriminatory taxes on U.S. pipelines.

El Paso Natural Gas Co., in promoting its "all - American" pipeline, has raised the possibility of interference from Canada's provincial governments in the projects proposed by Arctic Gas and Northwest Pipeline Corp.

Gas Showdown Facing House

SEAE 3/1/77

By CHUCK KLEESCHULTE
Empire Staff Reporter

The showdown over the state's sale of North Slope royalty gas likely will come Wednesday on the floor of the House.

The duel between opponents and proponents of the pacts was guaranteed Monday when the House Finance Committee voted to send the pacts to the floor for consideration.

The finance panel, however, failed to recommend acceptance of any of the administration-negotiated pacts with only three of the 10 voting members making recommendations in favor of the contracts.

Several of the members of the panel said they will oppose the contracts on the floor, and Juneau's Rep. Jim Duncan said he will lead efforts on the floor to tack an amendment onto the contracts.

Duncan proposed a controversial provision in the pacts be deleted. The clause, the so-called "switching" provision, allows the state to switch its support from the El Paso all-Alaska gas line route to another route, probably the Alcan line. The clause also allows the three transmission firms, Tennessee Gas Transmission Co., a subsidary of Tenneco, Southern Natural Gas and El Paso to keep their gas if they follow the state's lead.

"The clause contains a basic inequity. We're giving our gas to El Paso to help them sell construction of their line. But if Alcan finally is the state choice, we have no gas left to follow the same rationale," Duncan said as he argued he gas contracts should simply be terminated the state drops its support of the El Paso roject.

Duncan also argued that since the contracts on't contain any performance criterion for e amount of support the companies must ovide, elimination of the clause would in- ce the firms to work harder for the El Paso ject.

'I think the addition of the amendment will e them all the incentive they need. Because ey don't win then its certain they won't be ng any gas," Duncan said.

pponents of the contracts attacked the dment as an attempt to delay approval e pacts. They argued the administration on that amendments to the contracts will e total renegotiation of the pacts and implementation needlessly.

the amendment had been in the original ct I would have no objection to approving it, but I have a feeling that these resolutions are being stalled to death. I object to anything that which will drag this out any longer," said Rep. Oral Freeman, D-Ketchikan.

The committee failed to adopt the amendment on a 5 to 5 vote with Rep. Thelma Buchholdt, D-Anchorage, out of the room.

The committee then voted to move the contracts, sending them to the floor but with a plurality of the committee voting to recommend disapproval of the pact which calls for the sale of 25 per cent of the state's gas to El Paso.

Five Democratic lawmakers including Duncan, Clark Gruening, Anchorage; Red Swanson, Nenana; Russ Meekins, Anchorage; and Leo Schaeffer, Kotzebue, all recommended disapproval, while committee Chairman Steve Cowper, D-Fairbanks, and Phillip Guy, D-Kwethluk, declined to make a recommendation. Three members, Freeman, E.J. "Ernie" Haugen, R-Petersburg, and Leo Rhodes, R-Homer, recommended approval of all the pacts.

On the other pacts, Duncan and Meekins joined Cowper and Guy in the uncommitted category.

The less than positive reception came following an appearance by Morris Thompson, vice president of the Alcan project. Thompson argued the switching position should be removed from the contract since it discriminates against the Alcan project.

Thompson added his firm should be given an opportunity to bid competitively for the state's one-eighth share of Prudhoe Bay reserves. "Originally we felt precluded from bidding on the state's gas because a condition of bidding was support for the El Paso system."

Following the session Gruening, chairman of the Special House Gasline Review Committee, said he still plans to compaign against the contracts on the floor. The Senate last week approved the pacts on a 14 to 5 vote.

"I won't be talking much, everyone has made up their own minds and there's no reason to yak the issue to death. But I do feel a concise explanation of what's at stake should be made," Gruening said.

Duncan said he would be proposing his amendment on the floor—an amendment El Paso officials said they were still optimistic will be defeated.

SEIZ

House Rejects Duncan Amendment, El Paso Pact May Be In Jeopardy

By CHUCK KLEESCHULTE
Empire Staff Reporter

The Alaska House this morning turned down an amendment which would have modified contracts for the sale of the state's share of North Slope royalty gas.

But the close vote on the amendment, offered by Juneau Rep. Jim Duncan, signaled that one of the three pacts might be in grave danger of rejection when it comes up for a floor vote later this afternoon.

The House, on a 17-22 vote, balloted against acceptance of an amendment which would have caused the administration-negotiated pacts to be automatically terminated if the state ever decided to switch its support away from the El Paso all-Alaska gas line project.

Duncan, who proposed the amendment Monday in the House Finance Committee, argued that allowing the so-called "switching" provision to remain in the pacts would prevent the three transmission firms proposing to buy the state's one-eighth share of Prudhoe Bay gas from having a clear incentive to "go all-out" in support of the Alaska line.

Duncan also argued that acceptance of the contracts without alternation would establish a bad policy where the state would be unable to support the Alcan Pipeline Co. by selling it a share of state gas, if the state ever did switch its support from the El Paso project.

Opponents of the amendment argued that its acceptance would needlessly delay acceptance of the royalty gas contracts since the pacts would need to be renegotiated and then returned to the state's Royalty Oil and Gas Board for consideration.

Even after rejection of the amendment, however, administration officials were sweating over indications that the House might accept pacts with Tennessee Gas Transmission Co. and Southern Natural Gas while rejecting a contract with El Paso—the sponsor of the state's preferred all-Alaska gas line route. Under the pacts the state would sell 25 per cent of its gas to El Paso.

Attorney General Avrum Gross during a break in a party caucus acknowledged that the final vote on approval of the El Paso contract "is too close to call." Legislative observers were, however, predicting easy approval for pacts with Tennessee and Southern which involve the sale of 50 per cent and 25 per cent of the state's gas respectively.

Gross expressed alarm over the effect that rejection of the El Paso gas contract would have on acceptance of the El Paso pipeline project in Washington.

"I don't see how rejection of the El Paso pact can be interpreted any other way than being a direct slap at the company which has broken its back in support of the state's aims. I don't have any idea how our Congressional delegation is going to explain that Alaska is all in favor of the El Paso project while it refused to sell the company its gas," Gross said.

Juneau Rep. Mike Miller, House majority leader, however, said this morning he will vote against the El Paso contract since it represented a needless sale of state gas.

"This is an arm-length, coldly calculated business deal. I haven't been convinced that we will gain enough extra political support for the El Paso project from selling gas to El Paso to justify what we might lose in future pricing.

"El Paso is already committed to work for us, they don't need any additional incentive to do so," Miller said.

The House Special Gasline Review panel last week recommended against acceptance of the El Paso contract so that the state could keep some gas in reserve to take advance of potentially higher prices from future gas sales.

Gross, however, argued against rejection of the El Paso pact saying that contract could help the state the most strengthening citizen support for the all-Alaska in the state where such support is weakest, California.

The House will be balloting on the pacts, approved by the Senate last week, this afternoon.

SEAE 4/28/77

Arctic Gas Route Pushed

ANCHORAGE, Alaska (AP) President Carter has been urged in a letter from 13 members of the Senate to choose the Arctic Gas Co. proposal for a Canadian line to transport natural gas from the North Slope to the Lower 48.

In reporting on the letter Sunday, the Anchorage Times said the 13 senators have generally favored a Canadian route for North Slope gas and in 1973 backed a trans-Canada line for oil.

They urged the President to accept the recommendations of Federal Power Commission Administrative Law Judge Nahum Litt.

Litt recommended on Feb. 1 that the FPC grant Arctic Gas a certificate to build the Canadian route for natural gas.

"The decision of the administrative law judge was reached after 20 months of hearings, during which representatives of several states, environmental organizations, consumer groups and the three competing pipelines were permitted to cross-examine witnessess," the 13 senators told Carter.

"The 45,000-page hearing record provides conclusive evidence that the proposed Arctic Gas pipeline is the wisest of the three proposed delivery systems in terms of national energy needs, economics and environmental considerations."

The FPC is scheduled to make its recommendation by May 1. Other federal agencies and individual states may offer comments until July 1.

Carter then has until Sept. 1 to recommend a route to Congress, although the President can take an additional 90 days if he feels it is necessary.

The 13 senators urged Carter to make his recommendations by Sept. 1, saying, "Renewed understanding of the value of the natural gas reserves in Alaska has come in the wake of our current natural gas crisis and emphasized anew the importance of reaching the correct decision on the delivery system for this gas as promptly as possible."

Signing the letter were Sens. Birch Bayh, D-Ind.; Hubert Humphrey, D-Minn.; Wendell R. Anderson, D-Minn.; Wendell Ford, D-Ky.; Robert Griffin, R-Mich., Donald Riegle, D-Mich.; Jacob Javits, R-N.Y.; Claiborne Pell, D-R.I.; Charles Mathias, R-Md.; Thomas Eagleton, D-Mo.; John Culver, D-Iowa; Richard Lugar, R-Ind., and George McGovern, D.-S.D.

Royalty Gas Contracts Signed Months Ago

SCNE 3/11/77

By The Associated Press

Kodiak Sen. Kay Poland has drafted a letter requesting Gov. Jay Hammond not sign contracts selling Alaska's royalty gas, but the administration says the contracts were signed before they were submitted to the legislature.

Asst. Atty. Gen. Fred Boness said the contracts to sell Alaska's one-eighth share of Prudhoe Bay natural gas were signed by Natural Resources Commissioner Guy Martin several months ago when the state's Royalty Oil and Gas Board approved them.

The contracts do not require Hammond's signature, Boness said, and became official when the legislature approved them last week.

Under terms of the pacts, Tenneco Inc., El Paso and Southern Natural Gas will receive Alaska's royalty gas in exchange for their lobbying efforts for an all-Alaska gas line.

Sen. Poland, who voted for the contracts, said Thursday she was appalled at the recent disclosure by Tenneco, the firm slated to get 50 per cent of of Alaska's gas, that it improperly transferred large amounts of gas from interstate customers to more profitable intrastate markets in Texas.

Sen. Poland demanded the legislature request that Hammond not sign the contracts.

"It's a mystery to me to see how we can expect a company with such a tarnished reputation to have political clout," Sen. Poland said.

She said today that she did not know the contracts had been signed. She called a meeting of the Natural Resources Committee, which she chairs, and said if the contracts have been signed, she may still draft a letter requesting they be nullified if possible.

APN 2/28

Arctic Line In Trouble?

ANCHORAGE (AP) — Economist Arlon Tussing says Canadian Prime Minister Pierre Trudeau and his liberal party are in such "terrible political trouble" that selection of the Arctic Gas pipeline proposal would be risky.

But Tussing told the Bartlett Democratic Club here Thursday he is confident that the U.S. government will select that route. He predicts the impasse probably will be resolved with an agreement on an overland route, quite possibly an Alaska Highway route.

The University of Alaska professor and consultant to the U.S. Senate Interior Committee said it is unlikely Canada will provide strong support for the Arctic Gas proposal. He said reasons for that lack of enthusiasm included unresolved Canadian Native claims and the fact that Canada does not need to develop gas reserves in the MacKenzie River Valley for another ten years.

The Arctic Gas project would cross the Arctic National Wildlife Range en route from Prudhoe Bay to Canada, and the firm proposes to tap the MacKenzie reserves with its line to markets in the Lower 48 states.

Tussing said Trudeau must hold national elections by 1978 and it would be unwise for him to make a decision which could alienate a significant portion of the population.

He said if a Canadian court report on Native claims recommends a delay in the project, it will be difficult for the Canadian government to "run roughshod over it."

He called it "a matter of political reaction from the bleeding heart vote in the urban areas."

Tussing also said the premiers of British Columbia and Alberta stated earlier this year they have no intention of imposing discriminatory taxes on U.S. pipelines through their provinces.

Showdown on gas bill today

ADN 3/2

By PAUL NUSSBAUM
Daily News Staff Writer

JUNEAU — Arm-twisting and other arts of gentle persuasion were the favorite indoor sport here Tuesday as supporters and opponents of contracts to sell Alaska's royalty gas tried to line up votes for Wednesday's showdown in the House on the contracts.

The biggest battle will develop over the contract which would sell 25 per cent of the state's one - eighth share of natural gas to El Paso Natural Gas Co. The other two contracts, to sell the rest of the royalty gas to Southern Natural Gas Co. and Tenneco - Alaska Inc., are expected to pass the House.

ALL THREE contracts were approved by the Senate last week.

The El Paso contract is expected to have less support than the other two contracts because El Paso is the company which wants to build a trans - Alaska gas pipeline from the North Slope. Opponents of the contract say the state will gain no additional political support for a trans - Alaska line by selling gas to a company which is already committed to the prospect. By not selling the 25 per cent, opponents say, the state can retain flexibility in deciding what to do with its royalty gas.

Rep. Bill Miles, D-Anchorage, will bolt the Democratic caucus he chairs to lead the floor battle for the contracts, sources here say. Rep. Clark Gruening, D-Anchorage, will lead the opposition.

THE HEAD-COUNTING Tuesday was complicated by a requirement that the contracts be approved by a majority of the House, rather than just a majority of the members present. With such an extremely close race, one or two absent members may make the difference.

Two members are excused from the House today — Charles Parr, D-Fairbanks, and Kris Lethin, R-Anchorage. Lethin, a supporter of the contracts, may fly to Juneau in time to vote. Parr is out of the state.

Depending on whom you ask, the supporters of the El Paso contracts have 19, 20 or 21 votes. It will take 21 to carry the day.

The 15 Republicans are reportedly bound by a caucus commitment to vote in favor of the El Paso contracts. Of the Democrats, Miles, Steve Cowper of Fairbanks, Al Ose of Palmer and Oral Freeman of Ketchikan are expected to vote for the contract. That leaves the supporters of the contract two votes short of the majority they need.

Supporters of the contracts have not been able to get lobbying help from Gov. Jay S. Hammond, who is in Washington, D.C., to attend a National Governor's Conference. Natural Resources Commissioner Guy Martin, who has been an ardent campaigner for the contracts, met with individual legislators Tuesday.

The Hammond administration signed the contracts with the three gas transmission companies last November, in exchange for support of a trans - Alaska pipeline route.

Miles, who will join with Republicans Rick Urion, C. V. "Chat" Chatterton and Joe Hayes — all of Anchorage — to lead the battle for passage of the contracts, acknowledged Tuesday evening he may be accused of playing politics by advocating passage of the El Paso contract.

Miles will be voting against the other two Democrats from his District 7 home area — Russ Meekins and Gruening.

"But I've been in favor of these contracts for a long time," Miles said. "If the caucus decides this way at the last moment, well, that's the way it goes."

Whatever the outcome today, there is certain to be a replay on Thursday. Whichever side loses today is almost certain to have a representative give notice of reconsideration of his vote, thus requiring a second ballot the following day.



Associated Press Wirephoto

Govs. Julian Carroll, Ky. and Jay Hammond, Alaska, flank Interior Sec. Cecil Andrus at governors' conference Monday.

20-19 vote to be tested again today

House rejects El Paso contract

ADN 3/3/77

By PAUL NUSSBAUM
Our Juneau Bureau Chief

JUNEAU — The state House Wednesday narrowly rejected a contract to sell 25 per cent of Alaska's royalty natural gas to the company which hopes to build a trans - Alaska gas pipeline from Prudhoe Bay. Two other contracts to sell the rest of the state's share of the North Slope gas were approved.

The House will vote on all three of the contracts again today, as several legislators gave notice of reconsideration of their votes.

SUPPORTERS of a contract to sell one - fourth of the state's royalty gas to El Paso Natural Gas Co. hope to persuade at least two members to change their votes today. The resolution approving the contract was defeated, 20-19, Wednesday. A majority of the 40 members of the House must approve the contract if it is to become law. All three contracts passed the Senate last week.

If defeated on reconsideration today, the contract to sell natural gas to El Paso is dead for all practical purposes. The resolution to approve the contracts is the Senate concurrent resolution, and there is an identical House version. But that



Rep. Clark Gruening

resolution would not be acted on if the Senate version fails, because "you don't want to keep beating a dead horse," House Speaker Hugh Malone said Wednesday.

Rep. Clark Gruening, D-Anchorage, led the floor fight against the El Paso contract. Gruening and other opponents of the contract charged that the state would give up flexibility to dispose of its gas in exchange for political support that was already there. The primary purpose of the three contracts is to gather support from the three transmission companies for a trans - Alaska gas pipeline in exchange for the state's estimated 2.5 trillion cubic feet of natural gas.

"WE HAVE BEEN so single - mindedly grabbing onto this single objective that we've been ignoring others," Gruening said. "There's not a group of attorneys smart enough to write a contract to take care of us 20 years down the road."

William Akers of Chuloonawick, the only Republican to vote against the El Paso contract, is certain to have pressure put on him to switch his vote. So is Martin Severson, the Independent from Naknek appointed by Gov. Jay S. Hammond to fill a vacancy in the House. Both had indicated earlier they would vote to approve the contracts, but changed their votes to maintain the solidarity of the bloc of rural legislators.

THE CONTRACT to sell 50 per cent of the state's royalty gas to Tenneco - Alaska Inc. was approved, 23-16. The third contract, to sell one - fourth of the royalty gas to Southern Natural Gas Co., won approval by a 24-15 margin. The difference in the two votes was provided by Rep. Mike Miller, D-Juneau, who voted for the Southern contract and against the other two.

Minority Leader Rick Urion, R-Anchorage, said Anchorage Democrats will be the prime targets of a switch - your - vote effort. Mentioned were Thelma Buchholdt and Joe McKinnon.

"I think when they sleep on it and realize their votes will be seen as votes against the El Paso line, they may change their minds," Urion said.

IN THE PUSH to sway the necessary two votes, Hammond will call his hometown friend Severson from Washington, D.C., where the governor is attending a National Governor's Conference, Hammond aide Frances Ulmer said Wednesday after the vote. The administration will also try to persuade Akers and Fairbanks Democrat Fred Brown to vote in favor of the contracts, she said.

Anchorage Republicans Urion, Joe Hayes and C. V. "Chat" Chatterton and Anchorage Democrat Bill Miles

(Continued on Page 2)

Andrus told of gas line choice

By ROSEMARY SHINOHARA
Daily News Staff Writer

Gov. Jay S. Hammond, in Washington, D.C. for the National Governors Conference Tuesday claimed some success in cabinet level lobbying for the trans - Alaska route for a North Slope natural gas pipeline.

Hammond told The Daily News he is convinced the chief of the Interior Department, Cecil Andrus, will consider potential delays — particularly with Canada's Native land claims — that face a trans - Canada gas pipeline system.

THE GOVERNOR met with Andrus during a ride back to his hotel, and left the secretary feeling that the delay potential of the Arctic Gas trans - Canada pipeline proposal will not be ignored in the Interior Department's position paper to President Carter.

"While he certainly was non - committal, he did not dispute it (the delay potential)," Hammond said. "I think he is very sensitive to the possibility." Unless Native land claims are "removed as a roadblock, I think it would be a significant factor in his decision."

As governor of Idaho, Andrus supported Alaska and other Western governors on behalf of the trans - Alaska pipeline route proposed by El Paso Natural Gas Co.

BUT AS INTERIOR Secretary, the former Idaho governor will make a new recommendation on the gas pipeline issue to the President after the Federal Power Commission issues its opinion in May.

During the governors conference, Hammond said he met singly and collectively three times with Andrus and James Schlesigner, designated to head the proposed Department of Energy.

The governor said he
"initially somewhat concer
about the Carter Administr
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FRIDAY, MARCH 4, 1977—WEEKEND EDITION

16 PAGES TODAY 25 CENTS

House Backpedals, Okays El Paso Pacts

By CHUCK KLEESCHULTE
Empire Staff Reporter

Supporters of the proposed sale of the state's share of North Slope royalty gas to El Paso held their breath this morning as the House voted on reconsideration of the $1 billion contract.

After the green and red lights stopped flashing on the chamber's toteboards, they exhaled having gathered the exact number of votes needed to reverse Wednesday's rejection of the pact.

With Reps. Fred Brown, D-Fairbanks, and Martin Severson, I-Naknek, changing their votes, the House approved the sale of 25 per cent of the state's gas production to El Paso on a 21-16 vote. The House also reaffirmed its support for the administration-negotiated sale of 50 per cent of the state's gas reserves to Tennessee Gas Transmission Co., a subsidary of Tenneco Inc., and to Southern Natural Gas. Those contracts were originally affirmed Wednesday.

The switches to supporting the contract came following scant debate in the House. Two days of intense lobbying efforts by supporters of the gas pacts—pactz designed to net the state political support in favor of El Paso's all-Alaska gas project preceded the final vote.

Brown in a speech on the floor explained he was switching his vote since he had been convinced that rejection of the pacts would be perceived in Washington as a slap by Alaska against the backer of the all-Alaska project.

"We may not like it, and it certainly is not the case factually, but rejection of the pact will be preceived in Washington as Alaskans taking a negative position against the El Paso project.

"No matter how painful it may be, I must accede to the view of people close to Washington who believe that our rejection will have a negative effect on chances for selection of the all-Alaska line," Brown said.

The Fairbanks lawmaker also said his review of the contracts Thursday night convinced him the contracts were technically sound and protected the state well on price provisions for the gas. He added, though, he still has not been convinced that El Paso needs the gas. "I don't think El Paso needs any more incentive to lobby for its own line," Brown added.

Opponents of the contract continued to argue that the pact with El Paso was not needed since the state would not be netting additional political support from the sale and would be wise to withhold 25 per cent of its gas to take advantage of future changes in gas prices.

Proponents, however, argued that the pact would give El Paso the ability to gain support for the all-Alaska project in the Southwest. Rep. C.V. "Chad" Chatterton, R-Anchorage, argued that the El Paso project is weakest in California which has opposed construction of El Paso's gas reliquification plant, a key ingredient in the project. Chatterton reasoned that the ability to promise Californians gas would tip the balance in favor of the El Paso project in the key state.

Opponents of the pact continued to argue that as long as the switching provision remains in the contract, a clause giving the state the ability to switch its support to another pipeline route, that the contracts could actually be harmful to state interests.

"A vote against these contracts does not mean we are opposed to the all-Alaska route. In fact it means we are truly in favor of it. Such a vote makes sure we support the all-Alaska route," Rep. Russ Meekins Jr., D-Anchorage, said.

After the vote, Gov. Jay Hammond expressed pleasure at the outcome. "I think a lot of people had not realized the negative effect that rejection of the contract might have had on the trans-Alaska line.

"I believe in Washington they would have noted the rejection of the gas contracts as, in essence, a lack of support for a trans-Alaska route or a lack of concern for the routing of a gas pipeline. Whether or not that is a rational conclusion to draw is quite aside from the point," Hammond said during a stopover in Chicago on his way back from the nation's capital.

Rep. Clark Gruening, D-Anchorage, a leading opponent of the sale, this morning did not express surprise at the outcome on reconsideration. He said he expected Severson, appointed to fill a temporary vacancy by Hammond, to change his mind on reconsideration.

"I guess all I can hope now is that I was wrong and that the contracts will prove to be good ones for the state," Gruening said.

The pacts, approved by the Senate last week, now go into effect.

SCOMM

#21:15

SOUTHEAST ALASKA EMPIRE

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Production Manager

Gas Contracts

The Senate has considered and reconsidered. The House is unsettled. The issue is the sale of the state's royalty gas to three gas transmission firms in exchange for political support of the El Paso pipeline route in Washington, D.C.

Final resolution could earn the state hundreds of millions of dollars or cost a like amount, depending on who can be believed.

Never has an issue been more shrouded in fog than the gas sale. Part of the fog is being generated by steamed-up lobbying efforts. Political catchphrases like all-Alaska, all-America and vague allusions to 'national security' obscure the issue.

All the subterranean rumbling and airy pronouncements tend to hide the central theme of whether, as the Hammond administration says, the sale of our gas resources will curry enough support in Washington, D.C. to ensure selection of the El Paso route for the gas pipeline.

Separate that theme from the chaff and the answer is 'no.'

The simple truth is: through the gas sale pacts, Alaska would be allied with 'big oil.' And whether or not the popular image is justified, 'big oil' is synonymous with 'big lie' in the minds of many, many Americans. If the gas sale is approved by the legislature, the integrity of Alaska on the gas line issue will fall to the level most people believe is occupied only by oil and gas firms and Lockheed. In other words, the alliance would be seen as a crass political ploy.

But there are other persuasive arguments against approval of the gas sale pacts. There is no minimum standard of performance required of the three gas-sale beneficiaries who supposedly will lobby for the El Paso route. All three (Southern, Tenneco and El Paso) refuse to commit a specific dollar amount to the lobbying effort for the all-Alaska route. None is willing to describe, except in vague generalities, what efforts would be expended on the state's behalf.

In fact, the state included in the contracts a provision which allows the gas sale to remain valid if the transmission companies follow the state's lead and switch their allegiance to another line.

Canada Turmoil

Secession

By Roland Bird
NEA/London Economist news Service
(Second in a series)



Rene Levesque did not sweep the Parti Quebecois into power on Nov. 15 by concentrating on separatism. It was George Bourassa, Quebec's Liberal Party leader, who told Quebecers to vote Liberal and keep the separatists out, while Levesque, having opened his campaign with the promise of a referendum in two years to decide on separatism, went on to slaughter the Liberals with charges of bad government and scarcely another word about separatism.

Since Levesque was never fighting for immediate separatism, it is rather jesuitical to claim that 40 per cent of the popular vote for the Parti Quebecois is tantamount to a rejection of separatism. The party is committed to secession and will seek a mandate for it two years from now. Meantime they will show Canada and the world how much better they can run Quebec than the "corrupt" Liberals and the failing Bourassa, and will embark on the enormous job of trying to teach the majority of Quebecers who are not of the party's thinking what separatism will involve.

Rene Levesque is indeed a nice man; but he has preached separatism for half a lifetime and he is now politically able and compelled to go for it.

Separatism is no longer the subject matter for some exciting romantic seminar, like the hundreds he has presided over. It is tough realpolitik policy, and if he were to show the slightest sign of backing off from it (which he will not) there are determined associates in the party who would quickly get rid of him and do the job themselves.

There is more to the Parti Quebecois victory than Quebec's possible secession from Canadian confederation. Canada's prime minister, Pierre Trudeau, has been taking a rather lofty line: the people of Quebec chose a new government, not a new country, on Nov. 15. He is not there to negotiate the secession of Quebec. But he has rightly recognized that there is a crisis of decision, not just for Quebec, but for the whole of Canada.

Do Canadians want to live together in one civil society? Can they solve, in this generation, the questions, as Trudeau defines them, of language, rights, regional disparity and social justice? Would the Parti Quebecois be acting illegally, as the prime minister has asserted, if it took Quebec out of confederation?

Voice Of T

Southeast Alaska Empire readers are encouraged to write and express their opinions. Space limitations require that each letter be limited to 350 words. Unsigned letters will not be

day. It seems that's what He intended for me all along. I get up in the middle of the night sometimes and write because I can't sleep until I do a letter that I've been putting off.

I see where our Governor was,

The following scenario is [illegible]

Due to lack of hard lobbying, the El Paso route is doomed in Washington. The state realizes El Paso is a lost cause and switches its support to the Alcan route. The three firms which have bought our gas switch their allegiance to Alcan in order to retain their share of the gas. The gas transmission firms win either way, so what incentive do they have to push hard for the state's first pipeline choice?

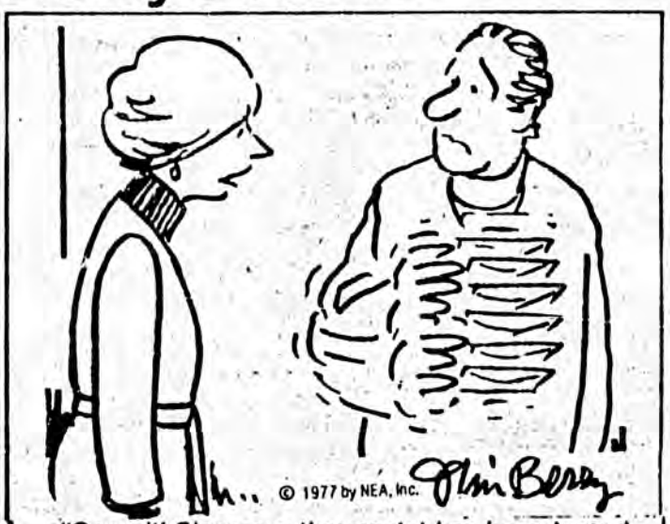
There are also severe doubts about the financial implications of selling the gas now. Legislative consultants conceded the possibilty that if the contracts are signed now Congress or the Federal Power Commission may set unfavorably low prices on the gas sold in 1977. This argument becomes more persuasive in the face of reluctance by the other owners of North Slope gas to sell now. The other owners are concerned the FPC or Congress may set the price of the gas on prevailing prices at the time the contracts for sale are signed, not on the value of gas at some future date. It is likely that the value of gas will continue to rise. The state should consider that possibilty and not open the door to arguments that the gas prices should be frozen at 1977 rates.

In view of the many uncertainties about the financial and political implications of the gas sale contracts, we feel it would be unwise to approve the contracts. Performance standards and guarantees of prime gas rate structures should be incorporated in the contracts before the legislators gives their blessings.

If legislators feel the El Paso route is in the best interests of the state, they should appropriate money for Alaskans to speak for Alaska in Washington, D.C. instead of hiring the tarnished reputations of 'big oil.'

The state then could sell our natural gas resources at a time when financial benefits could be better assessed.

Berry's World



"Open it! Since our thermostat has been turned down, maybe the bill won't be as high as you think!"

withheld in [illegible] judged to be in poor taste or libelous will not be published.

Unpaid Debts

Dear Editor:

I hope I can squeeze in several subjects this time.

Many of you old people in this State owe this State a debt you haven't paid. You owe it to all Alaskans whether young or old, till the day you die.

I'm going to be as mellow on the following subjects as I can be—for me!

If I did as many of you are doing—sitting on your butts feeling sorry for yourselves, giving up, I'm sure I would be dead by now. Get active!

You have the years of experience that no young generation has. As you know, education plus experience is a must to get good laws on the books of this nation.

Just think—you have 24 hours a day to sit and write to news editors and legislators about your views. You can do research in public libraries since all the State statues are there.

Our State needs the knowledge you people are keeping locked up in your minds.

One of the best places I know of to do this is in the Alaska Pioneer homes. Look at the knowledge within those walls being wasted!

I hope that every time you look in a mirror you remember this letter. Some of you can write better than I. God never gave all of us the same abilities—pool yours! It costs nothing to write to the Editors of the papers in our State—it is free.

I made a promise to God I would be a better man if he saved my life in the war—Jan. 11, 1943—in the Bering sea; men were dying all around me. So the rest of my life is dedicated to the best government we can get—for all of us.

In the last several years I have saved this State and Federal government millions of dollars—their oversights.

My wife and I are both disabled. I'll be 60 this fall, she is 59. I first came to this State in 1939 on August 19—to the Chilkoot Barracks.

You people who are 62 and waiting to reach age 65 to apply for Social Security, don't wait—unless the Lord had notified you of the date of your death. Maybe I'm not on his mailing list yet! I was trying to quit writing to newspapers, but evidently the Lord won't let me. I love it 24 hours a

employees to receive cash bonuses for ideas to save out State money. Good! Corporations do it.

To: Governor Hammond

Suggestion—Include all Alaskan residents in this cash bonus plan.

(Maybe I could get back pay—retroactive! I'm joking! Who knows, this could be my last letter—but I hope not!)

Help you're legislators help you.

Yours,
Leo A. Land

Thanks

Dear Editor:

The Lions Club of Douglas would like to thank all those who supported our raffle.

The drawing was held Feb. 22. David L. Johnson won first prize—$300.00 worth of beef. Emma Paron, Lillian Austin and Nowman Hughes each won a



A partner for Alaska?

Thirty days ago we voiced our misgivings over the Hammond administration's plan to sell the greater part of the state's North Slope royalty natural gas to three gas companies in exchange for their aid in the trans-Alaska pipeline lobbying effort. We felt we needed to know a lot more about the contract and these companies before the legislature approves this move, and we questioned the wisdom of forming such a partnership with the oil industry.

Since then we and many other Alaskans have had the chance to study the gas sales contract carefully, and most agree it is a good contract. It gives the state maximum flexibility in dealings on the Alaskan gas line issue, even to the point that the governor can change the state's position to support of the Alcan Highway route and the three gas purchasers will have to either agree or cancel their contracts.

The contract is for a large part of the gas the state expects from Prudhoe Bay, but not for all the production. It provides for the state to cancel portions of the gas sale as markets develop here.

But our questions of the political decision behind the contract still remain, and today's front-page story by our Washington D.C. correspondent increases our desire to know more about these new allies and just what they're going to do on our behalf.

Reports filed with the Securities and Exchange Commission (SEC) indicate Tenneco Inc., and its subsidiaries made a number of illegal and questionable payments to politicians and public regulatory officials over the past six years. These practices are the subject of a stockholders' suit against the company.

We should ask again: is it proper for the State of Alaska to ally itself so closely to oil companies in making its appeals to Congress?

Tenneco gets half the gas being sold under the proposed contracts, with El Paso Natural Gas Co. and Southern Natural Gas Co. splitting the other half. This newspaper has backed the concept of El Paso's trans-Alaska pipeline proposal since its inception, and we've agreed with many things said and done in their behalf by other Alaskans who have actively supported them before the Federal Power Commission (FPC) and Congress. We don't know the other two companies at all, however, and what we hear is disturbing.

As we said before, a business partnership is a lot different from the political support El Paso has received in the past. Before the FPC now the State of Alaska speaks as a separate intervenor taking a similar position as El Paso for entirely its own reasons. Before Congress next year, if these gas sale contracts are approved, we will appear as a joint lobbying effort seeking both political and business ends.

And as we also pointed out before, we will be appearing at the same time as we're trying to convince Congress that Alaskans can best manage our own resources, that Congress need not lock up 80 or 100 million acres of d-2 land in order to protect it, and that Alaskans are capable of selecting and managing millions of acres more of the state land entitled to us under the Statehood Act.

The SEC reports don't convict Tonnoco as a big time pit of corporate corruption, but do raise some questions about whether it's the type of partner to take on for a 20-year financial and politicial alliance.

It raises questions which should be answered by the Hammond administration, and it applies to political decisions our legislators should be talking with us about before they go to Juneau next month. The royalty gas sale is not an issue which should be decided between them and special interest groups after a few intensive back room sessions in the capitol, but one which should be raised before all Alaskans immediately.

The Hammond administration has put a lot of emphasis on bringing the public in on long-range policy decisions, and now is the time for it to show that the same applies to immediate decisions with long-range impact.

Tundra Times

Alaskan newspaper

Inupiat Paitot *People's Heritage*

Den Nena Henash *Our Land Speaks*

Unanguq Tuuktauq *The Aleuts Speak*

25c

Tlingit
Ut kah neek *Informing and Reporting*

Vol. 14, No 2

Wednesday, January 19, 1977

Fairbanks, Alaska

editorial —

Gasline route

After several years of closely observing the debate between Arctic Gas and El Paso about the method of transporting Alaskan gas to the populous urban and suburban regions of America and southern Canada, the Tundra Times is relieved to note the emergence of a third, more viable, alternative in the Northwest — Alcan Pipelines proposal.

The Alcan proposal has one highly desireable attribute — it does not have any of the lethal and undesireable deficiencies of the Arctic and El Paso proposals.

Let us note the problems plaguing the Arctic route:

(1) It presents a severe challenge to the subsistence lifestyles of Alaskan and Canadian Arctic peoples — What assurance is there that the people of Kaktovik and the Mackenzie delta will be left undisturbed in the pursuit of their subsistence lifestyles? None, that we may observe.

(2) Let us not force the Canadian Native people to settle their aboriginal claims in the same frenzied, development-based turmoil in which Alaska Natives were forced to reach a land claims settlement during the 1960's and early 1970's. Before any type of Canadian pipeline system should come under serious consideration, Canadian Native claims should be fairly and thoroughly adjudicated without pressure from too-rapid development. We should know this from the Alaskan experience in resolving Native claims.

(3) Although we often do not lend much credence to the conservationist elements (special interest groups which often have little respect for the Native subsistence lifestyles, nor for the property rights of the original Canadian and Alaska Native landlords), many environmental questtions about the feasibility of building the Arctic system with minimal impact on our Arctic ecosystems have not been adequately satisfied.

(4) Alaskan and Canadian Inupiat Eskimos are dependent upon migratory patterns of caribou for protein and essential nutrients. In spite of many assurances to the contrary in advance of construction of the Alyeska pipeline, Anaktuvik Pass Eskimos report disruptions in migratory patterns of the Porcupine caribou herd. We believe that there may be no guarantees of avoidance of such disruption where non-indigenous technology is massively applied against the arctic ecosystems. There are no such herds of caribou to be impacted by construction along the highway.

The El Paso route, a favorite of many Alaskans, will find it extremely difficult — we believe impossible — to overcome the lethal objections of the conservationist elements, staff recommendations of the Federal Power Commission, and the demands of more populous midwestern and eastern markets. Sound environmental concerns are concentrated about the uncertainty of implementing a technologically unproven gas transmission system involving a pipeline system, gas liquification system and LGN tanker system. The southcentral Alaska terminus proposed by El Paso has been demonstrated to be highly susceptible to earthquake danger. The El Paso system would increase tanker traffic along sealanes and near ports which state and federal officials worry may become cluttered with unsafe vessels.

Regardless of how Alaskans feel about the El Paso route, odds against its selection are tremendous and increasingly stacked against the proposal. The remaining contenders, we believe, will be Arctic and Alcan. The Tundra Times is hopeful that the decision will (1) not infringe upon the subsistence lifestyles of Alaskan and Canadian Native peoples, and allow them to continue to gather their daily ration of protein in peace, and (2) allow for the adjudication of Canadian Native land claims in a fair and equitable, orderly and comprehensive manner, and (3) allow for intelligently planned development of Alaskan resources with minimal environmental damage.

In our view, the best way to go is the Alcan route.

—T. R. j.

reprinted as guest editorial for SE Alaska Empire 2/3/77

Editorial Opinion and Comment of

FAIRBANKS
Daily News - Miner

"Independent in All Things . . . Neutral in None"

Other opinions expressed on this page do not necessarily reflect those of the Daily News-Miner.

More bad advice

Some weeks ago we noted the Federal Power Commission got some bad advice when its staff endorsed the Arctic Gas trans-Canada natural gas pipeline route. Tuesday the FPC got another layer when its administrative law judge, Nahum Litt, agreed with the staff's queer logic on the three-way pipeline debate.

Like the staff, Judge Litt said the Arctic Gas route is best because it will speed oil and gas development in the Arctic National Wildlife Range—the one part of the North Slope where we are trying to preserve a piece of Alaska free of any massive development.

Like the staff, Judge Litt said the Arctic Gas proposal is best because it's biggest. With the eastern and southern states literally frozen in the results of the catastrophic natural gas policies followed by the FPC during the past 20 years, Judge Litt tells us we in Alaska can only help by pumping out more natural gas to keep the next crisis just a little farther away.

Judge Litt went his staff one better when he dismissed the state's arguments for the trans-Alaska route as "more an advocate on economic grounds than a concerned party merely seeking to protect its environmental heritage."

Even if that were true, the motives of the state shouldn't dismiss credible testimony presented under oath. Did Judge Litt discount Arctic Gas' case because it represented the economic desires of multinational oil companies to piggyback small foreign reserves on Alaskan holdings? If he had, no decision would have been possible.

No matter how many discoveries are made in Alaska, moderate oil and gas production will always be the key to our state's financial stability and to our country's best energy policies. We didn't learn our lesson with the oil crisis four years ago, and gutting Alaska of its vast resources in a few short years won't help either.

Petroleum is a non-renewing resource, and a modest production rate will ease the tendency for our state government to rely on it too much, it will keep the pressure on for new energy developments in other states and it will stretch out the time Alaska needs to get renewable resources up to their full potentials.

As for the Canadian fields in the Mackenzie Delta, that's also something best left for the future. Only 6.5 trillion cubic feet of gas have been discovered in the Mackenzie Delta so far, out of the estimated 50 trillion cubic feet the area holds. Since 1965 oil companies have drilled 130 wells there, finding 17 gas accumulations of which only three are considered major.

If the Canadians are hurting for natural gas, they can use the U.S. exports which will stop when Alaskan gas comes on stream. Alaskan gas could also go to Canada's northern communities from an Alcan highway pipeline with trade-off increases in other exports to the U.S.

Even if we wanted to increase production beyond what current discoveries and the wishes of the Prudhoe Bay operators call for, El Paso can expand its trans-

A mino

By TOM BRADEN

WASHINGTON—This town will miss Sen. James Abourezk (D-S.D.) but not for the reasons he handed out the other day.

At the same time Abourezk announced that he would not run again, he issued a list of his "accomplishments." They were largely parochial (flood relief for Rapid City) and what wasn't parochial wasn't really accomplished.

Oddly, perhaps, Abourezk didn't mention in his list the one thing for which he will be remembered here. He was the Senate's only spokesman for the Palestinians and for the Arab cause in general. There is nobody to succeed him, and so the country will be deprived of the forceful presentation of a minority view.

Abourezk is of Lebanese descent—his father emigrated to South Dakota and became an Indian trader—and he never let anybody forget it. Time after time he rose to deplore what he considered to be the one-sidedness of U.S. policy in the Middle East and to point out that the land which the Jews call home is called home by the Arabs, too.

Not that this was a big issue in South Dakota. When Abourezk came to the House in 1971, he hadn't given a



Lette

College Utilities

been possible.

No matter how many discoveries are made in Alaska, moderate oil and gas production will always be the key to our state's financial stability and to our country's best energy policies. We didn't learn our lesson with the oil crisis four years ago, and gutting Alaska of its vast resources in a few short years won't help either.

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Even if we wanted to increase production beyond what current discoveries and the wishes of the Prudhoe Bay operators call for, El Paso can expand its trans-Alaska pipeline from its all-weather workpad easier than Arctic Gas can expand its own system, and El Paso has a far greater flexibility in its liquefied natural gas tankers than its competitor has with a buried overland pipeline.

The Alcan Highway proposal is designed to carry 2.4 billion cubic feet of gas per day, can be expanded to carry 3 billion merely by adding compression and the sponsors of this line are looking at expanding the 42-inch pipe to 48 inches if new demands come up before construction begins.

Before the two trans-Alaska routes are too small for North Slope traffic, we're going to have to discover new gas fields capable of producing more than half the rate of the huge Prudhoe Bay field. They will have to be developed and ready for production and our nation's gas customers are going to have to want new Alaskan gas over cheaper and more convenient new supplies in the Gulf of Mexico and other states.

We hope the commission carefully reviews the facts in the pipeline debate along with the recommendations of its staff and hearing judge. We're lucky that the commission's decision will go through the White House and Congress before it becomes final, because it hasn't gone well for Alaskans so far.

As with most decisions made in Washington D.C., Alaskans are coming out on the short end. We're going to have to redouble our efforts, or see our state and our nation suffer from decisions like these for years to come.

FAIRBANKS
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C. W. SNEDDEN



Let

College Utilities

600 University
P.O. Box
College, Alaska
Jan. 25,

Dear Editor:

This letter is a continuation of reply to a paid letter to the Edito Mr. Fred Schikora regarding College Service Area.

College Utilities Corporation hydrants are placed on patt following criteria of modern w works systems, and where pa customers exist in the commu Approximately 120 fire hydrants now placed from one end of proposed College Service Area to other. Currently, no College Util Corporation customer is more than feet from a fire hydrant, and greater majority are within 300 feet

All College Utilities Corpora facilities which have been constru to serve any Alaska Airlines fac were paid for at full, Alaska Pu Utilities Commission regulated approved rates. Mr. Cosgrave and associates currently directing Ala Airlines were bought out of Col Utilities Corporation in 1969 in an verse stockholder proceeding. He his associates are no longer associ with College Utilities in any way.

Absolutely no College Service A tax revenues have any way of acc to College Utilities Corporation. and others like you, will benefit College Utilities Corporation hyd placement as much as our pa customers, as there is a hydran your street placed there as a result hookup of one of your neighbors, the Municipal Utilities Sys Greenwood Exchange.

In a Fall of 1976 public meet called by the City of Fairbanks discuss annexation of the Mack Snowball Subdivisions and w service to that area, approximately miles east of Sandvic Road, majority of the people attending meeting were against annexation in fact, the City of Fairbanks could guarantee water in any of that are

El Paso's tankers

El Paso Alaska isn't making a big thing of it, but the recent rash of oil tanker accidents and increased worries about tanker safety should add to their case for the all-Alaska natural gas pipeline.

The liquefied natural gas (LNG) tankers El Paso hopes to operate out of Point Gravina are a very different breed of ship than the oil tankers we read about in recent news reports and Noel Mostert's book, "Supership." Although their record is based on far smaller shipping figures, their design is inherently more safe and their operations are quite a bit more safe than what we've seen for oil tankers.

In contrast to the promises of federal officials and oil company executives a few years ago, the oil tanker fleet serving the trans-Alaska pipeline appears now to be deficient in even some of the most basic safety designs. LNG tankers meet or exceed all requirements of those concerned about oil tanker safety, and their operation appears to be a more responsible system as well.

LNG tankers have double hulls and segregated ballast compartments, since the cargo must be kept supercooled to minus 260 degrees during the voyage. They also must have inert gas systems in cargo holds, since LNG becomes hazardous when it vaporizes and mixes with oxygen-bearing air.

A much greater advantage is the different organization of LNG tanker fleets. Oil tankers are largely owned by private shipbuilders and operators, and leased to oil companies for their work. The oil companies have only the slightest direct control over the crew and the details of the ship, and the vast majority of oil tanker accidents have been due to human error which would have been avoidable in better hands.

LNG tankers, however, are owned by the gas companies using them and are under direct control of those companies. There's no trouble in pointing the fingers of blame when things go wrong, and a company like El Paso can insure that safety features meet the standards they promise.

LNG has been transported throughout the world for more than 15 years without a death, serious injury or cargo spill. Some have theorized that an LNG tanker could become a massive floating bomb if certain accidents took place in a populated area, but scenarios of this type can be cooked up for oil tankers and many other potential hazards of society. Safety hazards of LNG tankers deserve more study, especially since we'll be using them more and more, but nothing we've seen to date marks them for great immediate concern.

LNG tankers have been working out of Cook Inlet for many years, carrying gas from a liquefaction plant in Kenai to Japan, and their safety record has been far better than the oil tankers using the same waters.

LNG tankers share one advantage with oil tankers which we have mentioned earlier—they give flexibility to send cargo anywhere it is needed. We're seeing that in the oil exchange proposed for Alaskan production later this year, and we see it again in the state's recent decision to shut off royalty gas sales to Japan and make the state's Cook Inlet gas available for Anchorage utilities. We're learning the hard way that our energy systems need to be flexible and reliable, and the El Paso pipeline-tanker proposal offers the highest standards of both.

Aiding idleness

Teenage gainful employment, whether during the summer months, in the evenings or over weekends during the school term—or over holidays and prolonged vacations from school—is disappearing in the United States.

at all about the only absolutely independent attorney general in the generation.

It is odd because after John Mitchell and Richard Kleindienst, after the Saturday Night Massacre, after the squeezing of Henry Petersen, everybody agreed that "independent" was what the attorney general ought to be. Between 1972 and 1975, the country had seen six attorneys general, two of them proven lawbreakers and one who lasted two minutes because he suspected the truth.

Then came Edward Levi, absolutely and totally independent. Nobody liked it at all.

Republicans didn't like it because independence was embarrassing. When Levi kicked out the No. 2 man in the FBI, they shook their heads. When he acquiesced in putting Henry Kissinger on the stand in a wiretapping suit, they wondered if he had political judgment. When he laid down stringent guidelines for domestic espionage on the FBI and the CIA, they asked each other—in private—whether he understood that

Profits a
what the

The 1976 profit score is in. Profit is made to sound like a dirty word and it's one thing to hear rumors of high profits. To get them officially is another thing indeed. And the U.S. Department of Commerce officially states that a corporation retains control of just 10 cents on the profit dollar.

We do not live in a profit economy. We live in a profit-and-loss economy.



That's totally different. It must include the losses—which in the aggregate are enough to make you take up smoking again.

Yet the risk for (profit or loss), and trend of, profits is discussed only when large. There's little thought of enterprise as a job-giving factor and the enterprisers' reward is ignored. The concern for profits and progress are not imcompatible. They are indivisible. Yet profits are made to sound like a dirty word.

Business, like individuals, must have a suitable climate in which to develop. This is essential in order to provide the maximum contribution to jobs, payrolls, security, products, etc. Scaring the daylights out of business is a poor way to get the production, employment and wages and the taxes on which Washington and the states and municipalities depend.

Yet U.S. businessmen are the victims of a sort of preventive legislation. These men and women hardly know if their next step is even legal—nor can they readily find out in Byzantium-on-the-Potomac.

The Commerce Department shows profits at $127 billion. That sounds like a lot—until you make the deductions in even a profitable firm.

Taxes total an appalling $54 billion. Countless companies pay many times

Editorial Opinion and Comment of

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"Independent in All Things . . . Neutral in None"

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Finger pointing

It's taken a whole week for Congress to respond to the natural gas shortages in eastern and southern states, and the response is mostly for a few valves to be turned to transfer gas across some bureaucratic barrier.

While they were at it, the subject of gas price deregulation came up again, but most of the wise old heads have continued to shake the idea off, because of the horrible prospect that someone might make a profit out of it.

They hope the U.S. public doesn't yet realize who is responsible for the gas "shortage." They again point fingers at the gas industry and cry "profits," but they don't have very far to point when it comes to finding who's responsible for there not being enough gas because of their profit-less attitudes.

To beat a dead horse once more, it went like this:

The federal government decided some years ago to put a price limit on gas sold between states, letting natural gas produced and sold within a single state be priced on the open market. They set a gas price which soon became artificially low. Unless a producer struck gas along with an oil field, it didn't pay for him to explore for new gas or put a new field into production or sell it outside his state.

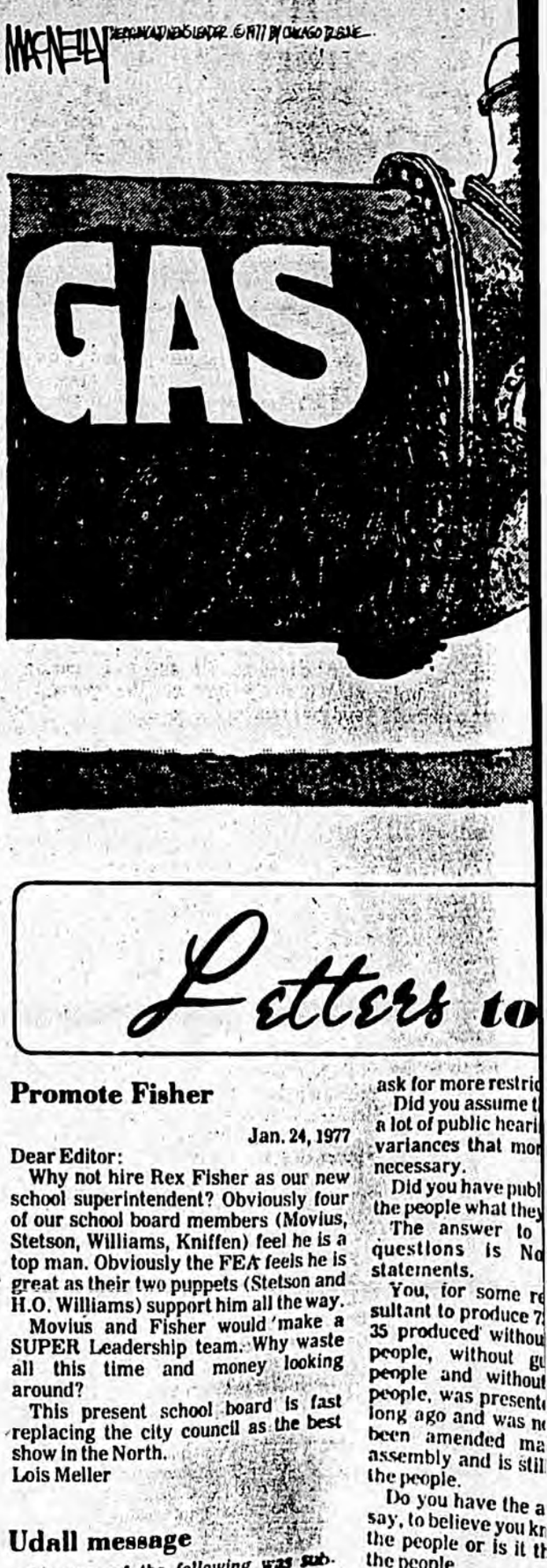
This meant gas sold on interstate markets became in increasingly short supply, because nobody looked for it and nobody did anything with it when it was found. We can't blame the oil and gas companies for this, since no one except congress can expect them to invest money in a loser.

The federal policy also meant people shifted to gas in their homes, because it stayed "cheap" while other forms of energy rose in price. The people who can least afford the current problems are the ones who changed in great numbers, of course.

Since people were paying cheap prices for gas, there was little consumer incentive for developing alternative forms of energy. There will be when Congress is forced to double the price of gas for all these folks, but by then it will be too late.

All this time the intrastate gas markets, those where gas is produced and sold within a state and out of federal jurisdiction, rose to prices three and four times as high as the federal price. It's no wonder now that gas-producing states have plenty of gas for sale within their own borders, but it literally takes an act of Congress to get that gas across a state line to needy areas.

Now a cold winter finally brings the federal gas policies of the last 20 years into their inevitable conclusion. Now factories are shut down, people are freezing to death in their own bedrooms and the nation's economic recovery is in peril. Does Congress admit its past mistakes and remove the restrictions which have brought it all about?



Letters to

Promote Fisher

Jan. 24, 1977

Dear Editor:

Why not hire Rex Fisher as our new school superintendent? Obviously four of our school board members (Movius, Stetson, Williams, Kniffen) feel he is a top man. Obviously the FEA feels he is great as their two puppets (Stetson and H.O. Williams) support him all the way.

Movius and Fisher would make a SUPER Leadership team. Why waste all this time and money looking around?

This present school board is fast replacing the city council as the best show in the North.

Lois Meller

Udall message

(A copy of the following was submitted as a letter to the editor.)

Jan. 29, 1976

Honorable Mr. Morris Udall Re H.R. 39

Why are you so interested in turning most of Alaska's natural resources into an idle national park? Would it be that the strip mines in Arizona with their 0.5 per cent copper would no longer be able to control the copper market in the United States if they had to compete with the 1 to 3 per cent loads in Alaska which can be mined with much less damage to the environment?

I invite the Sierra Club to compare

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Now a cold winter finally brings the federal gas policies of the last 20 years into their inevitable conclusion. Now factories are shut down, people are freezing to death in their own bedrooms and the nation's economic recovery is in peril. Does Congress admit its past mistakes and remove the restrictions which have brought it all about?

No. Instead it allows a little gas to seep across some state lines, spreads a lot of talk about how the gas producers were hoarding it, and decries the short-term windfall profits a few might make from it.

It's the same old story. Regulate and restrict an industry until it can't do its job, then use that as the reason for a full federal take-over.

And if our neighbors in the smaller states think this winter has been bad, wait until Congress has its hands on more than the price of the gas in their homes.

Shuttle Missions

Although the space shuttle program began with a controversial approval in 1972 and now has unveiled its first flying craft, it will not become operational until the spring of 1979. Much suborbital testing is necessary to prove the vehicle can perform as its designers say it will.

After the shuttle has proved itself, then what? The question is not asked facetiously, because a vehicle with the capability of launching into earth orbit with a payload of 65,000 pounds and returning to an earth landing as many as 100 times obviously has many potential uses.

At this point in the space shuttle's development, it is somewhat like the first locomotive. Even if it works as planned, it is limited by lack of track. Will space stations be lobbed into orbit. with the shuttle acting as a commuter between them for men and equipment?

Will the shuttle service more conventional satellites, perhaps acting as an in-space repair station or post from which to observe foreign satellites? Missions are what the space shuttle will need between now and 1979 to prove its worth.

Promote Fisher

Jan

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I invite the Sierra Club to the environmental impact of Arizona to that in Alaska.

I wonder who is taking adv the free ride-you or the Sierr all Americans' expense.

Sincerely,

Alaska Prospector

Johnny L. Wilson

Towsley's firing

326 Bo

Fairban

Ja

Dear Editor:

It would be ever so good to s written to the editor commen wonderful things that the Ci has accomplished. Unfortun council seems to botch every

The recent firing of Mr. To insult to the people of Fairb dare a representative of attend a meeting after hav alcoholic drinks and then exp a frame of mind that would to analyze various problems to the Council!!! With repr as unconcerned with th image, it is no wonder that receives so much criticism only assume that the recent the councilman's obnoxiou was caused by previous resentment toward Mr. Tow

Not being familiar with of the case, it seems to firing of Mr. Towsley is warranted. Perhaps Mr doesn't care to pursue the may find it a relief to no with the incompetence seems to excel in.

It is my hope, howeve people of Fairbanks atte Council meeting and DISCOURTESY and unpro of some Council membe consolation is the *fact that* for the councilman in

The Anchorage Times

ROBERT B. ATWOOD
Editor and Publisher

WILLIAM J. TOBIN
Associate Editor
And General Manager

CLINTON T. ANDREWS JR.
Managing Editor

Freezing In The Dark

THE COLD WEATHER that has struck so hard at the Midwest, the East and the South in recent weeks has caused enormous suffering, inconvenience and economic loss, as everybody knows.

Literally, and sadly, people have been freezing in the dark. What would be almost routine winter weather in Alaska has been a disaster for a dozen and more states from the Great Lakes to the eastern seaboard to the Florida citrus groves.

It took a calamity of this magnitude, unfortunately, for many Americans to realize the seriousness of this nation's energy situation.

All the prior talk about the trans-Alaska oil pipeline sailed past the consciousness of many people. All the controversy about environmental considerations was of not much more than academic interest to others. Many who proclaimed the need to preserve the wilderness a few years ago when the winter was mild are locked in blizzard chill today.

For several years the trans-Alaska gas pipeline has been a vital matter of public interest up here. But Outside it has attracted only limited interest. After all, many probably thought, wasn't that just another argument by Big Oil trying to defend its raping of the environment?

NOW, HOWEVER, the awful consequences of a winter more severe than existing energy supplies can deal with are being brought home to millions of citizens and hundreds of state and government officials.

In all of this is it perhaps worth a footnote to history to suggest that:

— Had it not been for efforts to delay and to actually halt construction of the trans-Alaska oil pipeline, crude already would be flowing to market, and would have been for the past two or three years, and

— Had the oil line been completed somewhere close to the original target date, without all the delays imposed by that opposition to the oil pipeline, the natural gas line very likely would now be under construction or nearing completion, with the promise of putting more energy in the hands of consumers before next winter rolls around.

MAYBE IT DOES no good for Alaskans to display an I-told-you-so attitude.

In no way should this be construed as a lack of sympathy for those now caught in a severe energy crisis. Nor should it be considered to disregard the very real problem that confronts this nation in dealing with energy matters.

It reflects only a little bit of human weakness, perhaps, and a desire to say, "Okay, we warned that this might happen, and it did; now what can we do to help?"

The latter thought is important. Alaska truly is this country's energy hope for the future. It is encumbent upon this state, its political leaders and its people to consider the national interest in helping to resolve the crisis now confronting other states.

In the process, however, Alaska has a right and an obligation to remind those dealing with this situation on the national scene that this state, too, has an interest which properly should be protected. Alaska, as the energy supplier of the nation, should get an adequate share of the resource for utilization within the state, to meet present and future industrial needs.

That's not selfish. That's just fair.



Wishful Thinking

OUR TIMES



The Meani... Pardo...

By Smith Hemp...

WASHINGTON — President Carter can, as he has done, grant "a full, complete and unconditional pardon" to those light-footed thousands who fought the Vietnam war from the safety of Canadian bunkers.

But the President lacks the authority to bestow upon those who violated the Selective Service Act the gratitude of their country, the respect of their peers or that sense of honor they sacrificed in the pell-mell pursuit of their own comfort and safety.

These, to paraphrase President Kennedy, were willing to pay any price, employ any loophole, travel any distance, shirk any responsibility to assure their own survival and success.

One can, and must, respect a man who refuses to kill. There is a place for him — and 30,000 found it during the Vietnam war — in the non-combatant medical corps.

IT IS POSSIBLE to esteem those 35,000 who said they would not under any circumstances don a uniform, and dignified that stance by their willingness to go to jail or to perform alternative civilian service.

But it is not possible to admire a person whose most profound statement of belief is a skeddaddle

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IN WASHINGTON



Hell Has Frozen Over

By Ron Hendren

WASHINGTON — Winter in this ... and faithful friend who has never

SOUTHEAST ALASKA EMPIRE

WILLIAM S. MORRIS III—PRESIDENT and PUBLISHER

KIM ELTON, Managing Editor
JEFF WILSON, Business Manager
TOM BLUMENSHINE, Production Manager

Backing A Loser

(Editor's note: the following opinion is reprinted from the Sitka Sentinel.)

As the Alaska Legislature methodically works its way toward a foregone conclusion—an overwhelming endosement of the El Paso Pipeline Co.'s "All Alaska" pipeline route through the approval of Gov. Hammond's royalty gas sale—the evidence continues to mount that the state is backing a sure loser.

The legislature, by its past actions, has practically locked itself into a commitment to the El Paso route. Yielding to intense pressure to do so, Gov. Hammond has thrown the weight of his administration behind the proposal, though perhaps not so unshakably as the El Paso lobbyists would have us believe.

The officers of our state government have the obligation to give prime consideration to the fiscal welfare of Alaska in making decisions such as this. In supporting the El Paso proposal for getting North Slope natural gas to markets in the lower states they are performing their duty as they see it.

If the final decision were to be made by Alaskans, perhaps this is all that would have to be considered. The decision will not be made by Alaskans, however, and the inescapable fact is that the particular route the state supports is the one that would fail by the largest margin to meet the needs of the greatest number of ultimate consumers.

It is ironic that the hearings in Juneau should coincide with the natural gas crisis in sections of the lower states. What more graphic illustration could there be that the El Paso route that is so highly favored up here would deliver the North Slope gas precisely where it is needed the least—the Southwestern United States.

If it could be shown that the delivered cost of the gas by this route would be the lowest of any of the three alternatives, there would be an arguing point for the Alaskans who will be promoting it before the Federal Power Commission, Congress and—in the unlikely event it gets that far—President

Who R

EDITOR'S NOTE: This article cerpted from a document of tina's Montonero Party. The previously called the Auth Peronist Party, went undergroun before the ruling junta assumed in that country. The documen published last month by the American Congress on Latin Am

It is difficult to give a complete p of repression in Argentina today, t come obstacles such as a vacuum formation created by the Junta censorship or newspapers, the legal measures taken by the gover

Opinion

as well as the "cautiousness" of newspapers.

There is no official information political prisoners in Argentina. plete list of prisoners has not published, nor has information given about their present status. except in very sporadic cases, ther official recognition of arrests, mot arrests, location of prisoners, applied in prisons, etc. The num prisoners is not known either.

Reliable sources, whose infor obviously cannot be confirmed off estimate the existence of close t political prisoners. (This clearly d take into consideration the 6,000 p prisoners who already existed Isabel Martinez's government.)

Only a small part of that num composed of officals of the p government Justicialist Party o union members who have been a and are under investigation on cha corruption. Most of the prisone workers — trade union leaders fr tories who belong to a new genera trade unionism and have been a involved in the resistance against Martinez's government, as well a activists and party members.

Almost all political prisoners a in military garrisons regiment warships which have been trans into prisons. And, while po prisoners are treated with the harsh treatment used in regula prisoners who are under investiga charges of corruption are comf lodged in the ship's staterooms a their meals with the ship ficers. Shortly after last year Argentine newspapers began to lists of people who had been ma by the Argentine Anti-Com Alliance, (AAA), an armed gang ed by the Minister of Social Welf

The North American Congress America (NACLA), which publi monthly report on Latin American located at Box 57, Cathedral Sta York, N.Y. 10025

for the Alaskans who will be promoting it before the Federal Power Commission, Congress and—in the unlikely event it gets that far—President Carter.

But there is not even a cost advantage in favor of the "All Alaska" plan. Three independent studies—two done by agencies of the state government—have concluded that the El Paso plan would deliver the highest price product.

Gov. Hammond's Gas Pipeline Task Force, the State Department of Revenue, and most recently the Federal Power Commission Administrative Law Judge have all reached this conclusion.

In what could well be viewed by "outsiders" as evidence of a public-be-damned attitude, the governor's pipeline task force glossed over the discrepancy in the projected delivery prices with the observation that it was probably immaterial to the state's economic future. The wellhead price and the resultant royalty and severance taxes on natural gas, unlike oil, are not necessarily affected by transportation costs, the task force observed, because the FPC regulates gas prices to guarantee a return on the developer's investment. The task force thus dismissed considerations of relative delivery costs. As long as we get our share, Alaskans seem to say, why should we worry about the higher price the consumers in the lower states will have to pay?

The strategy of the state and the El Paso people in holding out the promise of the distribution of Alaska's royalty gas—which of course would be only a small fraction of the total North Slope production—to the gas-short areas of the East and Midwest can be expected to be woefully lacking as an inducement for approval of the All-Alaska, LNG tanker delivery system.

The FPC may be expected to pursue the recommendation that already has been passed through two of its lower levels, favoring the Arctic Gas Proposal.

This is the route that would benefit Alaska the least. But the most ineffective way to combat this proposal, which is as vulnerable as the El Paso project to cost overruns, would be for the state to continue to advocate the opposite extreme.

As soon as it can gracefully do so, the state must abandon its sure loser and throw its support behind the proposal that holds the greatest promise of benefits both to the State of Alaska and to the rest of the United States.

That, of course, is the Alcan route. It has the disadvantage of being unimaginative: no wintertime construction on snowpads; no construction of gas liquefaction plants and LNG tankers on a scale unprecedented in the world; no hair's breadth gambles with the environmental catastrophes that are inherent in the other two plans.

Alcan holds the promise of getting the gas to the markets where it is needed most, using conventional technology and the most efficient and economical manner. At the same time Alaskans could expect development opportunities—apart from the makework project of liquefying the product—at least as great as would be available under the El Paso Plan.

monthly report on Latin American affa
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Did Ju-Neau? The

(Note: it seems like hardly a week go
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back then, is once again presented, ex
first appeared in the EMPIRE in M

On Monday, March 2, 1953, the regular meeting of the Skagway City Council was called by Mayor Max Kopanski, to discuss the new ordinance which prohibits dogs from running loose on the streets of Skagway. There was no quorum because only three council members showed up...Occie Selmer, Orrin Edwards, and Mavis Soldin.

However, since a large number of citizens were present to register complaints about the new dog law, City Marshal Bill Cathcart was sent out to try and find the missing council members, and while he was looking, Mayor Kopanski, and Councilmen Selmer, Soldin and Edwards agreed to listen to the complaints from the citizens.

After listening to a number of complaints, and after Marshal Cathcart returned unable to find the missing council members, Mayor Kopanski suggested that perhaps it would be a good idea to raise the dog license fee to $25. Mr. John O'Daniel suggested that people be tied up instead of the dogs. Much discussion was held regarding the difference between good dogs and bad dogs, and the meeting finally adjourned.

After the adjournment, the citizens present formed the Dog Protective Society of Skagway to protect the rights of the dogs to run the streets. While everyone was milling around, Howard Johnson arrived to report that one of the girls of the town was knocked down by a pack of dogs in his yard and bitten twice. Also, one of the missing councilmen had been bitten on the nose by the dog belonging to one of the councilmen who was present.

The following Monday, March 9, 1953, Mayor Kopanski called a special meeting of the council to get the dog issue settled. Mr. O'Daniel again took the floor and asked if the ordinance could be changed so good dogs could run loose and bad dogs be chained up. Mrs. Soldin said that to the owners all dogs are good dogs. Mr. McGee Brena said he was probably going to run over Mr. O'Daniel's good dog because he was always chasing his taxi cab. Mrs. Barbara Kalen wanted to know why anyone would want to

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Editor

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...o is so concerned about the ... club's board treats its ...rs, I cordially invite him to ...oard meetings. He can con- ...club office at 278-9589 for the ...tion he needs to apply to ... our board.

Wanda Harris
Executive Director
Girls' Club of Alaska

Judge Litt's Recommendation



By Tom Fink

THE ADMINISTRATIVE law judge for the Federal Power Commission has made his recommendations regarding the method of transporting the North Slope gas. The FPC will make its recommendation by May 1 and the President and Congress will act subsequently.

Contrary to the first reaction, the recommendation of Judge Litt in the overall was a good recommendation. He set the baseline for the President and Congress to evaluate the three proposals.

He did recommend the Arctic Gas route, but cautioned that his recommendation excluded all of the political ramifications. Whether he should have considered the political ramifications or not is debatable, but he certainly limited his approval of the Arctic gas route.

SINCE CONGRESS had determined that location of a gas route carrying Prudhoe Bay gas was to be made by the President and Congress, it had in effect told the FPC and staff to leave the political decisions to them.

Judge Litt established many important points. He stated that the gas requirements of the nation are sufficiently great to outweigh any small environmental degradation which may occur. He stated that the gas line route should be the one which is most economical and most efficient for the United States as a whole, and not just what is most advantageous for Alaska. He recited that the most populous consuming states, which took an active interest in the line determination, prefer the Arctic line. They prefer the Arctic line since they feel they would most likely be the beneficiaries of the gas if the spigot were in the Midwest and not on the West Coast.

He stated that the Alcan line does not support even the possibility of certification. Its design was neither efficient nor economic and it was undersized. This spells the end for Alcan.

He stated that the El Paso line did meet the requirements of convenience and necessity and, if Arctic did not proceed, El Paso could be certificated.

HE ACKNOWLEDGED that the President and Congress would have to evaluate the problems of national security, provincial taxation and control, the balance of payments, the U.S. employment effect, the timing of the Canadian National Energy Board decision and the time required to settle the native claims. These items are insurmountable for the Arctic line.

If the President and Congress will delve into the political facts, they can only conclude that the El Paso line is the best interest's of the United States. The single most important fact is that the settlement of the Canadian native land claims will substantially delay construction of any pipeline through Canada.

The job of Alaska is to convince the President and Congress to investigate those political issues. It will be easy for the President and Congress to accept the concept that the spigot in the Midwest is the most direct way to get the gas to the area where most of the congressmen live. It is of the utmost importance that they take the time to review the insurmountable difficulties of building and maintaining a line through Canada.

Certainly the members of Congress from east of the Rockies are having brought home to them the importance of supplying new gas to the Midwest and East. Certainly the timing of that delivery will be of utmost importance. Certainly the timing will be more important than the slight cost differential between the Arctic and the El Paso line. In fact, the timing will give a cost differential favorable to the El Paso line.

IT WILL TAKE considerable support from other than Alaskans to get Congress and the President to delve into the line beyond the spigot concept. It is for this reason that the State of Alaska must have strong allies throughout the United States. Our state legislature must speedily approve the gas sales contracts currently proposed by the governor. The contracts should be modified so that the governor cannot change support to another route without legislative approval. The other speculative questioning on the contracts should come to an end and the contracts should be approved.

These three companies to which we propose to sell our share of the gas are substantial suppliers of gas in the Midwest and East. Their support is the best hope that we have that Congress and the President will go beyond the conceptual idea of a spigot in the Midwest.

Judge Litt has provided a baseline document for the final decision to support the American line. The only line that can begin construction immediately after the President and Congress make a decision is the all-American line. It requires no other approvals.

Tom Fink, an Anchorage insurance man, is a former speaker of the Alaska House of Representatives.

Barbs

When you were 20, you'd write poems about snow; after 40, you write letters to the editors complaining about the cleanup crews.

Build a better mousetrap, and you'll get sued blue for patent infringement.

...He was looking for the Northwest Passage, which isn't here. What he found was land, land, everywhere. And, most importantly, he found the site from whence would arise the largest city in all of Alaska.

It would seem appropriate that he should be looking toward the land from his prominent pedestal in Resolution Park. Besides being appropriate, his face would then be visible to all passersby as well as pedestrian visitors to the park structure. Captain Cook, an English gentleman, would not, we are sure, choose to stand publicly with his back to all the people.

WHICH WAY the explorer should look was apparently duly considered by the Bicentennial committee that was concerned with the park.

Mrs. Gwynneth Wilson, chairman, says that there were two main reasons for having him look toward the sea instead of toward the city.

One reason was that the architects who designed the park wanted it that way because they thought of the park "from the point of view of integrity of design."

That would seem to subordinate the interests of people to concern for the physical structure of the park. Why should the...

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NATIONAL SECURITY



Milit... Par...

By Lt. Gen. Ira C...

CENTRAL TO the current debate on the so - called "threat" to U.S. security is the relative military strength of our country and Russia. It is appropriate, in fact it is critical, that this ongoing controversy establish the relative strength between ourselves and our adversaries as we change commanders - in - chief.

We have now an adversary whose leadership is openly dedicated to our defeat and which may also have the necessary power to accomplish that result.

That is why the current debate on relative military strength of the U.S. and the U.S.S.R. is so critical.

HERE ARE the relative military strengths as of last November, as the intelligence communities both here and abroad agree:

	U.S.	U.S.S.R.
Total military manpower active and reserve	4,7,,000	25,000,000
Men under arms	2,086,700	3,650,000
Combat divisions	19	168
Tanks	1,280	41,500
Major combat surface ships	176	214
Attack submarines	75	231
ICBM's	1,054	1,527

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Administration Must Act On Sale Of Royalty Gas

6/6/76 AT

By Tom Fink

THE GOVERNOR recently stated that the delay in the sale of North Slope royalty gas is a result of his insistence that the state retain the right to use whatever portion of that gas within Alaska that is needed. For purposes of this discussion, let us assume that this is the basis of the state's refusal to consummate the sale of our gas.

Under the most ideal circumstances, the Federal Power Commission, the Congress and the President would order a trans-Alaska gas pipeline and the state would not sell any of its royalty gas at this time. If the trans-Alaska pipeline were approved, the state could then proceed to determine the best use of the gas from the viewpoint of Alaskans. Currently there is no demonstrated need for the state's royalty gas to be used in the state, except for heating and electrical generation along the pipeline route, which would consume an infinitesimal amount of the state's share.

UNFORTUNATELY, we are not looking at the most favorable circumstances. The Federal Power Commission is currently considering the trans-Alaska line and the trans-Canadian line. If the FPC, Congress and the President all agree that a trans-Canadian line is to be built, there is no possible way that the state can keep any of that gas for use within Alaska. It is also true that if the trans-Canadian line is built, very little employment will occur in Alaska for construction and next to no continuing employment for operations would occur, in contrast to the trans-Alaska line.

It is essential therefore that the state administration take the strongest position it can to insure the building of a trans-Alaska line. It is necessary that we give up some of the flexibility of the use of our Prudhoe Bay royalty gas in order to assure the building of a trans-Alaska line. Certainly there will be no flexibility if the Canadian line is built.

Our delay in consummating a sale of our royalty gas the State of Alaska, but it may very well be that once we put gas into a pipeline we could not take it out without FPC approval. So the state is running the risk that once it allows its royalty gas to enter that pipeline it will lose control.

The choice appears to be a trans-Canadian line with no facilitities in Alaska and no opportunity to use our Prudhoe gas versus the trans-Alaska pipeline with no opportunity to use the gas but with the considerable amount of facilitities producing taxes and jobs. If that is the choice, we ought to opt for the trans-Alaska line. Further, once the trans-Alaska line is in place we will have the opportunity to take a crack at any new gas found on the North Slope or along the pipeline if we have a use for the gas in the state. Again, if the line is built across Canada we will have no flexibility whatsoever, we then could only sell the gas in the South 48.

WE HAVE one gas company that has spent a lot of money in applying for the trans-Alaska line. We still have not committed any gas to that company, which has certainly detracted from the credence of that company's presentation to the FPC and to Congress. We have other companies additionally in various parts of the South 48 that wish to share in some of our royalty gas and wish to support our trans-Alaska pipeline.

Our state administration should quit dilly-dallying on consummating the sale of our royalty gas. There is some risk in any action but here is more risk in non-action.

Undoubtedly many people believe what we have and are presently working on is sufficient, particularly with huge revenues forecasted to come when the trans-Alaska pipeline goes on stream. Although activities associated with construction of the pipeline have produced a near-term economic upswing, the absolute promise of great revenues flowing to the state once production begins from the North Slope is founded more in the minds of transient journalists than it is in the pragmatic minds of those planner and plaintiff. There is far more interest in suing comebody for alleged violation of some order, law or regulation than there is in acting in the role for which the agency was originally established. The order of the day is no permits, no leases, no sales, no nothing.

The Department of Fish and Game is more active policing activities throughout the state and in particular harassing fledgling mining operations through misapplication of Title 16 (the anadromous fish act), than it is in trying to manage the fish and game resources per se.

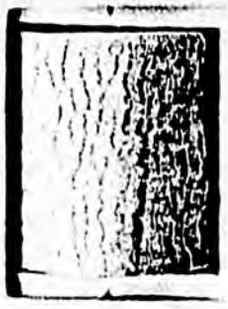
THE SO-CALLED "no-growth" concept is being felt by institutional investors throughout the country as well as potential investors or participants from overseas.

If you think this is an exaggeration, call on the money markets in New York, Houston or the West Coast today and attempt to raise capital for a new development or project. Were it not for the economic clout and credit rating of the native regional corporations, financing of many projects currently under way or on the drawing board would be non-existent.

Open encouragement of new development is an infectious thing. It generally attracts competitive interests with new dollars that lead to more jobs and better economic stability. Similarly an apathetic, ambivilent or outright hostile governmental attitude turns new people away and greatly troubles those who chose to invest at a time when the economic climate was more attractive.

We have all the government we can "say grace" over and then some. If we are destined (and hopefully not) to be saddled with so much government and are saddle sore from being ridden so much, we have to find and attract others to share the burden. More, rather than less, industry is the key.









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Our delay in consummating a sale of our royalty gas through the trans-Alaska pipeline has encouraged a third filing for a pipeline from Prudhoe Bay through Fairbanks, then east through Canada. If our gas were committed solely to a trans-Alaska line much of the incentive for the highway route would evaporate. It is doubtful whether the proponents of that route would continue if the state would commit by contract our royalty gas to the trans-Alaska line.

IT IS ALSO important that the state commit that gas prior to July, when the FPC intends to close its hearings on the Prudhoe Bay gas. Our chance of maintaining some flexibility with that gas and of having maximum influence on the FPC would be to complete the sale of our royalty gas prior to the end of the hearings.

As contrasted to oil pipelines, the federal law generally provides that once natural gas is in the pipeline it becomes part of interstate commerce. We can take our oil out of the pipeline anywhere in the way of the native regional corporations, financing of many projects currently under way or on the drawing board would be non-existent.

Open encouragement of new development is an infectious thing. It generally attracts competitive interests with new dollars that lead to more jobs and better economic stability. Similarly an apathetic, ambivalent or outright hostile governmental attitude turns new people away and greatly troubles those who chose to invest at a time when the economic climate was more attractive.

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The question is whether it is better to rely on a "bet on the come" future and discourage potential new investors to Alaska or whether it is preferable to embrace new ventures warmly in hopes that Alaska's resources will be processed to the fullest practicable extent, thereby establishing a broad-base, long-range, stable economic growth pattern without total dependence on raw resources that are destined to be processed outside of Alaska.

SOME OF US believe that an effort to encourage expansion of processing and maufacturing of Alaska's resources at this time is a prudent and farsighted approach. Apparently, we are out of phase with the prevailing attitude of the state administration.

The State Division of Lands, once an agency responsible for generating much of the income into the state treasury, is largely acting in the role of



Alice Puster

DITOR'S OUTLOOK

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Lloyd Jones

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speeded the southward march of the desert by the overgrazing of the parched land.

Food shipments would not have been enough. The wealth of the tribesmen is in their herds and flocks. Could we develop a mechanism to move men and animals, forcibly if necessary, so that they may not intensify a natural disaster? By what authority? And move them where?

As Hamlet said, "Aye, there's the rub!"

When the last fingers of the Wisconsin glacial age moved downward men were already well - formed and beginning to develop tribal cultures. Presumably, those who were frozen out gradually drifted south and, while there may have been some clubbings between themselves and the aborigines, the earth, as far as mankind was concerned, was still a great vacuum.

Even when the last mini - freeze began in the Northern Hemisphere six centuries ago there was much warm emptiness to migrate to, and, indeed, the white colonization of the Americas and South Africa followed shortly.

BUT IF THE EARTH should really be hit with a new climatic wallop, where would the victims go? If the monsoons begin regularly



Tims Up For Review
1/30/77

By Thomas E. Kelly

THE DROWSY STARTUP of the 10th Alaska Legislature, if you exclude the free-for-all during organization, will change dramatically commencing tomorrow. For three days, starting Jan. 31, joint Senate and House committee hearings on the proposed state sale of royalty gas will take place in the citadel on the Gastineau.

At the close of the hearings Alaskans should be able to better understand the pros and cons of the question, "Is the proposed contract negotiated between the Hammond administration and El Paso, Tenneco and Southern Natural Gas in the best interests of the state in the long run and has everything been accomplished in full compliance with existing statutes?". My guess is that the special committees will carefully examine all facets of the contract, because for a happy change there are several members on the committees who have in-depth knowledge of gas purchase contracts.

It is a well publicized fact that the majority of Alaskans currently prefer an all-Alaska gas pipeline, as proposed by El Paso. It is also fair to state that the percentage of those in favor of the El Paso route has declinded in recent weeks.

FROM THE standpoint solely of political strategy, prompt approval of a gas sales contract for the state's one-eighth royalty share strengthens the argument for the El Paso route. There is no mistake on that.

The decision of the administrative law judge for the Federal Power Commission, as well as the commission's final ruling on the choice of the route as proposed by the three competing groups (Arctic Gas, Alcan, El Paso), will be made in the near future. But the final say-so will be that of the President and Congress.

The harsh winter and accompanying energy shortages in the Midwest and East will no doubt have influence on Congress as it seeks to make sure that Alaskan gas, or an exchange therefor, gets to those areas the quickest and least expensive way possible — regardless of who does the job.

BACK TO the gas sales contract itself — a general statement is that it isn't all bad and it isn't all good. But what negotiated contract is? Despite the ballyhoo from Alaska's commissioner of natural resources that it is the best thing since catfish and hominy grits or the reporting of the Snow Tiger that it is analogous to the "sweetheart" deal cooked up years ago by this author with respect to the existing Tesoro royalty oil contract, a number of provisions of the proposed royalty gas sale need more than rubber stamp approval from the legislature.

The provisions controlling the price of gas, the "take back" provision coupled with replacement of 150 per cent of the "take back" gas, the "fliperoo" provision whereby if the governor switches to a route other than El Paso's the buyers can switch, too, under the same terms of the contract — all need careful review before we are convinced that the long-term best interests of the state are being served.

A simple question that has been taken for granted, but not necessarily satisfactorily answered, is how come Southern? Facetiously, one could answer that Southern is the company that distributes to bustling Plains, Ga. Presumably the correct answer is that Tenneco, El Paso and Southern have more clout in Congress than other gas transmission companies and have a better chance to successfully lobby the all-Alaska route.

There were several other substantial companies who wanted a place at the negotiations table but were essentially told that there was "no more room at the inn."

THE LEGAL ASPECTS of negotiating a sale as contrasted with selling to the highest competitive qualified bidder needs further examination.

Authority for the proposed sale is cited as AS 38.05.183 (d), which basically says that no state royalty oil or gas shall be sold until the commissioner determines that the royalty share is surplus to the state's present and future domestic and industrial needs. A report of such a finding must be submitted within 10 days of the convening of the legislature.

This columnist questions who (a) of that section, the first provision dealing with royalty sales, was not cited and unequivocally satisfied. It was the express intent of the 1970 legislature, following the negotiated royalty sale in 1969 (at which time there was no restriction on negotiating), that royalty taken in kind would be disposed by competitive bid except where the commissioner determines the best interests of the state do not require it or no competition exists. The latter clearly is not the case, as many were after the gas and only three were selected.

Where is the showing that the best interests of the state do not require it? Only because this action puts pressure on the FPC in favor of the all-Alaska gas line? The brief two-and-one-half page findings and conclusions of the commissioner that there was inadequate competition for a competitive sale doesn't get the job done in one man's opinion. When a finding of fact starts making reference to "subjective judgment" in the decision - making process four letter expletives are sometimes prevokable.

Suppose Congress, which has the final decision, decides something other than the all-Alaska route. Is the gas sale as proposed still better than offering the royalty for competitive sale? Maybe so, but I either have been sleeping and failed to get the message or the message hasn't been conveyed. Hopefully, all the data and supporting evidence is in the information packet that was apparently distributed to the legislature. Maybe I'm on the wrong mailing list.

Tom Kelly, former commissioner of natural resources, is a consultant specializing in Alaska resources. He is a past president-elect of the Chamber of Commerce.

SOUTHEAST ALASKA EMPIRE

WILLIAM S. MORRIS III—PRESIDENT and PUBLISHER

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What Others Say:

Gasline Route

(Editor's note: the following editorial is reprinted from the Tundra Times.)

After several years of closely observing the debate between Arctic Gas and El Paso about the method of transporting Alaskan gas to the populous urban and suburban regions of America and southern Canada, the Tundra Times is relieved to note the emergence of a third, more viable, alternative in the Northwest—Alcan Pipeline's proposal.

The Alcan proposal has one highly desireable attribute—it does not have any of the lethal and undesireable deficiencies of the Arctic and El Paso proposals.

Let us note the problems plaguing the Arctic route:

(1) It presents a severe challenge to the subsistence lifestyles of Alaskan and Canadian Arctic peoples—what assurance is there that the people of Kaktovik and the Mackenzie delta will be left undisturbed in the pursuit of their subsistence lifestyles? None, that we may observe.

(2) Let us not force the Canadian Native people to settle their aboriginal claims in the same frenzied, development-based turmoil in which Alaska Natives were forced to reach a land claims settlement during the 1960's and early 1970's. Before any type of Canadian pipeline system should come under serious consideration, Canadian Native claims should be fairly and thoroughly adjudicated without pressure from too-rapid development. We should know this from the Alaskan experience in resolving Native claims.

(3) Although we often do not find ourselves to the conservationist elements (special interest groups which often have little respect for the Native subsistence life-styles, nor for the property rights of the original Canadian and Alaska Native landlords), many environmental questions about the feasibility of building the Arctic system with minimal impact on our Arctic ecosystems have not been adequately satisfied.

(4) Alaskan and Canadian Inupiat Eskimos are dependent upon migratory patterns of caribou for protein and essential nutrients. In spite of many assurances to the contrary in advance of construction of the Alyeska pipeline, Anaktuvik Pass Eskimos report disruptions in migratory patterns of the Porcupine caribou herd. We believe that there may be no guarantees of avoidance of such disruption where non-indigenous technology is massively applied against the arctic ecosystems. There are no such herds of caribou to be impacted by construction along the highway.

The El Paso route, a favorite of many Alaskans, will find it extremely difficult—we believe impossible—to overcome the lethal objections of the conservationist elements, staff recommendations of the Federal Power Commission, and the demands of more populous mid-western and eastern markets. Sound environmental concerns are concentrated about the uncertainty of implementing a technologically unproven gas transmission system involving a pipeline system, gas liquification system and LNG tanker system. The southcentral Alaska terminus proposed by El Paso has been demonstrated to be highly susceptible to earthquake danger. The El Paso system would increase tanker traffic along sealanes and near ports which state and federal officials worry may become cluttered with unsafe vessels.

Regardless of how Alaskans feel about the El Paso route, odds against its selection are tremendous and increasingly stacked against the proposal. The remaining contenders, we believe, will be Arctic and Alcan. The Tundra Times is hopeful that the decision will (1) not infringe upon the subsistence lifestyles of Alaskan and Canadian Native peoples, and allow them to continue to gather their daily ration of protein in peace, and (2) allow for the adjudication of Canadian Native land claims in a fair and equitable, orderly and comprehensive manner, and (3) allow for intelligently planned development of Alaskan resources with minimal environmental damage.

In our view, the best way to go is the Alcan route.

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Our views:

Gas deal question

The legislature believes it is debating an issue of great significance in grappling with the questions of when and to whom to sell the state-owned 12½ per cent share of royalty natural gas from the North Slope.

Is it? The psychological impact of gas sales during the Big Freeze in the East will obviously generate a warmer feeling for Alaska among the stricken states. Two of the companies the state administration proposes to sell gas to, Southern Natural Gas, and Tennessee Gas Transmission Co., are in the heart of the cold country this year.

But the reason the legislature is debating whether to sell Alaska's gas is not that gas supplies are drying up in the Lower 48. Instead, the state administration has masterminded a plan under which sales of royalty gas to three distribution companies is supposed to generate support for the "all-American" gas pipeline project favored by the state.

The state is in a difficult position in campaigning for its choice of routes. The route favored by most Alaskans is the one that would enable some of the gas to be used in-state. In order to win national support for the route, the state must put forth the view that the route is the best one for the country as a whole.

In the first round of a series of decisions that will be made in Washington before the final gas pipeline route is chosen, an administrative law judge for the Federal Power Commission termed the route favored by the state administration a viable route, but said a trans-Canadian route was clearly superior.

Equally important, the judge questioned Alaska's motives, discounting environmental arguments put forth by the state because he believed the overriding concern of the state was to promote development within Alaska.

The theory of selling the royalty gas to powerful gas distribution companies so that they will lobby for an Alaska gas pipeline may very well have a similar impact on Washington decision-makers.

Although Alaska may be 80 per cent in favor of the El Paso Natural Gas Co. proposal for a trans-Alaska gas pipeline, the rest of the country has not demonstrated such unanimity. Dr. Arlon Tussing, of the University of Alaska, an economic consultant for the U.S. Senate Interior Committee, made some highly controversial remarks earlier this month when he testified before a state legislature committee hearing that the idea of selling royalty gas to wield political power would get Alaska nowhere.

Many may disagree with Dr. Tussing's view, but he brings to the fore an opinion based on observation from outside the state. It is certainly well worth thinking about.

Meanwhile, the latest testimony to come to light on the proposed sale was contained in a recently disclosed memo by the state's director of the Division of Oil and Gas. O. K. "Easy" Gilbreth, in a memo last year on illegal political contributions by oil and gas companies, suggested there could be grave liabilities in contracting with some industry members for political support. He went so far as to say, "If the political motivation is so important, why not commit to five or more East Coast or Southern U.S. users and get five times the benefit."

Unquestionably, Alaska should commit the major share of its gas to outside gas distribution companies as soon as possible to hold forth the promise of additional supplies to people in the cold.

As state Commissioner of Natural Resources by Guy Martin has pointed out, the rest of the country isn't going to stand for Alaska making plastics with its gas while outside residents deal with declining supplies to heat homes.

Our only question is whether the sale of the royalty gas should be premised on acquiring gas company-lobbyists for the El Paso project. Will it truly do any good?

SOUTHEAST ALASKA EMPIRE

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Gas Decision

This week attention is focused on the legislature and what they will do with the state's royalty gas from Prudhoe Bay.

Special House and Senate committees will probe the Hammond administration's proposal to barter the state's share of the gas to three large gas conglomerates in exchange for lobbying support on behalf of the El Paso gas line and against the Alcan and Arctic Gas routes.

The contracts, drafted by the Hammond administration, sell Alaska's gas to Tenneco, Southern and El Paso. There are provisions for state withdrawal of gas for development of petrochemical industries and use as an energy source within the state.

In the course of the legislative discussions of the contracts we hope the legislators keep in mind these important considerations.

1) The decision by the state Royalty Oil and Gas Development Advisory Board to accept the contracts was made with unseemly haste. Despite the fact the decision involves several billion dollars, the board rubber-stamped the gas sale contracts after only one day of testimony. The board's decision was made before an in-depth report of the benefits and disadvantages of the three competing gas line routes was completed.

2) Legislative approval of the contracts could have serious repercussions in Washington, D.C. Last year Congress approved a measure which gave Alaska control of its royalty gas. If Congress views the sale contracts as political, a gambit designed to further Alaska interests at the expense of the rest of the country, it could rescind approval of state control of royalty gas.

3) The political realities of the gas line route decision seem to be against the El Paso route. The Federal Power Commission staff has already recommended approval of the Arctic Gas route. Artic Gas' proposal is the worst possible line for the state since little of the line would be constructed in the state. There is not much likelihood Alaska royalty gas could be used for industrial or consumer use if the Arctic time is approved in Washington.

The state's chances of scoring a political coup and winning approval of the El Paso route are dimming as the cold snap in the Midwest and East lingers. The energy crisis is growing more acute, homes are chilled, schools closed and factories shut down because of natural gas shortages. It grows more unlikely the FPC, Congress and the President will approve the El Paso route which delivers gas to the West Coast over the Alcan or Arctic routes which directly pipes the gas into the stricken Midwest and East.

In light of these considerations, we question the state's all-or-nothing commitment of royalty gas to support the El Paso line. The legislature should closely examine the chances for approval of the El Paso route in the nation's capital and weigh that against the advantages of the Alcan route versus the Arctic Gas route.

The Alcan route proposed by Northwestern, would deliver gas to the lower 48 earlier and more cheaply than the El Paso route. The Alcan alternative would also pipe gas directly to the energy-starved Midwest.

In addition the Alcan route runs for a long distance through Alaska while the Arctic gas route traverses the northern rim of the state for a short distance only. With the Alcan route there is the real possibility of petrochemical industry in Fairbanks. Northwest is also studying the possibility of spur lines to tidewater in southcentral Alaska and southeastern Alaska.

As time passes, the Alcan route, called by state officials a good second choice, is becoming the only route favorable to the state and acceptable to U.S. representatives of the gas-starved East Coast and Midwest.

The state's legislators should be certain they don't step on the toes of those representatives. If the legislature does offend those representatives, there is a chance the state may lose control over royalty gas and end up with the least acceptable gas line alternative—the Arctic Gas Line.

2/11/77

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Tough Talk On Energy

We don't really know what our Republican senator was trying to tell the Canadians in his Thursday press conference.

At one point it appeared he was urging Canadians to expedite their decision on the status of a pipeline carrying Alaska gas through Canada to the lower 48 states. Sen. Stevens derided Canada for the delay in authorizing a Canada pipeline route. That kind of language only helps the Arctic Gas pipeline proposal; the proposal most inimical to Alaska interests.

At another point Stevens used not so thinly veiled threats that Alaska may curb gas production making the Canadian route uneconomical.

Alaska's senior senator was obviously trying the 'kid glove-big stick' tactic. Canadian reporters at the press conference were not impressed.

One reporter said if Canada accepted Stevens' challenge to expedite the pipeline decision process it would virtually guarantee approval of the Arctic Gas project. Another reporter said Canada didn't need Ted Stevens telling them what to do.

Perhaps the third reporter hit the nail on the head when he said Stevens was trying to make someone in Ottawa mad, hoping Canadians will dig in their heels and do nothing in response to him and his assault.

The third reporter's rationale is the only one that makes sense. Stevens must have been hoping his comments would anger Canadian officials and "get their backs up." That would make rapid and favorable action on any Canadian route unlikely and enhance the chances for the El Paso route which Stevens favors.

If that is the case the senator is playing a dangerous game. The gas line deliberations are in a delicate stage. So far the FPC hearing judge has already opted for the Arctic Gas Line. If the El Paso line is not the route selected by the FPC, Congress and President, the U.S. will have to work closely with Canadians during construction and utilization of either the Alcan or Arctic Gas route.

The senator seems to have forgotten many of the Pacific Northwest states are dependent on Canadian gas. His tough language may encourage some form of retaliation. If Sen. Stevens plays energy sheik with Canada they may play energy sheik with us.

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Gas Ruling

It may be cold in the nation's capital but a hearing judge in Washington, D.C., has made Alaskans hot under the collar.

In an opinion written for the Federal Power Commission, Hearing Judge Nahum Litt endorsed the Arctic Gas plan to ship the state's natural gas resources across the northern rim of Alaska and through Canada to the U.S. Mr. Litt's ruling is the decision most inimical to the state's interests.

The Litt ruling went far beyond a simple recommendation—it borders on an attack against the two alternative gas line routes proposed by the Alcan Pipeline Co. and El Paso Natural Gas Co.

In his report to the FPC, Mr. Litt said the Arctic route was superior from an environmental standpoint. That conflicts with a FPC staff report which calls the Alcan route environmentally superior. Mr. Litt conveniently ignored the fact the Arctic route violates the integrity of the Arctic National Wildlife Range. In addition he chooses to ignore the great distance of fragile tundra the Arctic route traverses.

There are other problems with the Arctic line. Arctic Gas contends construction across the Northern rim of the state can be done from snow roads. Mt. Litt seems to agree—nobody else does. Mr. Litt also contends Arctic will be able to deliver gas faster and at a lower price. That is disputed by many.

Not only did Mr. Litt's decision support the Arctic route, the least desirable from Alaska's standpoint, he also attacked the measure adopted by Congress which allows Alaska to take any gas the state owns from the pipeline without FPC permission. Mr. Litt wants the measure repealed. He also hinted that any sale of the state-owned gas must be approved by the FPC.

If Mr. Litt is taken seriously by the FPC, President Carter and Congress, it would mean state loss of all control of our natural gas resources; even gas the state owns. That is a bit like telling President Carter he can grow all the peanuts he wants but can't sell them unless he checks first with the federal government.

Conservation organizations, Gov. Jay Hammond and the state's congressional delegation have all vowed to fight Mr. Litt's recommendation to the FPC. There isn't much time to rectify all the misconceptions in the hearing judge's report before the final blessing is bestowed on one of the routes. Whether we, as Alaskans, favor the El Paso or Alcan routes there is no doubt we should all be united against the Arctic pipeline.

SCOMM

#21:16

Before the
Federal Power Commission

El Paso Alaska Company, et al.) Docket No. CP75-96, et al.

POSITION BRIEF OF THE COMMISSION STAFF

Allan W. Anderson, Jr.
Brian J. Heisler
Commission Staff Counsel

Washington, D. C.
December 7, 1976

Page

I INTRODUCTION AND STATEMENT OF POSITION 1

II BRIEF DESCRIPTION OF COMPETING PROJECTS 4

(1) Alaskan Arctic Gas Pipeline Company, et al. (Arctic Gas) 4

(2) El Paso Alaska Company, et al. (El Paso) 4

(3) Alcan Pipeline Company, et al. (Alcan) 5

III BASIS FOR COMPARISON 6

IV PROJECT COMPARISONS 11

(1) Overall Project Conception 11

(A) The Arctic Gas Project 11

(B) The El Paso Alaska LNG Project 13

(C) The Alcan Project and the Maple Leaf Project 14

(2) Economics 18

(3) Environment 28

(4) Engineering 29

(5) Gas Supply 32

(6) Financing 33

(7) Tariff 34

(8) Canadian Law and Treaty 34

(9) Markets 35

V CONCLUSIONS AND RECOMMENDATIONS 37

Appendix A

Appendix B

El Paso Alaska Company, et al.) Docket No. CP75-96, et al.

POSITION BRIEF OF
THE COMMISSION STAFF

I. INTRODUCTION AND STATEMENT OF POSITION

The enormous record in this case 1/ coupled with the need for expedition to meet the spirit and letter of the Alaska Natural Gas Transportation Act of 1976 (Public Law 94-586) necessitated the adoption of a segmented individual issue by issue briefing schedule. This process has been under way since early 1976 and is due to conclude with the filing of Wrap-Up briefs on December 15, 1976. Appendix A lists the series of briefs filed by Staff starting on May 28, 1976. This brief states the position of the Commission Staff on the overall question of which of the three competitive projects is superior. It is not intended to be a summary of the series of briefs filed previously by Staff because some issue areas are common to all three proposals, and the conclusions we reach in these specific issue areas do not for the most part favor one applicant over another. In the interest of a concise statement of the Staff position in this case, we have attempted to distill our thinking on this very complex case into the shortest document possible. The arguments and project comparisons which are presented in Section IV cover, in our opinion, the key issues in the case, but the list of issues contained therein is by no means exhaustive. The specific issue areas in the project comparisons are presented in the order of significance as we perceive them, in terms of their relative weight in deciding the superiority of one project over another. This does not mean that issue areas lower in the list are not significant in this case in and of themselves, quite the contrary; rather, in our opinion such areas are relatively less significant in deciding between the projects. For example the area of tariffs is of enormous significance to Staff but is of little moment in determining which of the three projects is superior.

For a full statement of our arguments, conclusions, and positions on specific issue areas, reference should be made to individual Staff briefs and the Staff final environmental impact statement (FEIS). Section IV (2) of this brief constitutes Staff's economics brief.

1/ 44,584 pages of transcript in 253 volumes (days) together with countless exhibits.

Based upon the analysis that follows and our overall experience in participating in the preparations for and conduct of the hearing in this case, the Staff has reached a position on which of the three projects 2/ best serves the public convenience and necessity.

Staff supports the Arctic Gas project modified and improved by the elimination of the "western leg" lateral to California, which has been shown on this record to be high risk, uneconomic, unnecessary, and environmentally unsound. The modified Arctic Gas project supported by Staff, shown in Figure No. 1, is a trunkline which would provide equitable access to Prudhoe Bay gas for all regions of the nation. Shorn of the unnecessary $700 million California lateral 3/, the recommended Arctic Gas project consists of a 48-inch and 42-inch diameter high pressure natural gas system that can deliver Mackenzie Delta gas to the Trans-Canada pipeline system for transmission throughout Canada, and at the same time can deliver Prudhoe Bay gas to central locations in the United States, from which it can be delivered to all existing continental markets. In our opinion, the only Arctic Gas trunkline transmission facility that can be certificated at this time excludes the western leg. Particularly significant in this opinion is the fact that only 12-1/2% of the Prudhoe Bay gas has as of this time been placed under contract. 4/ If the Prudhoe Bay gas is purchased by transmission and distribution companies spread throughout the continental 48 states, as has been assumed on the record and as we think is highly probable, this modified Arctic Gas trunkline in conjunction with the existing interstate natural gas pipeline network will be all that is required to move Prudhoe Bay gas to distributors and ultimately to the consumers of this gas. If particular purchasing companies in specific regions of the nation contract for more or less gas than has nominally been assumed in this record, then the certification of anything more than the modified Arctic Gas trunkline could turn out to have been a costly mistake. We believe the certification of this Arctic Gas system, modified by the elimination of the California lateral, is prudent, reasonable, and in the public interest, conditioned upon subsequent evidence of gas purchase contracts and financing.

2/ Arctic Gas project, El Paso Alaska project, Alcan project

3/ The original Arctic Gas project was amended to reflect the deletion of a $300 million eastern extention from the Chicago area to near Pittsburgh and by the requested withdrawal of Interstate Transmission Associates proposal for a second western leg to Los Angeles.

4/ By the State of Alaska whose royalty gas contracts do not contain price provisions and are subject to legislative approval in the future.

Figure 1.



FPC STAFF SUPPORTED ARCTIC GAS TRUNKLINE PROJECT

II. BRIEF DESCRIPTION OF COMPETING PROJECTS

(1) Alaskan Arctic Gas Pipeline Company, et al. (Arctic Gas) 5/

The Alaskan Arctic project (Figure 2) involves the construction of 3,486 miles of 48-, 42-, 36- and 30-inch diameter pipeline. 6/ Under this proposal a 48-inch diameter pipeline will be constructed from Prudhoe Bay, Alaska, east to the Mackenzie Delta in the Northwest Territories of Canada. From the Delta a 48-inch diameter pipeline will be constructed through Caroline, Alberta, to Empress, Alberta. At Empress the facilities will intertie with those of Trans-Canada Pipelines Limited and a new 42-inch diameter pipeline to the U.S. border at Monchy, Saskatchewan. A new 30-inch pipeline will be constructed from Caroline to the Alberta-British Columbia border at Coleman, Alberta. From Coleman, Alberta, the existing facilities of Alberta Natural, PGT, and PG&E, as far south as an intertie with the Southern California Gas Company (SoCal) system at Hinkley Station in California, will be expanded with a total 36-inch diameter pipeline loop. A new 42-inch diameter pipeline will be constructed from the border at Monchy to Dwight, Illinois. This system is designed to transport 2.25 Bcf/d of Prudhoe Bay gas to U.S. markets and 2.25 Bcf/d of Mackenzie Delta gas to Canadian markets. As proposed, 1,530 MMcf/d of Alaskan gas will be delivered to Northern Border at Monchy for delivery to markets in the Midwest and East; the remaining 659 MMcf/d will be transported through the western leg for delivery to Northwest Pipeline Company (22 MMcf/d), PG&E (200 MMcf/d), and SoCal (437 MMcf/d).

(2) El Paso Alaska Company, et al. (El Paso) 7/

As proposed, El Paso (Figure 3) will construct an 809-mile 42-inch diameter pipeline from Prudhoe Bay, following the Alyeska oil pipeline corridor, to an eight-train LNG liquefaction facility and terminal at Point Gravina on the south coast of Alaska. A

5/ Includes the transmission facilities proposed by Canadian Arctic Gas Pipeline Limited, Alberta Natural Gas Company Limited (Alberta Natural), Pacific Gas Transmission Company (PGT), Pacific Gas and Electric Company (PG&E), and Northern Border Pipeline Company (Northern Border).

6/ Only 1,903.9 miles are actually involved in applications before this Commission; the remaining are within the jurisdiction of Canada (2,281 miles) and the State of California (418 miles).

7/ Includes the facilities of Western LNG Terminal Company (Western LNG).

fleet of eleven, 165,000 cubic meter cryogenic tankers will be built to transport the LNG 1,900 nautical miles to Point Conception, California. Terminal, regasification facilities, and 251 miles of 42-inch diameter pipeline from Point Conception to Cajon, California, will be constructed by Western LNG. These facilities have been designed on the basis of the delivery of a nominal 3.2 Bcf/d to the liquefaction plant.

El Paso has made alternate showings which describe the facilities predicated on the deliver of 2.4 Bcf/d to the liquefaction plant and realignment of the Alaska pipeline closer to the Alyeska pipeline. The 2.4 Bcf/d case involves essentially the same pipeline with less compression, a six-train liquefaction plant, and the use of eight cryogenic tankers. El Paso maintains that it is ready, willing, and able to build any of the three alternatives (Applications Brief, page 9). Western LNG has also provided showings that correspond to the 2.4 Bcf/d case.

(3) Alcan Pipeline Company, et al. (Alcan) 8/

Alcan (Figure 4) proposes the construction of 1,800 miles of new pipeline in Alaska and Canada and the expansion of existing facilities in the provinces of Alberta and British Columbia and the States of Oregon and Washington. A 42-inch diameter pipeline will be constructed from Prudhoe Bay to Fort Nelson, British Columbia. The route will follow the Alyeska oil pipeline as far as Delta Junction, Alaska, from there the Alcan Highway through the Yukon Territory to Fort Nelson where it will connect with the existing facilities of Westcoast. A 36-inch diameter pipeline will be built from Fort Nelson to a point of interconnection with the facilities of AGTL near Lake Zama, Alberta. The Westcoast facilities will be expanded through the addition of 201 miles of 36-inch diameter pipeline looping, and the AGTL facilities will be expanded by the use of an unknown amount of 42-inch diameter pipeline looping. A 30-inch diameter pipeline

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8/ Includes Northwest Pipeline Corporation (Northwest), Foothills Pipe Lines (Yukon) Ltd. (Foothills), Westcoast Transmission Company Limited (Westcoast), the Alberta Gas Trunk Line Limited, and the Alberta Gas Trunk Line (Canada) Limited (AGTL). Only the facilities of Alcan and Northwest are within the U.S. and subject to this Commission's jurisdiction.

looping of 359 miles will be constructed by Northwest on its existing system between Sumas, Washington and a proposed new intertie with PGT at Kent, Oregon. A new 36-inch diameter pipeline will also be constructed in Saskatchewan connecting the existing AGTL facilities at Empress, Alberta, with the Northern Border facilities at Monchy. The Alcan project envisions the construction by Northern Border of a 36-inch diameter pipeline along its currently proposed route and the expansion of the existing PGT and PG&E facilities south of Kent, Oregon.

As will be discussed in other sections of this brief, Staff believes the Maple Leaf project must also be considered with Alcan; therefore, this project is included in Figure 4 and described as follows. The Maple Leaf project is a system for the delivery of Mackenzie Delta gas to Canadian markets sponsored by Foothills, Westcoast, and AGTL. The Maple Leaf group proposes to construct 898 miles of 42-inch diameter pipeline from the Mackenzie Delta to the existing AGTL system and 155 miles of 30-inch diameter pipeline laterals connecting this facility with Parsons Lake and the existing facilities of Westcoast. The existing facilities of AGTL and Westcoast will also be expanded to transport the 800 MMcf/d to 2,400 MMcf/d anticipated from the Mackenzie Delta.

III. BASIS FOR COMPARISON

The Arctic Gas project was filed with this Commission and the Canadian National Energy Board (NEB) on March 21, 1974. The initial filing with the Commission was deficient in many significant ways. This fact was not disputed by the applicants. They themselves highlighted some of the omissions and explained the rationale behind their filing schedule.

The El Paso Alaska project was filed with the Commission on September 24, 1974. The El Paso Alaska filing also lacked significant required information.

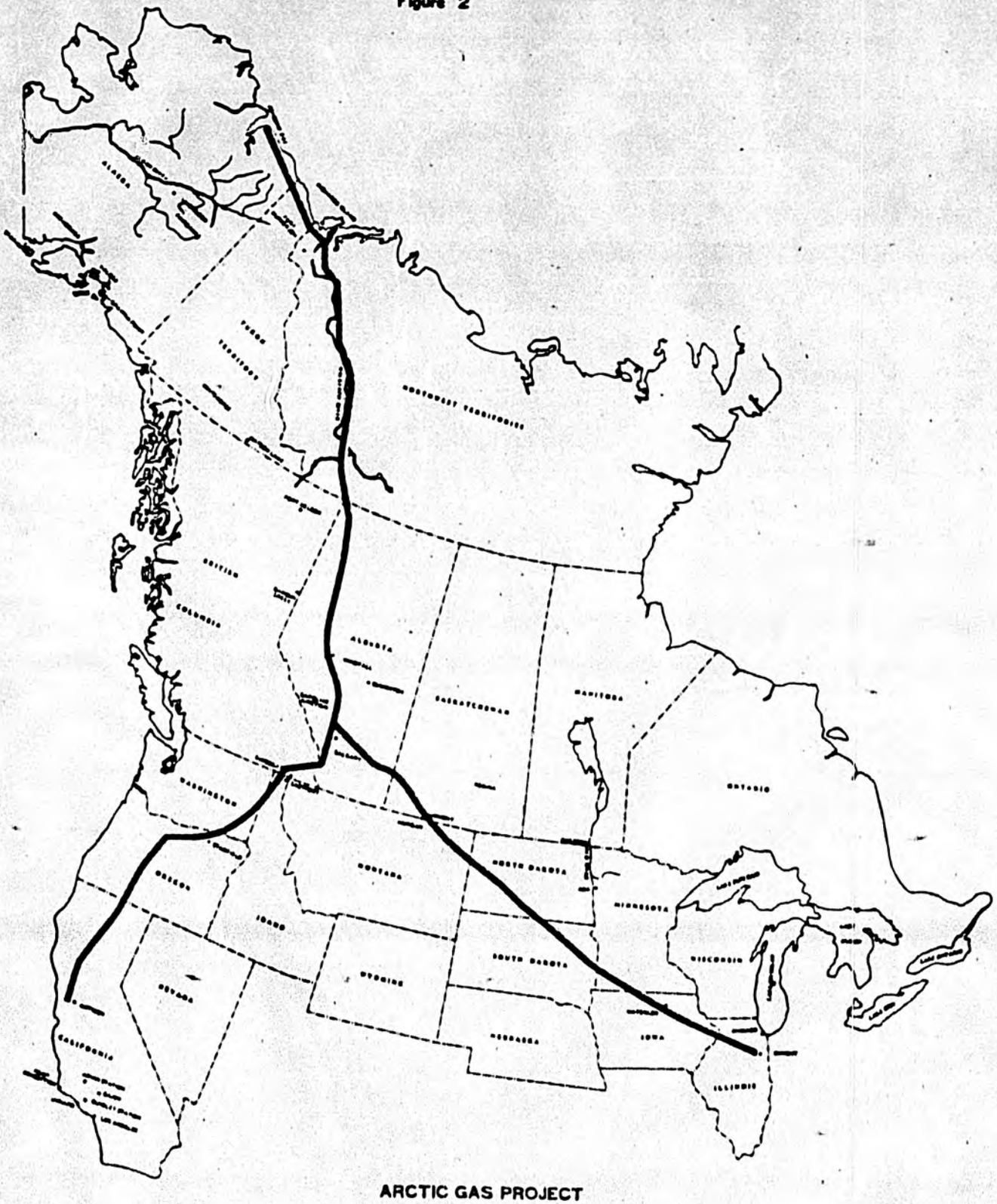
The two above filings went through a long and laborous process of refinement resulting in very tightly reasoned, highly defendable presentations which included the testimony, exhibits, backup studies, and supporting workpapers of the expert witnesses presented.

The Alcan project was filed on July 9, 1976, after a massive and impressive effort on the part of its sponsoring Canadian and U.S. companies. The process of perfecting the Alcan project was carried out in a much shorter time period than the other two projects. As a result, the degree of certainty that can

be attached to the cost projections associated with the Alcan project is significantly less than for the other two projects, in our opinion. By the same token, the minor adjustments and improvements that occurred during the hearing process did not run to full completion. On balance, though, Staff believes that the Alcan project was fairly presented and adequately reviewed. The enormous problems the Staff has with the Alcan project stem from the fundamental concepts underlying the project, not how or to what degree it was presented on the record. We are of the opinion that another year of hearing on the Alcan project, as filed, would add very little evidence that would be of value in deciding for or against Alcan. This is not to say that we cannot see many ways in which we would modify the Alcan project.

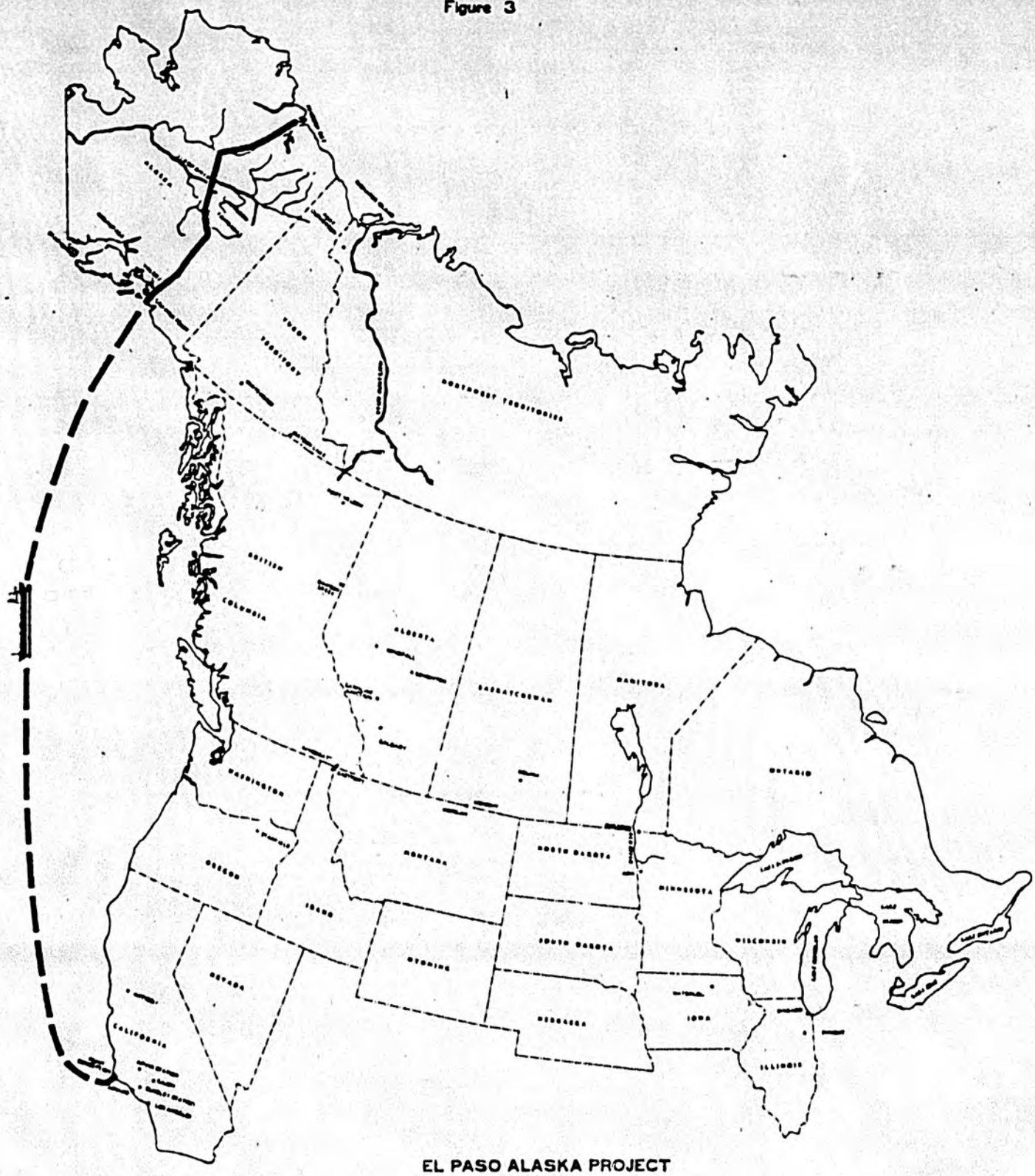
The Staff approach throughout the proceeding has been to modify the El Paso Alaska and Arctic Gas projects and to then compare them. In considering the Alcan filing in terms of Staff-supported testimony modifying and improving the filed proposal, we came to an interesting conclusion. The modified Alcan project we ended up with was in essence the Arctic Gas project. Our reasoning was essentially this. If you have approximately 3.25 Bcf/d of gas to transport, you do not incrementally expand two existing low-pressure transmission systems that are, for all intents and purposes, full. You take advantage of the economies of scale and build the largest diameter new facility that can be justified. Secondly, if the Maple Leaf project is assumed, and the Alcan project sponsors so assume, conventional natural gas industry logic suggests that one should look at a 400-mile leg to bring Prudhoe Bay gas east to the Delta and then expand the Maple Leaf line to 48-inch diameter. These changes to the Alcan and Maple Leaf projects would result in basically an Arctic Gas project.

Figure 2



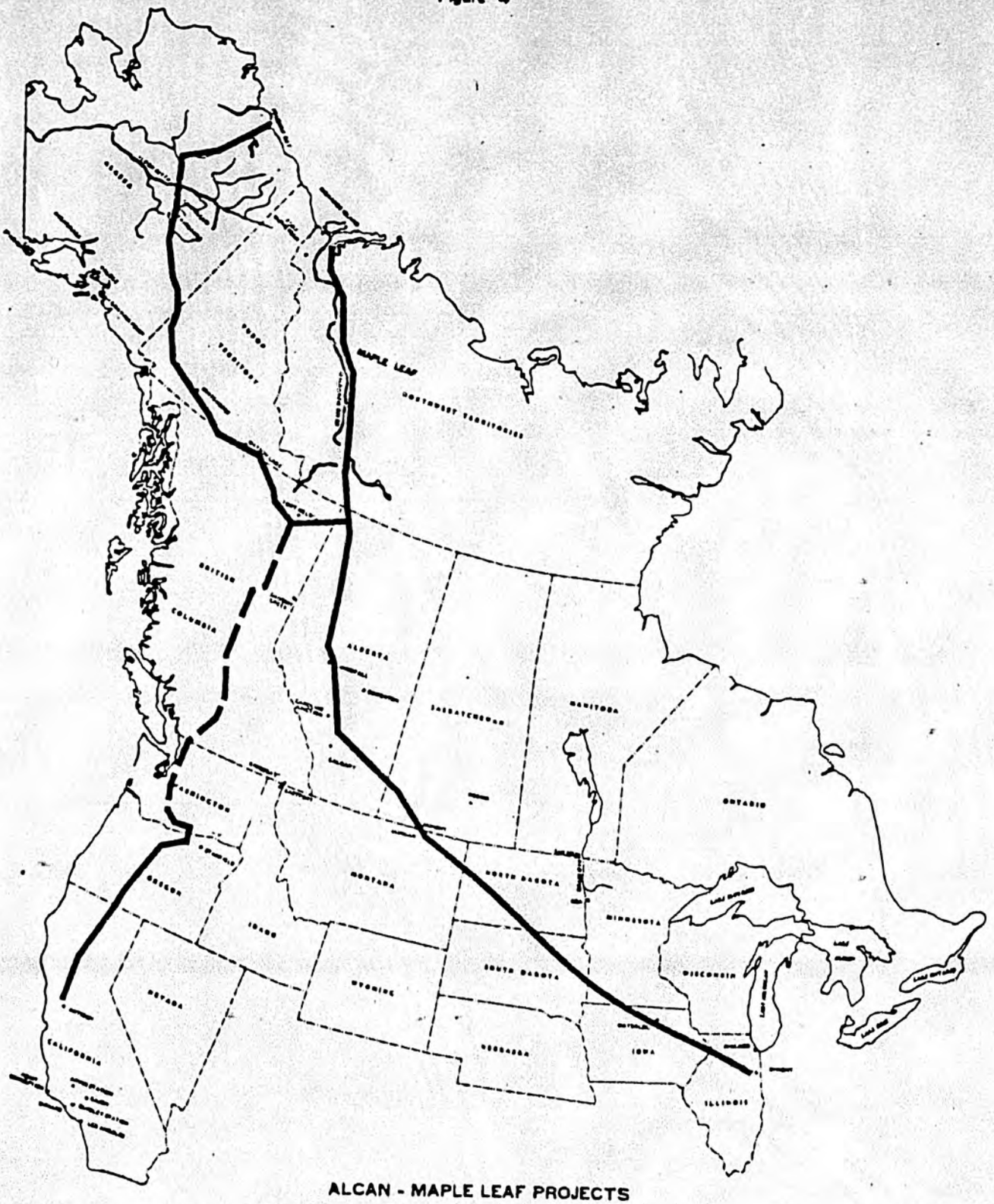
ARCTIC GAS PROJECT

Figure 3



EL PASO ALASKA PROJECT

Figure 4



ALCAN - MAPLE LEAF PROJECTS

IV. PROJECT COMPARISONS

(1) Overall Project Conception 9/

The three competitive projects in this case present significantly different approaches to the problem of delivering North Slope Alaska natural gas production to market in the lower 48 states. The fundamental underlying conceptual structure of each of the three projects is highly significant: in our opinion, the selection of the preferred project turns upon this decisive factor. This is the case because the key determinants in choosing between the alternative projects, such as economy, environment, engineering etc., all of which we consider in detail below, are to a large degree predetermined by the initial choices made in the formulation of each project.

(A) The Arctic Gas Project

Even a casual view of a topographic map of North America will reveal that the sponsors of the Arctic Gas project have chosen the most logical natural gas pipeline route from Prudhoe Bay across western Canada to the central United States. This is a physical fact. When the existence of a natural gas field in the Canadian Mackenzie Delta region is given recognition, the choice of the Arctic Gas route becomes overwhelming in its appeal. A natural corridor exists along the Beaufort Sea to the Delta and then south along the Mackenzie River Valley to Alberta. The mountains are, for the most part, skirted. Across Alberta the route follows existing natural gas lines to Empress, then strikes an essentially straight line for the midwestern region of the United States. In the process, two major existing natural gas trunklines serving western, central, and eastern Canada are crossed, three major pipelines in the United States are intersected and the major north-south transmission facility serving the region of the United States west of the Rocky Mountains is crossed. The fundamental logic of the Arctic Gas route is unassailable. If the realities of territorial sovereignty and the geography of wildlife preservation had been different, to the point of falling out of the decisional equation, there would have been no alternative proposals, period!

9/ The arguments presented here are based upon evidence that is woven throughout the entire 44,584 pages of transcript in this case. Staff's subject area briefs (see Appendix A) and those of other parties give ample record citations for particular points.

The choice of an all-land pipeline brings with it the benefits of over thirty years of natural gas pipeline technology. The Arctic Gas project 48-inch diameter 1680-psig proposal is a consistent next step in the evolution of high pressure natural gas pipeline design, if history is any guide. There will be problems, there are significant uncertainties, but the alternative is dramatically higher transmission costs. The risks are prudent and should be taken, in our opinion.

The combination of the Mackenzie Delta Field reserves in Canada with the Prudhoe Bay Field reserves in Alaska, as a foundation of supply for a joint project which takes full advantage of the economies of scale, minimizes the risks which are inherent in connecting these supplies. 10/ The effects of the uncertainties of gas reserve and deliverability projections are reduced by a joint project. Should the dictates of maximum oil recovery from the Prudhoe Bay oil field result in natural gas deliveries lower than the producer-projected minimum of 2.0 Bcf/d, there remains the very real chance that the Mackenzie Delta Field will out perform the assumed initial 1.0 Bcf/d projected by the Arctic Gas and Alcan sponsors. If the Delta Field does not come on as fast and to the degree projected, there is the possibility that Prudhoe Bay oil lifting will allow gas deliveries greater than the initial high-side 2.5 Bcf/d estimated by the field owners. The significance of this advantage to the Arctic Gas project is pervasive. The effects of it touch upon many key issue areas; neither of the other two competitive projects has this advantage.

The reliability of land pipelines is well documented. The natural gas network that spans the nation has been an unqualified success. Our standard of living is due in large part to this low cost, efficient, and reliable energy delivery system. The basic technology, upon which the Arctic Gas project is predicted, is elemental, low level, and highly reliable.

The direct route chosen by the Arctic sponsors together with the connection of two major reserve pools in one project, allows capital cost levels, transmission fuel requirements and construction material requirements that approach the physical minimums associated with the movement of natural gas. These are advantages and combinations of advantages that are formidable, and the superiority of the Arctic Gas project which we discuss below under specific topic heads largely flows from these central considerations.

10/ The resulting route also traverses the most promising potential gas reserve areas on the Arctic coast of the U.S. and western Canada.

(B) The El Paso Alaska LNG Project

The concept underlying and delimiting the El Paso Alaska project is that Prudhoe Bay gas should be delivered to the lower 48 states in such a manner that exclusive United States jurisdiction is maintained. Stated another way, the assumption--implicit or explicit--is that transit of Alaska gas across Canada is precluded or at very least unwise. This cardinal principle of the El Paso project is its paramount strength or its critical weakness, depending upon how the Canadian government decides its best interests will be served.

Viewed in the context of economics, engineering, environment, the history of the industry, etc.--in short in any way other than international politics--the El Paso project suffers significantly as a result of the physical realities of the circuitous route it must follow in order to stay within United States controlled areas. A water route is dictated, and this in turn necessitates the conversion of the transit Alaska gas into and out of the liquid state. At each step, costs in the broadest sense are necessarily incurred.

Water transit involves complex ships of a size not yet in existence. Ship movement introduces a line of discontinuous storage batch movement of gas between beginning and end links of continuous flow pipeline in the chain from gas field to market. The change in state required entails significant energy costs which can only be recovered under ideal conditions. The overall fuel requirements associated with land-water-land movement of natural gas are substantially greater than those associated with conventional land movement.

The liquefaction facility in Alaska and the corresponding regasification receiving terminal in California, in conjunction with the operation of ships, result in higher annual operating costs throughout the life of the project and introduce a risk of service interruptions. To a large degree, these types of costs are difficult to reduce and are prone to escalation due to inflation.

The required water route results in the significant environmental impact disadvantage associated with the El Paso Alaska project. The thermal pollution problems, the safety questions raised by LNG terminals and ships, the facility reliability uncertainty, and the passage through high-risk seismic activity areas in Alaska and California all result from the route selection dictated by the El Paso Alaska project concept.

The El Paso Alaska route extends 800 miles due south from Prudhoe Bay in a direction that points as much toward Honolulu as it does to San Francisco, let alone Chicago. The primary direction from Prudhoe Bay to the major market regions of the nation is southeast. As a result, the El Paso Alaska project lays the North Slope gas down on the California coast at one edge of the national natural gas market. An imaginative and innovative, but less than ideal, reverse flow proposal on the existing east-west El Paso Natural Pipeline is required to move North Slope gas to mid-continent points where it can be delivered throughout the nation.

Finally, by avoiding Canada, the El Paso Alaska route gives up the economic and risk reduction advantages of combining the Mackenzie Delta reserves with Prudhoe Bay reserves.

(C) The Alcan Project and the Maple Leaf Project

The underlying principles of the Alcan project appear to be as follows: (1) Prudhoe Bay gas should transit Alaska to Fairbanks and then follow the Alcan Highway to Fort Nelson; (2) the two existing western Canadian north-south transmission systems should be incrementally expanded to move Alaskan gas commingled with existing Canadian traditional production area gas; (3) an arbitrary 30%-70% split of Prudhoe Bay gas should occur at Fort Nelson; (4) 30% of the Alaskan gas should go south in the Westcoast Pipeline system, and 70% should go east to Zama Lake and then south in the Alberta Trunk system; (5) a design pressure of 1250 psig should be used on all new portions of the Alcan system; (6) no pipeline greater than 42-inch diameter should be utilized even if it is economically justified; (7) no co-ordinated corporate entity or Canadian and-U.S.-related entities should be created to construct the Alcan project; (8) the sequence of corporate entities which would build, own, and operate the Alcan system would basically follow state and provincial boundaries with individual corporations for each political subdivision down to the U.S. border; and (9) Prudhoe Bay gas should be brought on stream in the following sequence: 1.2 Bcf/d in year one, 1.6 Bcf/d in year two, and 2.4 Bcf/d in year three of the project.

The underlying principles of the Maple Leaf project appear to be as follows: (1) Mackenzie Delta gas should be brought on stream approximately 18 months after Prudhoe Bay gas begins to flow in the Alcan project, (2) the Mackenzie Delta gas should be commingled with existing Canadian traditional production area gas and with Prudhoe Bay gas south of Fort Nelson and Zama Lake; and (3) Mackenzie Delta gas will be rolled-in with the existing Canadian gas stream for transportation rate purposes.

The same two corporations sponsor the Alcan and Maple Leaf projects within Canada. These corporations, Westcoast Transmission Company and Alberta Gas Trunk Line Company, have indicated that their first objective is to build the Maple Leaf project, but that the Alcan project can be built first and the Maple Leaf project deferred into the late 1980's or longer if the Canadian Government chooses to do so.

The separability of the Alcan and Maple Leaf projects presents problems for any decision maker in comparing the Alcan project with the Arctic Gas project. The Arctic Gas project is predicated upon combining the Prudhoe Bay gas with the Mackenzie Delta gas to achieve significant economies, as we have discussed above. Comparing the Arctic Gas project, which connects the Mackenzie Delta reserves, with the Alcan project which does not, present problems that are not involved in the comparison of the Arctic Gas project, with the El Paso Alaska project. This is true even though the El Paso Alaska project does not connect the Delta reserves either. The Arctic Gas and the Alcan projects are international in scope. The needs and best interests of two nations must by law be considered. In the case of the U.S. go-it-alone El Paso Alaska project or the Canadian go it alone Maple Leaf project, there are impacts upon each nation as a result of the other nation selecting its unilateral project, but these effects are indirect and do not require that either government necessarily take the other governments' interests into consideration.

For our purposes Staff believes that from a logical, from a practical and from a legal point of view we must combine the Alcan and the Maple Leaf projects in attempting to select the superior route of the three applications before us. The two projects are on file in Canada before the National Energy Board, they have been consolidated and are being heard together. The Arctic Gas project connects the two reserve pools. The only logical approach we can see, is to look at what options the Alcan project leaves for Canada to connect Delta Gas and to compare the economic, engineering, financing etc. consequences of doing this with the Arctic Gas project. From a practical point of view there is no basis on this record for determining what the Alcan project would look like in detail, the detail required by the rules and regulations, if the Maple Leaf project were assumed to be delayed or never built. Staff defies anyone to segregate out the specific facilities, the specific costs associated with those facilities and point to the specific flow diagrams that would be associated with the Alberta Trunk portion of the Alcan project standing alone. Staff can not do it, Arctic

Gas could not do it and more importantly the Alcan sponsored witnesses for Alberta Trunk could not do it on the stand. This situation obtains for Westcoast and for Northwest Pipeline to a lesser degree. Northwest's facilities presentation is predicated upon the resumption of deliveries at Sumas in 1983, which according to testimony put on by Westcoast is predicated upon the Maple Leaf project being on stream by 1983. The Alcan project was presented for this record on the basis that the Maple Leaf project would track along 18 months later. The detailed subject area by subject area presentations are so intertwined, interconnected, and co-ordinated that at very best only a generalized Alcan project can be envisioned, absent any Maple Leaf project at all.

Based upon the above considerations we treat the Alcan project and the Maple Leaf project as one system in comparing it with the Arctic Gas and El Paso Alaska projects.

The Alcan and Maple Leaf system combines the Prudhoe Bay and Mackenzie Delta reserves in an enormously inefficient way. Approximately 1200 more miles of pipeline would be required to bring these two streams of gas together in northwestern Alberta, than in the Arctic Gas project. South of this junction point in Alberta the 30%-70% split of Alaska gas is arbitrary and appears to have been dictated by considerations other than economics. Alcan's own cost exhibits show that the use of the Westcoast system is significantly more expensive than the Alberta Trunk system would be. In similar fashion routing the California gas through the Northwest pipeline in Oregon and Washington is more expensive than using the existing or new Pacific Gas Transmission system. These curious facts are readily apparent and basically uncontested. Alcan even proposed a tariff arrangement to average out the transmission costs of their split stream approach, in order to avoid the obvious discrimination between shippers.

No!

No meaningful express line studies across Alberta were conducted by either company or by any participant in the Alcan and Maple Leaf projects. Subsequent to the filing of applications for the total Alcan and Maple Leaf system, Staff requested that a 42-inch diameter line from Sousa to Empress be analyzed and the results supplied for the record. The response from the Alcan and Maple Leaf sponsors was succinct and revealing "these

questions require us to analyze new designs which we have not proposed and have not sought authorization to construct" (Tr. 44,381).

The ultra-conservative engineering approach assume by the Alcan and Maple Leaf system sponsors in respect to maximum line pressure on new pipeline, leads necessarily to an uneconomic system. The filed for 1250 psig initial maximum design pressure with a very tentitive future escalation to 1440 psig with experience, became as the hearing progressed the 1440 psig design derated in early years to 1250 psig. The Alcan and Maple Leaf witnesses final word appears to be - 1680 psig systems as proposed by El Paso Alaska and Arctic Gas are probably feasible in the future, but are too speculative for use at this time.

The 2.4 Bcf/d ceiling on transit United States gas in the Alcan and Maple Leaf system was at first a cardinal principle underlying the fundamental concept of the project. The passage of time left this critical consideration in a kind of limbo. The policy witnesses attempted to explain the simple and clear contractual language away near the close of the record (witness Blair Tr. 41,868 to 41,896). The most revealing fact is that there is no basis in the record in this case to do anything other than speculate what it would cost to transport Prudhoe Bay volumes in excess of 2.4 Bcf/d in the Alcan and Maple Leaf system.

The above cited conceptual design considerations underlying the Alcan and Maple Leaf system virtually guarantee that any careful issue by issue comparison with the vastly superior Arctic Gas project will rebound to Alcan's disfavor. This is the overwhelming result of our analysis.

(2) Economics

The applicants have marshalled an imposing array of expert cost witnesses who have not only designed, developed, and presented the proposed projects but have also evaluated and criticized the proposals of the competition. Staff has not independently costed out the three systems proposed. This is entirely beyond our means. Fortunately the process of a contested administrative hearing with three competitive applicants has provided a detailed fully cross-examined record in the area of overall economics. Staff believes this record is excellent in respect to capital costs and unit cost of transportation, and we basically rely upon it in what follows.

The projects presented here do not involve traditional design or construction techniques. In the case of the El Paso Alaska proposal, only 16 percent of the estimated capital cost 11/ could be considered as even approaching traditional-type facilities. Approximately 53 percent of Arctic Gas' estimated cost involves construction north of existing Canadian facilities. 12/ The Alcan, Foothills, and Westcoast facilities necessary to deliver Prudhoe Bay gas into the existing systems represents approximately 60 percent of the total costs of all the facilities envisioned for this project (Exhibit AP-14).

We believe that the propensity for cost overruns increases the further north the construction. Staff considers that the Arctic Gas construction south of Lake Zama involves traditional techniques and costs, and thus any overrun that may occur would in all likelihood be a result of general economic pressures within the U.S. and Canada. Although we are highly skeptical of the costs shown for the expansions on the Westcoast and Alberta Gas Trunkline systems, primarily because the applicants failed to provide conclusive cost allocation information, the cost overruns on the Alcan and Maple Leaf systems south of Fort Nelson and Lake Zama would also fit in the general economic category.

11/ Total cost less the Alaska Pipeline, LNG plant, and tankers (EP-174, 178, 182, 185, 265 and WL-46).

12/ The cost of facilities from Prudhoe Bay to Sousa (AA-139) as a percentage of total cost (AA-71).

Because of a heavier reliance on new techniques and on an unconventional type of transportation mode, it appears that the El Paso project would be much more susceptible to inordinate cost overruns than the other proposals. Unlike the other proposals, El Paso's more southerly transportation mode is the much less traditional cryogenic tanker fleet. Furthermore, the design of both the LNG plant and tankers involves a technological advance, though probably sound, that may subject the project to a greater degree of possible overrun. As noted earlier, only approximately 16 percent of the El Paso project could be considered as traditional construction. Although this type of analysis is subjective and difficult to quantify, it must still be one of the major considerations in determining the best of several proposals.

It is Staff's view as expressed above that the Arctic Gas project is conceptually the best project in that it is the shortest route for the delivery of Alaskan gas into the major area of the lower 48 states, as well as being the most fuel efficient in that it provides the cheapest method of delivering U.S. gas to U.S. consumers and Canadian gas to Canadian consumers. Therefore, in analyzing the economics of the three proposals we will prepare the El Paso project and the Alcan and Maple Leaf projects with Arctic Gas.

Arctic Gas indicated that its proposal for the delivery of 4.2 Bcf/d will cost an estimated $8.6 billion, of which $2.75 billion will be attributable to the transportation of Canadian Gas, (Exhibit AA-71, as adjusted by Dau, Tr. 233/40,531). 13/ The average fifth year transportation cost as calculated by Arctic Gas is $1.238 per MMBtu (Exhibit AA-141). The facilities required for the delivery of 3.25 Bcf/d (no expansion case) are estimated to cost $7.95 billion, of which $1.82 billion is attributable to Canadian gas (Exhibit AA-73, as adjusted by Dau, Tr. 233/40,531). The average fifth year transportation cost for this no expansion facility is $1.392 per MMBtu.

13/ All of the capital costs shown herein were based on July 1975, estimates. This is basically true of the entire record. To the extent inflation occurs, all of the cost figures will escalate.

As the result of an analysis of the Arctic Gas project done by Green Construction Company for El Paso (Exhibit EP-255), the answering testimony presented by El Paso contended that there would be a delay of more than two years in the completion of the Arctic Gas project. As a consequence of this delay, the cost overrun was estimated at 42 percent for the 3.5 Bcf/d case and 44 percent for the 2.5 Bcf/d case (Argetsinger, Tr. 183/30,745). Accordingly, El Paso recalculated the incremental delivery cost per MMBtu for Arctic Gas as follows: (Jack, Tr. 189/32,232 and Exhibit EP-259).

	3.5 Bcf/d Case	2.5 Bcf/d Case
West	$1.653	$1.922
Midwest	$1.753	$2.151
East	$1.820	$2.227

The total estimated capital cost shown by El Paso for its base case (3.2 Bcf/d) is $7.92 billion 14/; with $6.57 billion being the estimate for the lower volume 2.4 Bcf/d case. 15/ The incremental delivery cost per MMBtu shown by El Paso for each case is as follows: (EP-265)

	3.1 Bcf/d	2.4 Bcf/d
West	$1.476	$1.610
Midwest	$1.759	$1.950
East	$1.807	$1.998
Average	$1.669	$1.836

The comparisons herein are based upon the cost of the proposed El Paso pipeline route, not its realignment case, which would add $200 million to its base case. These increased costs are primarily due to the need for thicker walled pipe, as required by U.S. regulations when situated in close proximity to the Alyeska haul road, and increased gravel needs (Wright, Tr. 169/27,698-710). When balancing these increased costs and other geotechnical problems against the environmental benefits of this alternative, Staff believes the prime alignment is the better of the El Paso options.

14/ Sum of the costs shown in Exhibits EP-174, 178, 182, 185, 265 and WL-35.

15/ Sum of the costs shown in Exhibits EP-200, 207, 228, 212, 265 and WL-46.

Arctic Gas responded with testimony indicating that the facility capital cost estimates should be approximately 12.6 percent greater than those shown by El Paso. This projected cost increase was shown as being in the major areas of Alaskan pipeline construction, LNG plant facilities, and ship construction (J.T. Mitchell Tr. 168/27,645-62, Martino Tr. 156/25,802-7 and DeLeon Tr. 156/25,848-56). Witness R.G. Anderson (Tr. 162/26,696-713) illustrated that the transportation cost under the 3.2 Bcf/d case, which reflected the adjusted capital costs and fuel use at $1.00 per MMBtu for the first full year of operation, ranged from $1.84 per MMBtu for deliveries to PG&E and $2.41 per MMBtu for deliveries to the Northern Border group (Exhibit AA-79).

In our opinion, Arctic Gas successfully rebutted the arguments of Green Construction except for the possibility that some cost overruns might occur because of a late start-up and early closing date for winter construction in the Arctic regions. This occurrence, which would be in probability terms very low, would most likely in all cases not delay the project but cause cost overruns through additional equipment and manpower utilized to finish the project as scheduled. Some additional costs may be incurred because of a modification of Arctic Gas' frost-heave program but this is not expected to be large. Arctic Gas may also have overestimated initial Mackenzie Delta reserves. However, in view of these possibilities, the estimated cost shown by Arctic Gas may be a little too optimistic, though nowhere near the disparity shown by Green Construction.

On the other hand, we believe that the answering testimony of Arctic Gas, as cited above, adequately described and quantifies the problems inherent in the El Paso proposal. Therefore Arctic Gas' contention that El Paso's cost could be at least 12 percent greater appears to be quite reasonable, particularly in view of the greater degree of nontraditional construction involved. 16/ The recalculation of an illustrative cost of service utilizing a fuel-use cost of $1 per MMBtu is also consistent with the showing of Arctic Gas and necessary for a fair and equitable comparison. It is quite apparent that the high fuel-use aspects of an LNG mode of transportation make its proponent reluctant to include such costs in an illustrative transportation showing.

16/ These overrun calculations did not consider the lack of meaningful base data for proper seismic design of the El Paso pipeline and both the Point Gravina and Point Conception LNG terminals, which Staff believes could lead to further overruns (See Staff's Geotechnical Briefs).

It is Staff's opinion that the following costs of service per MMBtu are the most appropriate estimates for each project. 17/

	Northern Border Delivery Points	California
El Paso	$2.41	$1.84
Arctic Gas	$1.61	$1.32

As noted earlier, there is a possibility that the Arctic Gas cost may be slightly higher; however, because of the wide disparity in the unit-cost estimates, it is doubtful that such an adjustment would make any appreciable difference in the outcome.

These unit cost figures are based upon the Arctic Gas project as proposed. If the Arctic project is modified as we propose by the elimination of the unnecessary $700 million western leg, the unit cost of transportation to California will be reduced by at least $.095 and that to Northern Border delivery points by at least $0.4. 18/ These are minimum savings figures which assume full displacement for 20 years. If displacement to California is required for only 36 MMcf/d for four years, as Staff projects, these unit cost of service savings would be more on the order of the full cost of service of the entire $700 million western leg. 19/ The nominal annual cost of service on a $700 million facility is $140 million (20%). Comparing this figure with the Arctic Gas derived $49 million annual cost of service savings resulting from elimination of the western leg, Staff concludes that the above unit-cost savings will be at least double if our assumptions about Canadian export curtailments prove to be correct.

17/ Since the lower volume cases are more assured and reflect a higher unit cost for each project, the comparisons are made on that basis.

18/ Volume 197, Tr. 33,382; Tr. 33,414; Tr. 33,469; Tr. 33,470-1; Tr. 33,476; Tr. 33,487. The nominal $.04 per MMBtu is derived by dividing the overall $49 million annual cost of service savings in two, half to the east, half to the west. The $24.5 million annual savings resulting is divided by the nominal 1530 MMBtu daily Northern Border delivery multiplied by 365 days in a year.

19/ Volume 197, Tr. 33,469, Line 18.

The derivation of specific unit cost of transportation savings on nominal delivery volumes, in the absence of gas supply contracts, is piling unknowns upon unknowns. The unit cost figures we site above are as valid as those shown by Arctic Gas. For purposes of a decision on the western leg, Staff relies upon the virtual stipulation between Staff and Arctic Gas that overall, the elimination of the western leg saves the Arctic Gas project $49 million per year in its cost of service, as a minimum. 20/

It cannot be emphasized too much that in order for the El Paso project to reflect a lower unit cost, the most pessimistic Arctic Gas costs would have to be compared with the most optimistic El Paso projection, and the fuel costs of El Paso must be left out. Any variation within this limitation results in Arctic Gas' unit costs being lower.

Alcan's presentation reflected an estimated total capital cost of $4.72 billion for the Alaskan and Canadian portions of its system and $1.56 billion for the facilities of Northwest and other non-participants within the lower 48 states (Ex. AP-14). Staff believes, as discussed in this brief, that the estimated cost of the Maple Leaf project, $3.14 billion (Exhibit ST-31), should be included as part of the cost of the total system. The transportation cost (per MMBtu) for the first full year of operation under the Alcan proposal was shown as follows (Exhibit AP-14):

Los Angeles	$1.55
San Francisco	$1.54
Northwest Pipeline System	$1.38
East Terminus of Northern Border System	$1.59

with or without fuel?

Answering testimony of Arctic Gas illustrated that the cost of the Alcan project from Prudhoe Bay to Sousa, Alberta, would be at least 12 percent greater 21/ based only upon a re-estimate of pipeline construction cost (Brackett, Tr. 245/42,778). Arctic Gas' witnesses also recalculated the cost of service for the Alcan system and argued that it would be as follows for the third year of operation (Exhibit AA-140):

20/ Volume 197, Tr. 33,476.

21/ $3.757 billion (AP-14) versus $4.216 billion (AA-139).

	Per MMBtu
Northwest Pipeline	$1.536
San Francisco	$1.674
Los Angeles	$1.718
Northern Border Delivery Points	$1.775

The Alcan proponents have presented several arguments that Staff must disagree with. First, that the Alcan and Maple Leaf projects can be considered independently (Br. p. 14). These projects are intertwined, as we have discussed above, and therefore their total cost must be considered when making a comparison with the Arctic Gas project. What is to be compared is the total cost of the facilities required to deliver Prudhoe Bay and Mackenzie Delta gas to their respective U.S. and Canadian markets and the appropriate allocation of such costs to the U.S. consumer. 22/ The estimated cost of the Westcoast (Item AP-T) and Alberta Gas Trunkline (Item AP-U) facilities under the Alcan project are inexorably intertwined with the facilities needed for the attachment of the Mackenzie Delta gas. In fact, after considerable cross-examination on the subject (Tr. 227/39,704, et seq.), witnesses for Alberta Gas Trunkline were still unable to detail with any specificity which facilities would be necessary for each project and their related costs.

Therefore, when comparing the Alcan and Maple Leaf projects with the Arctic Gas base case, a Maple Leaf cost of $3.2 billion (Exhibit ST-31) for its full-volume design is applicable, and for comparison with the non-expansion case a $2.7 billion, cost for the 800 MMcf/d facilities should be utilized (Kiely, Tr. 141/ 22,706). escalated

Alcan's other argument that should be addressed is the proposition that escalated costs should be shown in order to fully reflect the advantage of that system (Br. p. 36). To begin with, Staff does not believe that the expedited Alcan schedule is realistic 23/ and will therefore result in such a cost saving as is anticipated. This is regardless of other possible cost overruns. Regardless of this scheduling discrepancy, the

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22/ The other cost that could be considered in this comparison is the estimated $1.0 to $1.5 billion expansion required for the TransCanada system. Although our record is devoid of information on this matter and since the cost would be applicable to both the Arctic Gas and Alcan and Maple Leaf proposals and further would not be allocable to U.S. consumers, there is less need for its inclusion.

23/ See Geotechnical Reply Brief pages 15-18.

main reason that Alcan can show this supposed savings on escalated costs is the ability of the Alcan and Maple Leaf projects to shift all of the cost of the construction in the later years to the Canadian consumer. First of all, increased costs due to inflationary trends may or may not be true costs, depending upon their relationship to the overall economy. However, if this escalated cost is of the proportion and effect envisioned by Alcan, then why should the Canadians in their own interest permit the Maple Leaf project to lag behind the Alcan project by 18 months, when the so-called escalated cost of a cheaper Arctic Gas project would be borne by the consumers of both nations?

When comparing the Alcan and Maple Leaf projects with Arctic Gas, it is imperative that the functional aspects of the several segments of each project be analyzed. To begin with, the Arctic Gas facilities necessary for the delivery of Prudhoe Bay and Mackenzie Delta gas to the Lake Zama area of Alberta and Fort Nelson, British Columbia, are estimated to be $4.785 billion (Exhibit AA-139). This function will be performed by Alcan and Maple Leaf at a capital cost very optimistically estimated at $6.115 billion. 24/ Even considering untenable arguments that the Alcan costs should not include the Maple Leaf project, the facilities to transport Alaskan gas only to Lake Zama by Alcan are estimated to cost $3.757 billion. For this price, the consumer will get a low-pressure 42-inch pipeline with a very small amount of very high-cost expansability. We are certain that considering the differences in the length of the two pipelines, 1,272.4 miles for Arctic Gas (Exhibit AA-35) versus 1,646 miles for Alcan (Application in Docket No. CP76-433), that had Arctic Gas opted for a 42-inch pipeline following its route to transport only U.S. gas, the cost of this half measure would be less than the Alcan project. The Alcan route is 30% longer and follows mountainous terrain. The shorter Arctic Gas route follows a coastal plain and a river valley.

Even if a 42-inch pipeline had been proposed by Arctic Gas, with the Delta gas accommodated through additional looping, the overall cost, though more than the current proposal, would in all probability be cheaper than the Alcan and Maple Leaf projects.

24/ See Exhibit AA-17 for the facilities from Prudhoe Bay to the B. C.-Alberta border, Item by Reference AP-U for the cost of the extension from the border to Lake Zama and Exhibit ST-31 for the cost of the Maple Leaf facilities from the Mackenzie Delta to Lake Zama.

Within the lower 48 states, Alcan projects a cost of $1.558 billion (AP-14) for the facilities of PGT/PG&E, Northwest, and Northern Border. These facilities, of course, were predicated upon Northwest receiving the State of Alaska's royalty gas and a reduction in the facilities required for Northern Border. In view of the state's contractual arrangement with Tennessee, Southern and El Paso Natural, this proposal may no longer be applicable. The facilities in the lower 48 states proposed by Arctic Gas are estimated at $1.607 billion (AA-71).

Alcan argues that the expansion of the existing Westcoast and Alberta Gas Trunkline systems to accommodate the Alaskan volumes only will cost an estimated $991 million (AP-14). Exhibit ST-31 reflects an estimated cost of $783 million for the facilities relative to the transportation of Delta gas. Although, as noted earlier, the Alcan witnesses were unable to indicate the actual cost allocation between these two projects, it does appear that the Maple Leaf costs might be slightly less (Kiely Tr. 141/22,706). The Canadian Arctic facilities which are south of Lake Zama plus the Alberta Natural expansion are shown to cost an estimated $2.381 billion for the transportation of U.S. and Canadian gas; of this, $870 million could be attributed to Canadian use. 25/

The advantage for this segment, therefore, seems at first glance to rest with Alcan, with a savings in the order of $600 million for the joint project or $520 million for costs to U.S. consumers. However, not only will this slight saving be offset by an inordinately greater cost north of Lake Zama, but the resulting facilities will be of a much lower capacity and will be completely integrated with the existing Canadian pipelines wherein the U.S. consumers will, according to the proposed tariff, pay a disproportionate share of the incremental costs. 26/

Although it is possible that a single direct facility from Fort Nelson to Monchy might be more efficient and cheaper to construct and operate, the Alcan witnesses indicated that such a study was not made nor was one planned; therefore, any consideration of an improved Alcan system is mere conjecture.

25/ Canadian Arctic and Alberta Natural costs from Exhibit AA-71 less cost to Sousa shown in Exhibit AA-139.

26/ See Staff Allocation Brief.

When comparing the estimated capital costs presented by the Alcan and Maple Leaf proposals themselves, which Staff feels are neither realistic nor supportable, with those of Arctic Gas there is no doubt of the superiority of the Arctic Gas project.

As will be noted below under the environmental section (3) the Fairbanks Corridor Alternative would be environmentally preferable to all three of the applied for projects, even if such an alternative includes a pipeline from the Mackenzie Delta along the Dempster highway to the vicinity of Whitehorse (Richards Island lateral). It must be emphasized that this environmental preferance is not for the low pressure, thin walled pipeline being proposed by the Alcan project . What is contemplated in this environmentally preferred system is a 48-inch and 42-inch diameter high pressure project similar to the Arctic Gas project re-aligned to the Fairbanks corridor. The testimony of Staff witness Kiely (Tr. 141/22,681, et seq.) discusses the probable economic consequences of such a project. The cost of a 48-inch diameter pipeline from Prudhoe Bay, through Fairbanks, along the Alcan Highway (including south of Fort Nelson) to Caroline and Empress, Alberta would be in the neighborhood of $6.5 billion (Exhibit ST-31). The facilities currently proposed by Arctic Gas from Empress to Dwight, Illinois are estimated at $1.3 billion (Exhibits AA-35 and 71). A Richards Island lateral with a capacity of 2.4 Bcf/d would cost approximately in excess of $2 billion; thus, the total cost of the environmentally preferable alternative would be in the range of $10 billion, more than 16% greater than the Arctic Gas project as proposed. In view of this, it is still Staff's position that such an alternative is not economically viable when compared with the Arctic Gas project.

Staff's position with respect to economics and unit cost can be summarized as follows:

(a) The Arctic Gas showing of capital and unit cost although slightly optimistic, appears to be reasonable. In particular, the argument of the Green Construction witnesses was, in the main, successfully rebutted.

(b) The El Paso project is more susceptible to capital cost overruns because of the greater use of new and untried technology. The 12 percent increase envisioned by the Arctic Gas witnesses is reasonable, as is their inclusion within the cost of service of $1.00 per MMBtu for fuel use.

(c) The costs of both the Alcan and Maple Leaf projects must be considered when comparing with Arctic Gas. Alcan's construction schedule is unrealistic, and the supposed saving on escalated cost is indefensible.

(d) The Alcan and Maple Leaf projects are much costlier than the Arctic Gas project for both the U.S. and Canadian consumers. Not only are Alcan's projected unit costs higher, particularly in the west, but because of highly questionable capital cost estimates and inequitable and unsupported allocation methods, they are also highly suspect.

(e) On comparison the Arctic Gas project will be the ~~will be~~ cheapest of the three, both on a capital and unit-cost basis.

(3) Environment

The Alaska Natural Gas Transportation Systems Environmental Impact Statements evaluating the proposals of Arctic Gas, El Paso Alaska, and Alcan represent the most exhaustive study undertaken by the FPC environmental Staff to date. Working in cooperation with Staff members of the U.S. Department of the Interior (DOI), the Commission Staff issued a three-volume DEIS in November 1975 which adopted the 16-volume DEIS prepared by DOI, a five-volume FEIS in April 1976 which adopted the 11-volume FEIS prepared by DOI, and a two-part Supplement to the FEIS in September 1976. This massive effort culminated with the presentation of more than 40 environmental Staff witnesses in the Administrative Hearings to support the findings of the FEIS.

The Staff's conclusions concerning the environmental impact of the Arctic Gas, El Paso Alaska, and Alcan proposals have been based on a recognition that if gas is to be transported from Prudhoe Bay to the lower 48 states, facilities will have to be constructed. In this context, the overall projects as proposed by Arctic Gas, El Paso, and Alcan are each considered environmentally acceptable, presuming that the mitigating measures proposed by the applicants and those that would be developed and required by Federal agencies would be implemented and successfully enforced. These mitigating measures would significantly reduce potential impact and hold environmental damage to a minimum.

Staff's environmental analysis concludes that there are undesirable aspects associated with each project. It is clear that if one of the three proposals is certificated and built, impact associated with scenic, recreational, and game sanctuaries would not be avoided. In particular, the Arctic Gas system traverses the Arctic National Wildlife Range and the El Paso system traverses the Chugach National Forest and Prince William Sound areas which are highly worthy of preservation. The Alcan project lacks the necessary expansion and flexibility required to transport additional volumes of gas to the lower 48 states, suggesting that additional pipeline looping would be needed in the future. Both El Paso Alaska and Alcan projects would require that the Maple Leaf Pipeline system be constructed in Canada if transportation of the Mackenzie Delta gas is to become available for future Canadian consumption. The El Paso project, the least environmentally desirable of the three proposals, requires pipeline and LNG facilities to be built in areas of high seismic risk and unique beauty.

Staff believes that the Arctic Gas proposal, without the western leg, is environmentally preferable to the other two proposals, and it is preferable to any other route, including Staff's Fairbanks Corridor Alternative, if it included the Maple Leaf Pipeline system. However, the Fairbanks Corridor Alternative, suggested by the Commission Staff, with the Richard Island Lateral, remains environmentally superior to Arctic Gas, El Paso Alaska and Alcan if both proposed and non-proposed systems are considered (Tr. 23,772, 23,604-23,605; ST-52, p. 389; 23,613). This 48-inch diameter high-pressure system could provide the flexibility for expansion not available with the Alcan proposal, as well as environmental benefits not available with either Arctic Gas or El Paso Alaska. 27/ The above conclusions do not consider economic feasibility. These considerations are covered elsewhere in this brief. For an economic analysis of the Staff's Fairbanks Corridor proposal, see Section IV (2) above.

(4) Engineering

The particular terrain that is traversed by each of the proposed Alaskan natural gas transportation systems and their selected mode of operation determines the nature and extent of the engineering required for each project. Staff

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27/ A description of this alternative appears on page A-7 of Exhibit ST-18 and Tr. 23,527-23,529.

believes that the alignment of the Arctic Gas project with its proposed design parameters is clearly superior to the other two projects. The Arctic Gas system has been designed against a background of extensive research and engineering planning. Its proposed alignment avoids areas of high seismic risk, mountainous terrain, and high soil liquefaction potential. In contrast, the El Paso system would employ sophisticated liquefied natural gas (LNG) technology to build terminals in areas of high seismic vulnerability. El Paso has not conducted the necessary base line studies to accumulate the geological information to adequately design its system and estimate costs. The El Paso pipeline passes through rugged mountainous terrain. The Alcan project also traverses high seismic and mountainous areas in Alaska and Canada, but not to the degree of El Paso. Alcan faces a soil liquefaction problem along a portion of its route in Alaska from Delta Junction to the Alaska-Yukon border. The Alcan pipeline system is based upon engineering principles and facility limitations which would necessiate further construction and looping once additional supplies of natural gas are found in northern Alaska. The Arctic Gas project is superior to the other two proposals in terms of fuel usage.

The Arctic Gas project is based upon a enormous engineering effort into every important area of design. Arctic Gas has pioneered research in many of these areas like frost heave and construction equipment. It has conducted seismic surveys, soil liquefaction studies, pipe stress tests, and the testing and design of new construction equipment. The design of its pipeline gives gas consumers the most efficient system in terms of net energy at least cost to the consumer. Its alignment avoids mountainous areas and high seismic zones. The Shallow Bay area of the Mackenzie Delta is the only geological area where liquefaction might occur; however, recent tests suggest that the soil liquefaction potential is low. The 1680 design is a consistent next step in the evolution of pipeline design.

The Alcan project crosses moderate seismic areas in Alaska 28/ where the liquefaction potential of soils is high and ground shaking and its secondary effects would be the main earthquake hazard. In the Canadian section of the proposed Alcan system, the pipeline would face a danger of fault rupture in the Shakwak Valley where extentions of the Denali Fault are believed capable of magnitude 7 earthquakes. No studies have been performed and presented to this Commission, to support the finding that an adequate design for earthquake and soil liquefaction protection

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28/ Livengood, Alaska to the Yukon, Alaska border.

has been made or that costs for such protection have been adequately estimated. The proposed Alcan pipeline would closely follow the operational Alyeska oil pipeline. Special provisions would have to be made to assure that the Alyeska VSMs or the oil pipeline would not be damaged by Alcan construction where the natural gas pipeline would cross or lie near the operational oil pipeline. It is possible to design suitable construction procedures; however, one mistake could damage the Alyeska pipeline, i.e. a single blasting shot going awry. The Alcan pipeline would also be less efficient than the Arctic Gas line in terms of fuel usuage due to Alcan's lower wall thickness pipe, lower operating pressure, and longer route. Gas consumers would also lose valuable Btu's which will have to be stripped from the Prudhoe Bay gas stream in order to make the gas suitable for its transportation through the Alcan pipeline. 29/ Arctic Gas does not have this problem. The construction of the necessary gas conditioning plant in Prudhoe Bay and the necessary engineering and environmental studies for the Alcan pipeline make its proposed construction schedule impractical and unrealistic.

The El Paso system transporting gas through a rugged mountain area to a geologically dangerous Alaskan shoreline for further transportation to an earthquake region in California has the least desirable geotechnical alignment of the three proposed systems. El Paso's pipeline would cross the Denali Fault, traverse the Chugach mountains in Alaska where many faults may exist, and terminate at Point Gravina, another major earthquake region. El Paso has not conducted the necessary work to establish a proper seismic design for its terminal at Point Gravina, nor has it surveyed and studied the adjacent offshore region. At Point Conception, California, the receiving terminal for El Paso Alaska LNG ships has likewise not been designed adequately to assure that it would withstand the maximum credible earthquake expected at such site. Again the baseline studies necessary for such design have not been done. The El Paso system is extremely fuel inefficient when compared to a pipeline, even with the most advanced LNG technology. In addition to using the gas for fuel, the LNG system uses electricity and fuel oil to operate the regasification facility and tankers. Over the life of the El Paso LNG project, on a conservative basis, it can be expected to consume as addition fuel

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29/ Some of these Btu's extracted from the gas could be put into the Alyeska oil line; however, oil consumers would not necessarily be the gas consumers served by the Alcan project.

between 1/2 to one full years supply of delivered Prudhoe Bay gas. If the Arctic Gas's figures for fuel consumption are accepted, El Paso would deliver 6 percent less gas to market at a 2.25 Bcf/d of Alaskan input level, which over a 20-year period would equate to 1.2 years delivery of gas. 30/ The El Paso system requires a technology at its LNG vaporization and regasification terminals and ships which far surpasses presently operating LNG facilities.

(5) Gas Supply

All of the proposed systems are designed to transport gas from Prudhoe Bay to the lower 48 states. Prudhoe Bay contains the largest hydrocarbon reservoir on the North American Continent. Initial deliveries of gas from the North Slope of Alaska will approximate 2.0 to 2.5 Bcf/d in at least the initial years of production. Staff witness Wayne Thompson testified that a gas sales rate of 2.25 Bcf/d through year 1992, and thereafter a rate of 4.0 Bcf/d, could be achieved. All three of the proposed systems would be able to accommodate the initial volume. However, if additional volumes of gas should become available from nearby areas or Prudhoe Bay volumes reach a high level, Alcan and to a lesser extent El Paso are at a disadvantage to the Arctic Gas system, because of their capacity constraints and fuel usage.

The Kuparuk and Lisburne formations in the Prudhoe Bay area are possible future sources of additional supply. The Department of Interior estimates that reserve additions from these areas could reach 2.5 Tcf and 2.4 Tcf respectively. The most promising areas of potentially large gas reserves on the North Slope are the Arctic National Wildlife Range (ANWR) and the Beaufort Sea area. Potential reserve estimates in the ANWR are in excess of 14.5 Tcf and the potential reserves in the adjacent Beaufort and Chukchi sea provinces are estimated at 46.5 Tcf. If additional reserves are forthcoming from these areas, the Arctic Gas system would be the best system of the proposed three to transport such gas.

30/ With 26 trillion cubic feet of gas and with 6 percentage points difference in efficiency, 1.56 Tcf more gas would be delivered to market under Arctic's proposal assuming the same input volumes (See AA-127, p. 11, 16; Mitchell 168/27,653-27,657).

The Arctic Gas project would also benefit Canada through the transportation of gas from the Mackenzie Delta region of Canada. The transportation of Mackenzie Delta gas would further provide benefits to U.S. consumers by reducing the transportation costs associated with Prudhoe Bay gas. The shipment of Prudhoe Bay and Mackenzie Delta gas in one pipeline provides lower transportation costs for gas purchasers from both areas. It can be expected that approximately .7 Bcf/d of gas will be available from Mackenzie Delta in its early years of production. Canada has in recent years been allowing export permits to terminate. It is very doubtful, though, that Mackenzie Delta gas volumes will rise in the future to the level that exports of gas to the U.S. can be resumed at prior levels. Staff concludes, based upon NEB reports, that at best the connection of the Mackenzie Delta reserves will slow down or flatten out curtailment of Canadian exports of gas to the U.S. Rising Canadian domestic needs will absorb the Delta production in a relatively short period of time. The fact that Canada is now a net importer of oil may cause growing pressure upon its current surplus position in natural gas (Exhibit PG-126, page 140).

(6) Financing

The primary determinent to successful financing is the economic viability of a project (Tr. 25,655; 18,565). The project must be able to generate operating revenues sufficient to meet its expenses, service its debt, and provide an adequate return for equity investment and at the same time market a product which the public can afford and will purchase. This assures that a capital market exists which can provide funds to the project. If two projects are equally attractive in terms of economic viability, the cost of financing itself becomes important.

As discussed earlier, Staff believes that the Arctic Gas project is vastly superior to the other two projects in terms of economic viability. It is able to deliver gas to the lower 48 states at a lesser cost than the El Paso and Alcan projects. Lending institutions are available in Canada, the United States and Euro-dollar areas which can provide capital funds to the project. The Canadian market, however, could be somewhat strained because of its proposed portion of the Arctic Gas capital. This could result in additional financing costs, although the funds would probably be available. 31/ The Alcan and Maple Leaf projects would strain it possibly even more.

31/ Over its construction period, Arctic Gas would account for a portion of new gross new corporate issues in Canada higher than normally taken by any one issuer (See Staff Financial Brief).

In terms of financial costs, the El Paso project is more attractive. The cost of capital for the Canadian portions of the Arctic Gas or Alcan projects will be higher whether the capital comes from Canada or U.S. markets. The El Paso project also has the benefit of Federal subsidies through the U.S. government guarantee under Title XI of the Merchant Marine Act of 1931, as amended (Jiorle/Tr. 25,524-25,525).

(7) Tariff

Each of the three main applicants in this proceeding have filed pro forma tariffs designed to delineate the typical terms and conditions upon which gas transmission service would be rendered. The issues involved with tariff matters are common to all three applicants and would apply equally to all systems on an overall comparison basis except in the instance discussed below.

The one area where a tariff matter does have importance in an overall comparison between the applicants involves the proper allocation between U.S. and Canadian gas as it transits Canada in the same pipeline. Both Alcan and Arctic Gas have proposed a different manner to allocate costs between the U.S. and Canadian gas. Staff believes that the Arctic Gas procedure of utilizing the Mcf-mile method is a fair and equitable way of allocating costs. However, the proposed Alcan procedure is not fair and equitable to U.S. shippers. Alcan's method of cost allocation segregates its individual Canadian systems and assign costs to U.S. markets on an incremental basis. Alcan would freeze Alaskan gas costs at the initial looping stage of the AGT and Westcoast systems, which is the most expensive stage of any system's expansion. Later additons of other gas would get the benefit of lower costs. For this reason and others, as outlined in our cost allocation brief, Staff believes Alcan's Canadian allocation procedures are inequitable.

(8) Canadian Law and Treaty

Arctic states in its Canadian Reply Brief (p. 27) that Staff believes Canadian issues are "not real." This is inaccurate. The record evidence and legal argument of the parties have greatly reduced the number of conceivable unknowns which flow from the transit of U.S. gas across Canada. Moreover, these conceivable unknowns are not likely to affect the interests of the United States adversely, given the unprecedented trading relationship and history of cooperation between the two countries and the recent hydrocarbon treaty. The treaty is useful to the analysis not so much for its terms and conditions or for speculation about how protocols might be applied to a specific natural gas transportation system, but rather as evidence

that both governments are committed to carrying past cooperation into the future. Based in large measure on an evaluation of the persuasive record contribution of the State Department, 32/ Staff concludes that the Canadian law and treaty issue offers little if any guidance in a choice of an Alaskan Natural Gas Transportation System. The risks associated with the transit of United States gas across Canada are "real", but Staff believes they are modest and can be prudently incurred.

(9) Markets

The record in this proceeding contains considerable market and end-use information, but only with respect to those markets served by the respective potential shippers. However, reliability of this information is questionable. Since the major portion of the Prudhoe Bay reserves has not been contracted for, the identification and extent of specific markets to be served is merely speculative. Furthermore, in view of the time that will be required to complete any of the projects, we believe that these projected market studies may no longer be representative of the actual situation. The projected market requirements and anticipated supplies are too speculative to be utilized, particularly for comparative purposes. At the time such gas becomes available for curtailments, experienced during the interval coupled with a higher cost of gas, especially if deregulation becomes a fact, may result in a dramatic alteration in consumption patterns, not only for the participants but for the nation as a whole.

Although the future market requirements of individual pipelines may be speculative, it is apparent that the nation is presently experiencing a natural gas shortage 33/ and further, that future supply projections show a continued decline resulting in an even greater shortage. It is for this reason that Staff has recommended that, in spite of the absence of gas purchase contracts, a trunkline facility should be authorized at this time, but that such facilities be only those required to transport Alaskan gas to the lower 48 states and which would serve all regions of the country with a minimal amount of additional facilities (Lathom/Tr. 108/14,169-70).

32/ Exhibit EP-231, p. 173-188.

33/ "The Congress finds and declares that--(1) a natural gas shortage exists in the contiguous states of the United States; . . ." (Public Law 94-586).

Thus, the choice of an applicant does not revolve around which market its facilities will serve but rather which will best provide access to Prudhoe Bay gas for all markets. The trunkline of the Arctic Gas project best meets this criterion. It has been adequately demonstrated on the record that all regions of the country can be served either directly through the Northern Border facilities or by displacement. The proximity of the terminal point of the Northern Border Pipeline at Dwight, Illinois, to the center of the nation's major natural gas market area is graphically illustrated by Exhibit ST-46, and its relationship with the nationwide grid of existing pipeline facilities is evident when the proposed route is compared with Item by Reference ST-A.

V. CONCLUSIONS AND RECOMMENDATIONS

The modified Arctic Gas project which economically connects the Mackenzie Delta reserves to existing facilities within Canada and the Prudhoe Bay reserves to existing facilities within the United States, is vastly superior to the El Paso Alaska project and the Alcan and Maple Leaf system. The evidence is overwhelming.

Staff supports the Arctic Gas project modified and improved by the elimination of the "western leg" lateral to California, which has been shown on this record to be high risk, uneconomic, unnecessary and environmentally unsound. 34/ The project supported by Staff is shown in Figure 1. Reference is made to Appendix B which is a check list of Staff proposed action on specific docketed applications in this case.

In Section IV(1)(c) we concluded, for the reasons stated therein, that the Maple Leaf project must be considered with the Alcan project. Having taken this position for our purposes in reaching a position we hasten to point out the obvious. It is possible that the Canadian Government will decide that it is in Canada's best interests to defer indefinitely into the future, consideration of any and all projects south along the Mackenzie River corridor, no matter what the economic consequences for Canada and the United States. We believe, however, that our responsibilities in this case are to develop a record based upon traditional economic, engineering, environmental and other factors and to take a position based upon these factors and these factors alone. Determinations as to what the United States Government should do in respect to authorizing an Alaskan gas project, if use of the Mackenzie Valley corridor is precluded, would depend upon the reason for the Canadian rejection of a Mackenzie Valley corridor and a Canadian decision on what was not precluded. Consultations between the two governments would be necessary, and should include the participation of each government's working level Staff who were intimately involved in the development of the decision-making process. Only in the case when no Alaska gas would be permitted to transit Canada

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34/ Staff's position on the "western leg" or California lateral is fully covered in three specific briefs, which are listed in Appendix A.. . September 9, October 29 and November 19, 1976. The November 19th brief deals with Section 5(b)(1)(c) of Public Law 94-586 in respect to the "western leg".

is there a clear Staff choice of an alternative to the Arctic Gas project, without the need for more information. In this particular situation the El Paso Alaska project, in one of its variations, would be all that the United States could authorize.

Respectfully submitted,

Allan W. Anderson, Jr.
Commission Staff Counsel

Brian J. Heisler
Commission Staff Counsel

Washington, D.C.
December 7, 1976

Issue Date	Title of Brief
November 26, 1976	INITIAL SOCIO-ECONOMIC BRIEF OF THE COMMISSION STAFF
December 1, 1976	ANSWERING TARIFF BRIEF OF THE COMMISSION STAFF
December 3, 1976	GEOTECHNICAL REPLY BRIEF OF THE COMMISSION STAFF
December 3, 1976	BRIEF OF THE COMMISSION STAFF ON COST ALLOCATION ISSUE

Briefs to be Filed by Staff Prior to December 15, 1976:

STAFF NET NATIONAL ECONOMIC BENEFITS BRIEF

STAFF FINANCING BRIEF

STAFF WRAP-UP BRIEF

Reply briefs may be filed on socio-economic and environmental issues.

APPENDIX B

CHECKLIST FOR REGULATORY ACTION ON STAFF'S ARCTIC GAS TRUNKLINE

(1) Grant applications of Alaskan Arctic Gas Pipeline Company in Docket Nos. CP74-239, CP74-240

(2) Grant applications of Northern Border Pipeline Company in Docket Nos. CP74-290, CP74-291, with election filing for up to fully-powered case

(3) Deny applications of Pacific Gas Transmission Company in Docket Nos. CP74-241, CP74-242

(4) Permit withdrawal of Interstate Transmission Associates (Arctic) in Docket Nos. CP74-292, CP74-293

(5) Hold in abeyance */ action on the application of Northwest Pipeline Corporation in Docket No. CP76-174, directing submission of description of facilities needed for "Rye Valley" displacement in conjunction with termination of NEB Lic. GL-4

(6) Hold in abeyance */ the following pro forma Section 3 and 7(c) applications by shipper companies until perfected by submittal and Commission approval of gas purchase contracts: Columbia Gas Transmission, et al. CP75-257, Natural Gas of California (PGT) CP75-247, Pacific Interstate Transmission Company CP75-248, Northwest Alaska Company CP75-250, CP75-251 and Northwest Pipeline Company, Michigan Wisconsin Pipeline Company CP76-43, Natural Gas Pipeline Company of America CP76-49, Nothern Natural Gas Company CP76-45

(7) Deny stale Section 3 application of Pacific Gas Transmission Company in Docket No. CP71-182 for new import from Alberta.

(8) Deny the following pro forma Section 7(c) applications rendered moot by eastern displacement; Columbia Gas Transmission Corporation CP76-48; Panhandle Eastern Pipeline Company CP76-54; Texas Eastern Pipeline Company CP76-54

(9) Deny the following pro forma Section 7(c) application rendered moot by ITAA action Pacific Interstate Transmission Company CP75-249, CP75-251

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*/ Authority for this is section 5(a)(1) of PL94-586 which provides that the Commission "may refuse to act on any application, amendment, thereto, or other requests for action under the Natural Gas Act".

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Section 1.17 of the Rules of Practice and Procedure.

Dated at Washington, D. C., this 7th day of December, 1976.

Allan W. Anderson, Jr.

Allan W. Anderson, Jr.
Commission Staff Counsel

Washington, D. C.
December 7, 1976

FEDERAL POWER COMMISSION

NEWS RELEASE

WASHINGTON, D.C. 20426

IMMEDIATE RELEASE
MAY 2, 1977 No. 23113
El Paso Alsaka Company, et al.
Docket No. CP75-96, et al.

FPC RECOMMENDS OVERLAND ROUTE FOR TRANSPORTATION OF ALASKAN NATURAL GAS

The Federal Power Commission today recommended an overland pipeline route to bring Alaskan natural gas to contiguous U.S. markets, but split on which of the two proposed overland routes to specifically recommend .

Chairman Richard L. Dunham and Commissioner James G. Watt recommend the Alcan proposal, and Commissioners Don S. Smith and John H. Holloman III recommend the Artic Gas proposal. All three proposals are described in the accompaning fact sheet (News Release No. 23112).

The Commission found that all three proposals are technically and economically feasible and that a system should be built to bring the natural gas to the lower 48 market. It said the benefits of Alaskan gas would help meet the energy needs of our society and fully justify the costs and risks involved.

However, it found an overland route preferable because of its greater reliability, easier expansibility, greater efficiency in terms of gas consumed in route, and lesser environmental impact.

The Canadian protions of the proposed overland routes are still subject to approval of the Canadian Government. The Commission said that in deciding between the two overland routes, additional information is needed as well as an understanding of the intentions of the Government of Canada. "Based on today's circumstances, reasonable men can disagree on the right course of actions," the Commission said.

(over)

Commissioners Holloman and Smith pointed out that the Alaska Natural Gas Transportation Act precludes the Commission from basing its recommendation on the fact that Canadian authorities have not at this time rendered a decision authorizing a pipeline system through Canada. They therefore recommend approval of the Arctic Gas proposal, conditioned on favorable decisions by the Canadian government to make the route available and permit Canadian natural gas reserves from the Mackenzie Delta to be transported by the same system. Absent a favorable decision concerning the Mackenzie Delta reserves, they would recommend approval of the Alcan project. If Canada disallows an overland pipeline route, they would approve the El Paso project.

Today's approximately 500-page recommendation follows over three years of hearings and consideration by the FPC, and compilation of a 45,000-page record. FPC Administrative Law Judge Nahum Litt last February 1 recommended approval of the Arctic Gas proposal. The Commission heard oral argument in the proceeding the first week of April.

The Alaskan Natural Gas Transportation Act of 1976 required the FPC to make a recommendation to the President by May 1, which fell on a Sunday. The President is to make a recommendation to Congress by September 1, but may postpone his decision until up to December 1, at his discretion.

The Commission said in making today's recommendation it is acting in an advisory capacity to the President, setting forth the strengths and weaknesses of the various options.

The three competing applications are by Alaskan Arctic Gas Pipeline Company known as the Arctic Gas Study Group, a consortium of U.S. and Canadian companies; by El Paso Alaska Company; and by Alcan Pipeline Company.

The Prudhoe Bay Field contains the largest unit of reserves yet discovered on the North American continent--virtually every estimate exceeds 20 trillion cubic feet of proven producible reserves, enough to provide about 5 percent of our gas consumption for the next 25 years. The gas can be produced for sale in four or five years.

(continued)

The Commission found the system approved should be designed to carry initially 2 to 2.5 billion cubic feet daily, with expansibility in the 1 to 1.5 range. Under the three proposals, the earliest the gas could reach the lower 48 states is 1981 (under Alcan's proposal).

The cost of the three projects were estimated by the applicants in the $6.5 to $6.7 range, in 1975 dollars. By the time the project is built the impact of inflation undobutedly would drive the cost in nominal dollars of $10 billion or more. There are risks of cost overruns and delays in completion, it said, but in each instance the risk is well within an acceptable range. There is virtually no chance that any system would become so costly as to be uneconomic, it stated.

The Commission recommended rolled-in pricing be used, meaning the price of the Alaskan gas would be averaged in with all other gas in the purchaser's system. This would assist in obtaining the critical financing, the FPC noted. Federal financial assistance was not recommended by the Commission. However, it said if this is to be avoided, innovative approaches will be needed to meet the greatest financing challenge ever considered by the FPC. A choice must be made, the FPC said, as to who shall bear the ultimate risk of project failure, severe interruption, or massive cost overruns--private investors or consumers. Should the former be chosen, the rate of return would have to be an adequate incentive to invest--in the 11 to 15 percent range. Should consumers and taxpayers bear the risk, their charges should be lower.

It is imperative that the price of Prudhoe Bay gas be established as soon as possible, the FPC declared, and proposed to establish in the near future a proceeding to determine that price. It will also examine pricing mechanisms other than setting a fixed price, it added, such as formula pricing. However, it said that since its authority to approve such a pricing procedure could be challenged, it urged the President to submit legislation to authorize it to determine field or wellhead rates for Prudhoe Bay gas on the basis of market factors and alternative fuel prices.

(over)

Adverse environmental impacts of all three projects can be substantially avoided or mitigated, the FPC found. All three applications demonstrated their technical ability and determination to reduce to acceptable levels the environmental impacts.

Of the three proposed systems the Commission concluded that Alcan promises the least environmental impact, if proper mitigative actions are taken. However, it rejected Alcan's contention that alignment in an existing utility corridor is a compelling reason to choose one transportation system over another. While some construction and operation impacts would be smaller, the FPC said, the overall decrease is not substantial. Each system must be judged on its own total impact, the Commission stated.

Substantial evidence in the record supports the feasibility of winter construction, the FPC said, which Arctic Gas would use wholly and the other two would use in part. Machines can be prepared and men equipped to enable construction to proceed in all except the most severe conditions, it said. Winter construction poses greater economic risks than summer consturction, the FPC stated, but it is clear that in artic regions winter construction is environmentally sounder.

The Commission said it intends to implement the requirements for a western leg to deliver gas directly to the U.S. west coast, but at this time does not believe it necessary to make a final decision as to what new facilities would be needed. That decision can be deferred until about two years before delivery is to begin, it said. However, the Commission found the Oxnard, Calif., site should be the first choice for a west coast ship terminal and regasification facilities should El Paso be granted a certificate.

-FPC-

For futher information call 275-4006 (Area Code 202)

DC - 114

FEDERAL POWER COMMISSION
WASHINGTON, D.C. 20426

IN REPLY REFER TO:

May 2, 1977

The President
The White House
Washington, D. C. 20500

Dear Mr. President:

Enclosed is the recommendation of the Federal Power Commission pursuant to Section 5 of the Alaska Natural Gas Transportation Act of 1976. We have come to the following basic conclusions:

1. It is in the best interests of the citizens of the United States that a system be built in the near future to transport natural gas from the North Slope of Alaska to the contiguous United States.

2. Three competing groups have applied for a certificate of public convenience and necessity to construct and operate such a system. They are the Alaskan Arctic Gas Pipeline Company, El Paso Alaska Company, and Alcan Pipeline Company. The first and third applicants propose overland systems, while the second is a pipeline and tanker route.

3. We recommend that an overland system through Canada be selected, if such a route is made available by the Government of Canada on acceptable terms and conditions. If appropriate, discussions could be undertaken after the completion of proceedings before their National Energy Board. Until the Canadian Government has made a decision whether a land route is available, it would be premature for this Commission to recommend a route, unconditionally.

4. In making a decision between the two overland routes, it will become obvious to the reader of this recommendation that additional information is needed as well as an understanding of the intentions of the Government of Canada. Based on today's circumstances, reasonable men can disagree on the right course of action. Under present circumstances and expectations, Chairman Dunham recommends Alcan, Commissioner Watt Alcan, Commissioner Holloman Arctic, Commissioner Smith Arctic.

Commissioners Holloman and Smith recommend that an overland system through Canada be selected. Section 5(d) of the Alaska Natural Gas Transportation Act precludes the Commission from basing its recommendation upon the fact that Canadian authorities have not at this time rendered a decision authorizing a pipeline system to transport Alaskan natural gas through Canada. They, therefore, recommend approval of the Arctic proposal, conditioned upon timely affirmative decisions by the Government of Canada to make the route available and, after development, to allow simultaneous transportation of Canadian natural gas reserves from the Mackenzie Delta. In the absence of a Canadian determination that development and transportation of Mackenzie reserves should be permitted, the Alcan project should be approved, subject to the Government of Canada's making the route available on acceptable terms and conditions. In the absence of timely and acceptable agreements with the Canadian Government to make a route available for an overland system, a United States pipeline and tanker system can be built and can deliver gas to the contiguous United States at an economical price, and the El Paso project should be selected.

5. In the absence of agreement with the Canadian Government, a United States pipeline can be built in Alaska and a tanker system can deliver the gas to the contiguous United States at an economical price.

6. Any of the proposed systems can be financed without extraordinary risk-bearing by consumers or taxpayers, if investors are allowed the opportunity to earn an adequate return commensurate with the unusual size and degree of risk in this project. Alternatively, consumers and taxpayers could assume the risks of noncompletion of the system or interruption of service in return for a lower delivered cost of gas.

In reaching these conclusions, we have exhaustively considered the massive record compiled here and material outside the record, as directed by the Alaska Natural Gas Transportation Act. Our full recommendation covers hundreds of points. In the last analysis, we find the following items to be the most important and we recommend that you and the Congress direct your attention primarily to the confirmation or modification of these conclusions.

A. At least 20 trillion cubic feet of producible natural gas exist at Prudhoe Bay in Alaska, enough to provide about five percent of our natural gas consumption for the next 25 years. These volumes are adequate to support an economical transportation system.

B. This gas must be produced and delivered to markets both for its own value as energy and because its extraction is necessary to avoid a long-term reduction in oil production from Prudhoe Bay.

C. This gas can be delivered to the contiguous United States and successfully marketed by any one of the three competing applicant groups: Arctic, Alcan and El Paso.

D. Each system will have some adverse environmental impacts. We believe all of these impacts to be acceptable, given proper precautionary measures. Arctic would involve crossing the Arctic National Wildlife Range, and other lands now little used by man. The other projects would generally follow existing utility corridors - a distinct environmental advantage.

E. An overland route can deliver each unit of gas more cheaply than a land and water route using liquefied natural gas technology. If Canadian gas is also developed, the sharing of facilities will lower Arctic's cost of servi to Americans slightly below that of Alcan.

F. Calculations of Net National Economic Benefit produce the same relative results for the three systems. El Paso has an advantage in this analysis, because all of its tax payments go to the United States, and virtually all of its wage and material payments go to Americans.

G. Using our best estimate of the likely ultimate construction cost (not the applicants' figures), El Paso's system would require the least capital, with Alcan and Arctic costing somewhat more.

H. Arctic has the greatest risk of major cost overruns beyond our estimate, primarily because of its difficult winter construction schedule. El Paso is least vulnerable to such overruns.

I. Each of the systems can be constructed basically in the manner proposed, with the qualifications and conditions contained in our report.

J. Each of the systems should operate reliably once service begins. El Paso has a slightly higher likelihood of service interruption due to its complex nature and greater seismic risk.

K. El Paso would be the easiest system to finance because of its slightly lower initial cost and because of Federal guarantees of bonds for its tankers under Title XI of the Merchant Marine Act.

L. All of the above cost conslusions assume the simultaneous development and transportation of Canadian reserves in the Mackenzie Delta. Arctic's proposed route has the advantage of passing directly through this area. Should the Canadian Government decide not to proceed with the development of those reserves at this time, the overall balance of cost advantages shifts to Alcan.

M. Should additional gas be found in the vicinity of the transportation system, expansion capability could become important. Arctic can expand to deliver up to 3.5 billion cubic feet per day (Bcfd) from Prudhoe Bay, at a small cost. Any such expansion would lower the unit cost of gas delivered. Alcan is designed to start at 2.4 Bcfd, but can expand to 3.2 Bcfd at a small additional cost. El Paso can also expand its pipeline deliveries to 3.2 Bcfd at low cost, but its costs for ships, terminal facilities, and operating expenses will rise more rapidly proportionate to increased deliveries.

N. The North Slope gas should be distributed as widely as possible throughout the United States. Wide distribution will encourage broad-based financing for the chosen project, an important consideration in an undertaking of this size. Furthermore, because there is always some threat of service interruption, no area of the country should be allowed to become too heavily dependent on the Alaskan gas.

O. A choice must be made as to who shall bear the ultimate risks of project failure, service interruption, or massive cost overruns. If investors are to bear them, they will expect a commensurate return. If they do not receive such a return, the project cannot be privately financed. If consumers or taxpayers bear the risks, their charges, in the event of success, should be lowered in return for the service they have rendered. Our recommendation outlines the dimensions of each plan and contains specific suggestions for implementing either approach.

The President May 2, 1977

The decision now before you, we recognize, will significantly influence this nation's energy future. Therefore, beyond providing our best thinking in these recommendations, the commissioners and staff of the Federal Power Commission stand ready to assist you in every way.

Sincerely yours,

Richard L. Dunham
Chairman

James G. Watt
Vice Chairman

Don S. Smith
Commissioner

John H. Holloman III
Commissioner

For Monday Release
May 2, 1977

Office of Sen. John Sparkman
Contact: Grover Smith, Press Sec'y
202-224-4124, Wash., D.C.

Federal Power Commission Decision
Not Final, Says Sparkman Noting
Congressional-Presidential Role

(NOTE TO REPORTERS: This release is a comment on the Federal Power Commission release anticipated during the afternoon of Monday May 2).

WASHINGTON, D.C.---Foreign Relations Committee Chairman John Sparkman (D., Ala.), noted today that the Federal Power Commission recommendation for a Trans-Canadian pipeline running from Alaska to the United States still must be approved by the Congress and the President.

"The recommendation of the Federal Power Commission is not final," said Sparkman. "It is but one step in the process of selecting a project for bringing Alaskan gas to the lower 48 states.

"The Federal Power Commission is not structured for considering the foreign policy implications of this issue, and these considerations will now be fully explored by the President and the Congress," he stated.

In the face of three proposals submitted for natural gas routes from Alaska, the FPC today voted 4-0 for a Trans-Canada route, rather than a route involving Trans-Alaska pipeline and U.S. shipping to a Southern California distribution point. In a vote on which of two Trans-Canada routes proposed, the Commission voted two for a route along the Alcan Highway and two for a $10.4 billion line beginning on the Alaskan North Slope, running southeast through Canada to a point in Alberta near the U.S. border where the line would split with one route going down the U.S. Pacific Coast and the other to the Midwest.

- 30 -

FPC Divided in Recommendation of Alaskan Gas Transportation System; Two Members Recommend Alcan and Two Recommend Arctic Gas

On 5/2/77 the FPC forwarded a 460-page report to the President on the three competing Alaskan gas transportation proposals, together with a letter of transmittal containing a split (two-two) recommendation. "Under present circumstances and expectations," Chairman Dunham and Commissioner Watt recommended the Alcan project (the 48-inch alternative filed in March 1977), while Commissioners Holloman and Smith recommended Arctic Gas.

The report was submitted pursuant to the Alaskan Natural Gas Transportation Act of 1976 which requires the President to issue a decision by 9/1/77 regarding the transportation system to be built. This decision may be delayed for up to 90 days if the President should determine the need for an additional or supplemental environmental impact statement or the need otherwise for additional time to render a sound decision. The President's decision requires Congressional approval to become effective.

All four Commissioners favored selection of an overland system through Canada, provided such a route is made available by the Government of Canada on acceptable terms and conditions. However, they said, in deciding between the two overland routes (Alcan and Arctic Gas), further information is needed, as well as knowledge of the intentions of the Canadian Government. "Based on today's circumstances, reasonable men can disagree on the right course of action."

The preference of Commissioners Holloman and Smith for the Arctic Gas project was conditioned upon "timely affirmative decisions" by the Government of Canada to make the route available and, after development, to allow simultaneous transportation of Canadian natural gas reserves from the Mackenzie Delta. Absent a Canadian determination to permit development and transportation of Mackenzie Delta reserves, Messrs. Holloman and Smith supported the Alcan project. Failing "timely and acceptable agreements" with the Canadian Government regarding a route for an overland system, selection of the El Paso Alaska project was recommended.

Assuming selection of an overland system, the FPC recommended deferral of a decision on the Western Leg for one to two years until further information may be available regarding the continuation of Canadian exports under licenses due to expire in the early and mid-1980's and the extent of idle capacity on existing systems.

Neither the transmittal letter nor the FPC's report explained the specific basis for the recommendation of Arctic Gas by Commissioners Holloman and Smith, or for the recommendation of Alcan by Chairman Dunham and Commissioner Watt.

The Commission's transmittal letter stressed the following conclusions as most important: (1) at least 20 Tcf of producible gas reserves are contained in the Prudhoe Bay Field of Alaska, enough to provide about 5% of U.S. natural gas consumption for the next 25 years, and this gas can be delivered to the Lower 48 States and successfully marketed by any one of the three competing applicant groups; (2) each system will have some adverse environmental impacts, all of which are deemed acceptable given proper precautionary measures, although Alcan and El Paso Alaska have a "distinct environmental advantage" in generally following existing utility corridors; (3) an overland route can deliver gas more cheaply on a unit basis than a combined land and water route using liquefied natural gas technology, and Arctic Gas having a slight advantage over Alcan in this regard; (4) if the Canadian Government decides not to proceed with development of Mackenzie Delta reserves at this time, the overall balance of cost advantages shifts from

Arctic Gas to Alcan; (5) net national economic benefits are roughly the same for all systems, although El Paso Alaska has an advantage in the calculation because all of its tax payments go to the United States and virtually all of its wage and material payments go to Americans; (6) based on best estimates of likely ultimate construction costs (not the applicants' figures), the El Paso Alaska system would require the least capital, with Alcan and Arctic Gas costing somewhat more; (7) Arctic Gas has the greatest risk of major cost overruns, primarily because of its difficult winter construction schedule, while El Paso Alaska is least vulnerable to such overruns; (8) each of the systems should operate reliably once service begins, although El Paso Alaska is slightly more susceptible to service interruption due to its complex nature and greater seismic risks; (9) El Paso Alaska would be the easiest system to finance because of its slightly lower initial cost and the availability of federal loan guarantees for tanker construction under Title XI of the Merchant Marine Act; (10) Arctic Gas can expand to deliver up to 3.5 Bcf/d and Alcan to deliver up to 3.2 Bcf/d from the Prudhoe Bay Field at small cost, while expansion costs for El Paso (for ships, terminal facilities and operating expenses) would be greater relative to increased deliveries; (11) North Slope gas should be distributed as widely as possible throughout the United States, both to encourage broad-based financing for the selected project and to avoid too heavy a dependence by any area of the country on Alaskan gas; and (12) any of the proposed systems can be financed without extraordinary risk-bearing by consumers or taxpayers if investors are allowed an opportunity to earn an adequate return commensurate with the unusual size and degree of risk of the project. Alternatively, consumers and taxpayers could assume the risks of noncompletion of the system or interruption of service in return for a lower delivered cost of gas.

The FPC's 460-page report summarized major comparative advantages and disadvantages of the three projects from the standpoint of economics, environmental impact, system reliability and LNG safety, and financeability.

(1) Arctic Gas is economically superior -- in view of an estimated 20-year national average cost of service of 76¢/MMBtu (in 1975 dollars) compared to 79¢/MMBtu for Alcan and $1.09/MMBtu for El Paso Alaska. On the other hand, Arctic Gas is the most likely to suffer substantial cost overruns, due to potential construction delays in completing its North Slope section. However, even with a $270 million cost overrun in the Prudhoe Bay lateral section and a one-year delay before commencement of service from Prudhoe Bay (an "extreme assumption"), the unit cost of service for Arctic Gas would increase only 12%, or from 76¢ to 85¢/MMBtu. Neither Alcan nor El Paso appear to be subject to large cost overruns due to the forces of man or nature, even though Alcan's average 20-year cost would undoubtedly be somewhat higher than 79¢/MMBtu (in 1975 dollars) because of the unlikelihood of meeting its projected construction schedule. Finally, both Alcan and Arctic Gas can expand inexpensively from the initial flow rate of 2.25 Bcf/d by adding compression. By comparison, in order to expand deliveries, El Paso Alaska's LNG tankers, liquefaction and regasification facilities must all be scaled-up at costs roughly proportional to their initial costs.

(2) Alcan is environmentally preferable because of use of existing utility corridors and all-weather roads over much of its route.

(3) El Paso Alaska, because of its more complex LNG processing and transportation system, is subject to a slightly higher risk of service interruption. El Paso Alaska also presents the risk of hazard to a limited population in the event of an LNG accident, but the probability of such an accident is low and, if one should occur, damage to human life would be minimal.

(4) El Paso Alaska holds a distinct advantage in terms of financeability, even considering the likelihood of cost overruns for all three systems. Among other things, El Paso Alaska can obtain 20% of its total capital requirements easily and cheaply through U.S. Government guarantees available under Title XI of the Merchant Marine Act.

The Commission stressed the need to establish a field price for Prudhoe Bay gas as soon as possible, and indicated its intent to initiate a proceeding toward this end in the near future. In addition, the Commission suggested that field price (including gathering and conditioning) be determined on the basis of market value less transportation costs. In applying this formula, the Commission said "market value" would most likely be set by reference to the city gate cost of incremental gas or energy supplies, while the most appropriate transportation cost would be the national average cost to selected major market areas. Such a pricing formula, the Commission declared, would remove the possibility that producers could exercise monopoly power in the pricing of Alaskan gas, avoid the problem of allocating joint costs of gas produced in association with oil, and offer consumers significant protection against paying a price higher than market value for Alaskan gas since transportation cost increases would be offset by corresponding reductions in field price.

The report also discussed two possible approaches to financing -- one involving guarantee of debt service by project sponsors (assuming additional creditworthy parties can be induced to participate in financing) and the other involving consumer debt guarantees. Under the first approach, the FPC recommended an 18% rate of return on equity -- to be allowed so long as the delivered cost of gas (field price plus transportation cost) does not exceed the market value of the gas, but subject to reduction if market value is exceeded. Under the consumer debt guarantee approach, the Commission would allow a maximum rate of return on equity of 15%. In addition, the Commission recommended adoption of a consumer guarantee fee equal to the difference between the cost of service under the project sponsor debt guarantee approach and the cost of service with consumer guarantees. The consumer guarantee fee would be added to the out-of-pocket transportation cost for purposes of calculating gas field price (under a market value approach).

The FPC specifically did not recommend federal financial assistance to construct a gas transportation system. "Federal backstopping is a default option to be employed only if it is determined that the social benefits of a transportation system are overriding and private parties are unwilling to undertake the project alone at a reasonable cost." Here, however, the "private benefits are substantial and the risks bearable" under the proposed financing alternatives.

The FPC's conclusions differ in certain respects from those of Judge Litt who, in an initial decision issued 2/1/77, recommended Arctic Gas as superior to El Paso Alaska, found that El Paso Alaska nonetheless had a viable project which could be certificated if Arctic Gas were unable to go forward, and held that Alcan had no "possibility" of certification. (The Alcan project before Judge Litt, however, was its original 42-inch project which contemplated commingling of Alaskan gas and Canadian gas; in part because of Judge Litt's criticism, this proposal was replaced in March 1977 by a 48-inch express line alternative to carry only Alaskan gas to Lower 48 markets, with no commingling of Canadian gas.) Another difference was that Judge Litt urged approval of Western Leg facilities at this time rather than a deferral of decision. In regard to financing, Judge Litt recommended federal participation to the extent of an insurance or completion guarantee arrangement to facilitate raising project debt capital at a more reasonable cost, thereby reducing the cost of gas to consumers. (See REPORT NOS. 1090, App. pp1-23; 1095, App. pp1-26.)

The FPC's report to the President is summarized in greater detail in an Appendix to this REPORT.

Canadian Prime Minister Appoints Northern Pipeline Commissioner

On 4/29/77 Prime Minister Trudeau announced the appointment of Basil Robinson as Northern Pipeline Commissioner. Mr. Robinson will be responsible for coordinating all advice to the Canadian Government on the need for a northern gas pipeline, the choices open to the government and the advantages and disadvantages of each proposal. Among other things, he will assist the government in assimilating existing analyses and the forthcoming reports of the Berger Commission, the FPC, the National Energy Board and the two panels operating in the Yukon. Mr. Robinson's role will be to ensure that the Cabinet has before it all the analysis and advice required to make a decision in accordance with the broad national interest.

As part of his responsibilities, Mr. Robinson will consult closely with United States officials concerned with northern pipeline matters.

Mr. Robinson is presently Under-Secretary of State for External Affairs. He has previously been Deputy Minister of Indian Affairs and Northern Development.

Justice Department Concludes General Antitrust Investigation of Natural Gas Industry Not Justified at This Time

On 5/2/77 Donald Baker, Assistant Attorney General of the Antitrust Division, Department of Justice, replied to a letter dated 2/9/77 from Ralph Nader (and certain associates) requesting that the Antitrust Division conduct a general investigation into the natural gas industry to determine whether natural gas producers are engaged in an unlawful conspiracy to withhold gas from the market. In view of actions now being taken by the Antitrust Division on several fronts to scrutinize the natural gas industry, Mr. Baker stated that a more general antitrust investigation cannot be justified at this time. "There is to date no probative evidence of collusion, and a less precisely focused investigation would in large part merely duplicate the efforts of other government agencies . . . . Of course, if either our efforts or those of other agencies reveal any significant indications of collusion, we will rapidly undertake whatever additional investigation is necessary to determine whether an antitrust prosecution is warranted."

The bulk of Mr. Baker's letter described the Antitrust Division's current efforts in regard to the natural gas industry.

First, he said, the Division is closely monitoring the Interior Department's investigation into whether development and production of natural gas in the Gulf of Mexico has been intentionally withheld. The Secretary of Interior has indicated that the Justice Department will receive any evidence of deliberate withholding, and such evidence will be reviewed to determine whether an antitrust violation has occurred or whether further investigation is warranted. "An independent Antitrust Division investigation of possible collusive withholding of natural gas would be largely duplicative of the Interior Department's efforts."

Second, the Antitrust Division is following up on FPC inquiries into whether gas producers and pipelines have unlawfully colluded to withhold gas from the interstate market. "The FPC determined several years ago, based upon data submitted by jurisdictional pipelines, that there may be substantial amounts of dedicated natural gas reserves in the Gulf of Mexico that are not being produced." Also, in

5/23

Summary of FPC gas route decision.

Suggest you glance at pages 12-16 which speak of:

(1) State of AK & federal assistance in project financing.

(2) Early establishment of a field price.

(3) Federal auditing of construction costs during construction & determination of costs to be included in tariff. (Wouldn't that have been nice for the oil pipeline?)

CB

SUMMARY OF FPC REPORT TO PRESIDENT ON ALASKAN NATURAL GAS TRANSPORTATION PROPOSALS

On 5/2/77 the FPC forwarded a 460-page report to the President on the three competing proposals to transport Alaskan North Slope gas to the Lower 48 States, together with a 5-page letter of transmittal containing a split (2-2) recommendation. "Under present circumstances and expectations," Chairman Dunham and Commissioner Watt recommended the Alcan project (the 48-inch alternative filed in March 1977), while Commissioners Holloman and Smith recommended Arctic Gas.

The report was submitted pursuant to the Alaska Natural Gas Transportation Act of 1976 which requires the President to issue a decision by 9/1/77 regarding the transportation system to be built. This decision may be delayed for up to 90 days if the President should determine the need for an additional or supplemental environmental impact statement or the need otherwise for additional time to render a sound decision. The President's decision requires Congressional approval to become effective.

All four Commissioners favored selection of an overland system through Canada, provided such a route is made available by the Government of Canada on acceptable terms and conditions. However, they said, in deciding between the two overland routes (Alcan and Arctic Gas), further information is needed, as well as knowledge of the intentions of the Canadian Government. "Based on today's circumstances, reasonable men can disagree on the right course of action."

The preference of Commissioners Holloman and Smith for the Arctic Gas project was conditioned upon "timely affirmative decisions" by the Government of Canada to make the route available and, after development, to allow simultaneous transportation of Canadian natural gas reserves from the Mackenzie Delta. Absent a Canadian determination to permit development and transportation of Mackenzie Delta reserves, Messrs. Holloman and Smith supported the Alcan project. Failing "timely and acceptable agreements" with the Canadian Government regarding a route for an overland system, selection of the El Paso Alaska project was recommended.

Assuming selection of an overland system, the FPC recommended deferral of a decision on the Western Leg for one to two years until further information may be available regarding the continuation of Canadian exports under licenses due to expire in the early and mid-1980's and the extent of idle capacity on existing systems.

Neither the transmittal letter nor the FPC's report explained the specific basis for the recommendation of Arctic Gas by Commissioners Holloman and Smith, or for the recommendation of Alcan by Chairman Dunham and Commissioner Watt.

The report summarized the major comparative advantages and disadvantages of the three projects from the standpoint of economics, environmental impact, system reliability and LNG safety, and financeability, as follows:

(1) Arctic Gas is economically superior -- in view of an estimated 20-year national average cost of service of 76¢/MMBtu (in 1975 dollars) compared to 79¢/MMBtu for Alcan and $1.09/MMBtu for El Paso Alaska. On the other hand, Arctic Gas is the most likely to suffer substantial cost overruns, due to potential construction delays in completing its North Slope section. However, even with a $270 million cost overrun in the Prudhoe Bay lateral section and a one-year delay before commencement of service from Prudhoe Bay (an "extreme assumption"), the unit cost of service for Arctic Gas would increase only 12%, or from 76¢ to 85¢/MMBtu. Neither Alcan nor El Paso appear to be subject to large cost overruns due to the forces of man or nature, even though Alcan's average 20-year cost would undoubtedly be somewhat higher than 79¢/MMBtu (in

1975 dollars) because of the unlikelihood of meeting its projected construction schedule. Finally, both Alcan and Arctic Gas can expand inexpensively from an initial flow rate of 2.25 Bcf/d by adding compression. By comparison, in order to expand deliveries, El Paso Alaska's LNG tankers, liquefaction and regasification facilities must all be scaled-up at costs roughly proportional to their initial costs.

(2) Alcan is environmentally preferable because of use of existing utility corridors and all-weather roads over much of its route.

(3) El Paso Alaska, because of its more complex LNG processing and transportation system, is subject to a slightly higher risk of service interruption. El Paso Alaska also presents the risk of hazard to a limited population in the event of an LNG accident, but the probability of such an accident is low and, if one should occur, damage to human life would be minimal.

(4) El Paso Alaska holds a distinct advantage in terms of financeability, even considering the likelihood of cost overruns for all three systems. Among other things, El Paso Alaska can obtain 20% of its total capital requirements easily and cheaply through U.S. Government guarantees available under Title XI of the Merchant Marine Act.

The FPC report suggested that a field price (including gathering and conditioning) for Prudhoe Bay gas be determined on the basis of market value less transportation costs. In applying this formula, the Commission said "market value" would most likely be set by reference to the city gate cost of incremental gas or energy supplies, while the most appropriate transportation cost would be the national average cost to selected major market areas. The Commission also indicated the need to establish a field price for Prudhoe Bay gas as soon as possible, and announced its intent to initiate a proceeding toward this end in the near future.

The report discussed two possible approaches to financing -- one involving guarantee of debt service by project sponsors (assuming additional creditworthy parties can be induced to participate in financing) and the other involving consumer debt guarantees. Under the first approach, the FPC recommended an 18% rate of return on equity -- to be allowed so long as the delivered cost of gas (field price plus transportation cost) does not exceed the market value of the gas. Under the consumer debt guarantee approach, the Commission would allow a maximum rate of return on equity of 15%. In addition, the Commission recommended adoption of a consumer guarantee fee equal to the difference between the cost of service under the project sponsor debt guarantee approach and cost of service with consumer guarantees. In calculating the gas field price, the consumer guarantee fee would be added to the out-of-pocket transportation cost.

The FPC specifically did not recommend federal financial assistance to construct a gas transportation system. "Federal backstopping is a default option to be employed only if it is determined that the social benefits of a transportation system are overriding and private parties are unwilling to undertake the project alone at a reasonable cost." Here, however, the "private benefits are substantial and the risks bearable" under the financing proposals suggested above.

The FPC's conclusions differ in certain respects from those of Judge Litt who, in an initial decision issued 2/1/77, recommended Arctic Gas as superior to El Paso Alaska, found that El Paso Alaska nonetheless had a viable project which could be certificated if Arctic Gas were unable to go forward, and held that Alcan had no "possibility" of certification. (The Alcan project before Judge Litt, however, was its original 42-inch project which contemplated commingling of Alaskan gas and Canadian gas; in part because of Judge Litt's criticism, this proposal was replaced in March

1977 by a 48-inch express line alternative to carry only Alaskan gas to Lower 48 markets, with no commingling of Canadian gas.) Another difference was that Judge Litt urged approval of Western Leg facilities at this time rather than a deferral of decision. In regard to financing, Judge Litt recommended federal participation to the extent of an insurance or completion guarantee arrangement to facilitate raising project debt capital at a more reasonable cost, thereby reducing the cost of gas to consumers. (See REPORT NOS. 1090, App. pp1-23; 1095, App. pp1-26.)

The FPC report is summarized in greater detail below. The summary covers the following topics:

Gas Reserves and Deliverability
Comparative Cost of Service
Net National Economic Benefits
Environmental Impacts
Socio-Economic Impacts
Geotechnical Issues Affecting System Reliability (Including LNG Safety and Siting)
Construction Costs and Scheduling
Western Leg
Financing and Tariffs (Including Methodology for Determining Field Price)
Competitive Impact Assessment
Other Matters

Gas Reserves and Deliverability

The FPC stated that in-place gas volumes in the Prudhoe Bay Field exceed 40 Tcf (estimates range from 35.1 Tcf to 42.8 Tcf). Assuming a recovery efficiency of 75% to 80% and a 26% shrinkage factor, recoverable gas is 22.2 Tcf to 23.7 Tcf. Further, the Commission stated, available evidence indicates that at least 2.0 Bcf/d and possibly 2.5 Bcf/d, or even slightly higher, can be made available to any of the proposed gas transportation systems from the Prudhoe Bay Field. Gas deliveries can be sustained for 25 to 35 years depending on the sales rate and ultimate gas recovery efficiency, and assuming gas sales commence within roughly four to five years after oil production commences.

The Commission pointed out that the Prudhoe Bay Field is an oil reservoir, and that gas produced during at least the early years can be advantageously used for reinjection in order to maintain reservoir pressure and thus sustain oil production. Thus, the gas should not be viewed as a by-project that has to be sold, or that should even necessarily be sold during the initial years of oil production. However, the Commission added, reinjection of produced gas will require approximately 4% usage as fuel for compression. Therefore, the longer gas sales are postponed, the less total gas will be available for sale.

Possible future gas supplies which might be available in other areas of Alaska were also discussed by the Commission in the context of assessing system expansibility requirements of the three proposed systems. Based on review of available information, the Commission stated that (1) the possibility of significant supplies from Naval Petroleum Reserve No. 4 appears "slight" -- the most realistic resource estimate now available is about 14 Tcf which, assuming a maximum of 50% and a minimum of 15% capable of economic development, could be expected to provide maximum daily salable volumes ranging from roughly 0.3 Bcf/d to 0.9 Bcf/d (with the upper end of this range "highly speculative"); (2) geological and limited geophysical information suggests the possibility of substantial gas reserves under the Arctic National Wildlife Range, but no credible resource estimate can be made at this time; (3) high resource

potential exists for the Beaufort Sea (north of the Prudhoe Bay Field) and, to a lesser extent for the Chukchi Sea (west of NPR No. 4); and (4) the interior basins of Alaska hold little promise of natural gas.

In short, the Commission declared, there exists "some possibility" of increased deliveries from the North Slope of perhaps up to an additional 1.5 Bcf/d (from NPR No. 4, Arctic National Wildlife Range, the Beaufort Sea, and other reservoirs in or near the Prudhoe Bay oil field). Thus, the Alaskan gas transportation system should be designed to carry initially 2.0 to 2.5 Bcf/d, and be capable of expansion to an additional 1.0-1.5 Bcf/d. Each of the systems is so designed.

In regard to the Mackenzie Delta region, the Commission disagreed with Judge Litt's finding of a reasonable likelihood of 1 Bcf/d of deliveries in the first year of operations, rising to 1.5 Bcf/d in the fifth year. Rather, based on all available information, including gas supply information recently submitted to the NEB (in early 1977), the FPC concluded that the most realistic level of gas availability from the Mackenzie Delta area that can be projected at this time is 1 Bcf/d.

While additional exploration will likely result in new discoveries, the Commission explained, exploration and development activities to date have not been "totally encouraging," and the magnitude and timing of future reserves are uncertain. The three largest fields discovered thus far contain reserves (proved, probable and possible) of approximately 3 Tcf, 1.5 Tcf and 1 Tcf. No other discovered field has reserves in excess of 0.2 Tcf or 0.4 Tcf, according to recent estimates by Foothills and Canadian Arctic. Moreover, the Commission continued, there is no information presently available to indicate that future Mackenzie Delta discoveries (at least with respect to the onshore and shallow water area) would be different from the fields discovered to date. While there is some expectation that the Mackenzie Delta offshore area in the Beaufort Sea could hold substantial amounts of hydrocarbons, the Commission added, estimates of gas potential offshore are even more speculative than onshore. Also, "the pattern of onshore discoveries to date makes the likelihood of realizing any additions of reserves from the offshore Mackenzie Delta area -- at least during the near future -- highly questionable."

The Commission discounted the argument that the presence of a gas transportation system in the Mackenzie Delta area would result in a rapid escalation of drilling activity. If the best onshore prospects have already been drilled, and if technological and economic considerations require a high degree of selectivity for offshore activities, "no appreciable escalation in drilling activity is guaranteed by the mere presence of a gas transportation system." Nor, the Commission added, does the rate of reserves additions in the past, when most drilling activity was conducted onshore, provide a valid basis for projecting the level of reserves additions in the future, when much of the drilling activity may be offshore.

The FPC said projected deliverability of 1 Bcf/d could be met initially from the three largest fields discovered to date (Taglu, Parsons Lake and Niglintgak). However, to sustain this deliverability level for 20 years, additional reserves amounting to an approximate doubling of the claimed 3.8 Tcf of proved reserves (as of July 1975) would be required. To sustain this level for 30 years would require cumulative marketable reserves of 11 Tcf.

A gas deliverability rate of 1 Bcf/d from the Mackenzie Delta, the Commission noted further, is also supported by current plans for operating the Mackenzie Delta fields, including use of several centrally located gas conditioning plants to handle gas produced from all of the fields. This mode of field operations will most likely result in sequential production of various fields rather than simultaneous production

of all or a substantial number of fields. Moreover, even if the most optimistic recent estimate of current reserves (including proven, probable and possible categories) were accepted, "it seems questionable whether gas delivery rates substantially greater than 1 Bcf/d could be sustained long enough to justify expenditures for gas processing facilities capable of handling volumes greater than 1 Bcf/d."

However, the Commission added, if future Mackenzie Delta exploratory efforts should result in the discovery of more fields -- and particularly larger fields -- than have been discovered through past exploratory efforts, the projected deliverability of 1 Bcf/d could prove to be an understatement of the pipeline capacity required to handle Mackenzie Delta gas. In assessing the degree of pipeline system expansibility that may be required to handle gas supplies in excess of 1 Bcf/d, it is "conceivable" that the Mackenzie Delta area deliverability (including substantial offshore gas) could be sustained at 1.5 Bcf/d or even higher. Therefore, "the degree of gas transportation expansibility that should be attributed to the Mackenzie Delta area is 0.5 Bcf/d."

Comparative Cost of Service

The FPC compared unit transportation costs for the three projects using cost of service data recently submitted by the three applicants at the Commission's request. (See REPORT NO. 1101, App. pp13-14.) All costs are expressed in 1975 dollars.

	First Five Years				Twenty Years			
	East	Midwest	West	Natl. Avg.	East	Midwest	West	Natl. Avg.
	---(Dollars per Million Btu)---				---(Dollars per Million Btu)---			
Arctic Gas	$1.23	$1.19	$1.07	$1.17	$0.76	$0.74	$0.76	$0.76
El Paso Alaska	$1.71	$1.66	$1.28	$1.53	$1.23	$1.19	$0.91	$1.09
Alcan	$1.30	$1.28	$1.15	$1.24	$0.80	$0.79	$0.74	$0.79

The above estimates, the Commission stressed, indicate that all three systems can deliver Alaskan gas at a reasonable cost to the consumer. "Even El Paso could deliver gas at an average price of less than $2.10/MMBtu, assuming a field price of $1.00/MMBtu. We have no doubt that the gas is worth much more than this. Even with extremely large cost overruns, there is insignificant marketability risk for this gas, even on an incremental basis."

Net National Economic Benefit

The FPC determined that all three projects would yield substantial net national economic benefits, with the results close between Alcan and Arctic Gas and lower for El Paso Alaska (due to its higher operating costs and lower fuel efficiency). However, it was noted, unlike Arctic Gas and Alcan, El Paso Alaska would pay no Canadian taxes, which offsets in part its greater fuel consumption.

Using alternative discount rates of 6% and 10%, the Commission calculated NNEB for the three projects -- in 1975 dollars -- as follows:

	6% Discount Rate	10% Discount Rate
	---(Billions of 1975 Dollars)---	
Arctic Gas	$15.15	$7.12
El Paso Alaska	$12.86	$5.80
Alcan	$15.66	$7.65

The Commission added that Alcan's construction costs underlying the above calculations may be somewhat low, so that Alcan cannot be found superior to Arctic Gas on NNEB grounds.

Environmental Impacts

The FPC concluded that each of the three proposed systems is environmentally acceptable -- but that the Alcan route (48-inch alternative) would pose the least environmental impact assuming proper mitigative measures during final design, construction and operation. Compared with Arctic Gas, the Commission said the Alcan project would (1) use existing corridors to the maximum, thereby requiring less development of rights-of-way in virgin or unimpacted areas; (2) avoid crossing the Arctic National Wildlife Range, similar areas in Canada, and related waterfowl breeding areas; and (3) avoid caribou calving grounds in Alaska and Canada. Compared with El Paso Alaska, Alcan would avoid construction of a pipeline through the Chugach National Forest, construction of two LNG terminals in high seismic risk areas, and impacts on marine and wildlife resources in Prince William Sound.

At the same time, the FPC indicated that crossing of the Arctic National Wildlife Range by Arctic Gas could be accomplished without adverse environmental impact if proposed mitigative measures are undertaken. In this connection, the Commission dismissed fears of the Conservation Interveners and the State of Alaska that Arctic Gas' snow road construction plans to mitigate damage to tundra and permafrost areas would turn out to be technically infeasible or lead to problems which could cause abandonment of such plans and resort instead to gravel roads and workpads to complete construction. The Commission expressed the view that Arctic Gas' proposed snowroad construction can be made technically and environmentally feasible and that sufficient water exists to make snow without undue environmental impact. Moreover, the Commission noted, Arctic Gas would have two years of snowroad experience before beginning construction in the Wildlife Range. However, if Arctic Gas should encounter schedule difficulties in this phase, the Commission would oppose any deviation in the original construction proposal. In short, if construction could not be completed by the original deadline, "then completion of the project would simply have to be delayed."

Nor did the Commission agree with the contention of the Conservation Interveners that crossing of the Arctic National Wildlife Range would necessarily lead to an "inevitable progressive violation of the Range." Alaska and the Department of Interior have full authority to limit any further activity, the Commission noted. Further, while selection of Arctic Gas would probably serve as an "important catalyst for expansion into areas adjacent to the Range" due to increasing energy demands, any verified natural gas reserves "could readily and economically be attached to the proposed Arctic Gas system" and liquid hydrocarbons could be transported west to Prudhoe Bay and then into the Alyeska system. "The presence of the Arctic Gas pipeline thus would not constitute an additional incentive to later development." In short, a decision on crossing the Range now is not "an irrevocable choice between total development or no intrusion at all on the Range." Rather, "the Range would continue to support its current wildlife species, provided that strict controls and superior mitigation techniques are employed by builders of the pipeline."

The Commission also found that alignment in an existing utility corridor -- an advantage stressed by both Alcan and El Paso Alaska -- was not a compelling reason to choose one transportation system over another. Specifically, although construction and operational impacts for El Paso Alaska and Alcan would be smaller than for a wholly new route, "the overall difference is not substantial." El Paso, for example, will require a new right-of-way within the utility corridor since it runs parallel, but not adjacent to, the Alyeska line. Alcan's proposed alignment is adjacent to

Alyeska, "but it appears that an entirely new workpad will be required with its attendant gravel requirements." Moreover, the Commission noted, "adjacent" alignment to Alyeska will create oil pipeline integrity problems and could require additional costs for this reason.

Finally, the Commission indicated that it was not necessary to consider Mackenzie Delta gas in comparing the environmental impacts of the three systems. In other words, construction of a separate line to the Mackenzie Delta should not be considered in evaluating the El Paso Alaska and Alcan projects. Any such line, the Commission said, would be exclusively Canadian. "Canadian authorities have exclusive jurisdiction over timing of development and method by which Mackenzie Delta reserves will be brought to market. There is no point to our hypothesizing about those decisions."

Socio-Economic Impacts

The FPC stated that evaluation of socio-economic impacts of the three proposed projects provides little guidance for choosing between the three. These impacts will be greatest on the State of Alaska, and the principal benefits to Alaska -- from royalty payments and severance taxes and, to a lesser extent, from the operation of the pipeline itself -- will be largely independent of which pipeline system is certificated.

In general, the Commission concluded that El Paso would generate more jobs, more personal income, more property subject to tax, and more indirect economic activity than the other proposals, but it would also require more social services and probably also result in the highest unemployment. These impacts would be much smaller for Arctic Gas and somewhere in between for Alcan. On the other hand, "there is a possibility that Arctic Gas, with its lower projected transportation costs, would produce higher royalty income for Alaska, which will in turn aid the state in financing industrial development and expanding its social services."

Geotechnical Issues Affecting System Reliability, and LNG Siting Issues

The FPC concluded that, on balance, all three systems are adequately reliable for the transportation of Alaskan natural gas. Of the three, however, the El Paso Alaska system is most susceptible to some form of temporary interruption because of the location of its facilities in extremely active seismic zones and the complexity of its interrelated network of pipelines, ships and terminal facilities. On the other hand, the segmented nature of El Paso Alaska's operation, involving use of multiple ships and gasification trains, suggests that, "under most circumstances, the outcome of an untoward event will be a partial, rather than a total, cessation of supply."

In regard to particular geotechnical issues, the Commission declared that (1) seismic risk is greatest for El Paso Alaska, but its system can be designed to limit this risk to an acceptable level and is not likely to be completely destroyed by seismic activities; (2) frost heave and thaw settlement problems face all of the systems (although for differing distances), further work is required to determine the best solution, and whatever design is ultimately adopted will be available to all of the applicants; (3) metallurgy problems are also common to all of the projects, and none of the competing proposals appear to have a clear advantage in this area; and (4) LNG safety considerations do not render an LNG system inherently less reliable or more dangerous than a high pressure buried pipeline, although liquefaction and regasification facilities must be planned with the utmost care.

In regard to the proposed LNG terminal sites for the El Paso Alaska project, the Commission declared that Point Gravina had been shown to be an acceptable location in Alaska but that Cape Starichkof in the Cook Inlet -- an alternative site suggested by the FPC Staff -- may also be acceptable, depending on resolution of navigational questions posed by ice conditions. The Commission recommended further investigation of this alternative before any firm decision is made on location of the LNG plant in Alaska in the event that the El Paso Alaska system is selected.

As to regasification facilities in California, the Commission agreed with both Judge Litt and Staff that Oxnard (a developing industrial area) would be a preferable location to the proposed Point Conception site (an essentially undeveloped area) and should be certificated if the El Paso Alaska project is chosen, despite increased costs due to the need for larger tankers or an additional tanker to compensate for some 70 additional miles of shipping from the terminal in Alaska. As compared with Oxnard, the Commission said choice of Point Conception would cause construction of facilities on land otherwise lightly used, "thus spoiling that portion of the environment and inviting further development."

The Commission added that it was not necessary to decide at this time the further issue of whether there should be one single terminal or multiple terminals in California to accommodate the El Paso Alaska, Pacific Alaska and Pacific Indonesia LNG projects. Nevertheless, the Commission commented, while Western LNG Terminal Co. (which advocates three separate sites) argues that multiple facilities will ensure greater reliability, multiple terminals also impose considerably greater capital costs and cause greater environmental impact. Further, the Commission declared, the prospects of a major catastrophe are "sufficiently remote that little weight should be given to providing additional protection against such events through dispersed terminals. The sites [proposed by Western Terminal] are close enough together that a truly major catastrophe, such as a devastating earthquake or ocean storm could affect more than one of the terminals. Finally, the possibility of accidents which would affect a particular loading berth, gasification train, or storage tank, would be approximately the same whether concentrated at one location or spread out along various miles of coast line."

Construction Costs and Scheduling

The FPC indicated that capital cost estimates for the three projects (as developed by the respective applicants) are within a close range, as follows (in millions of 1975 dollars):

	Including AFUDC	Excluding AFUDC	System Capacity
Arctic Gas	$6,728.5	$5,620.5	2.25 Bcf/d
El Paso Alaska	$6,570.8	$5,587.5	2.36 Bcf/d
Alcan	$6,761.2	$5,780.9	2.4 Bcf/d

With construction continuing through 1983, the Commission noted, inflation will significantly increase actual dollar expenditures for all of the systems from those shown above. Moreover, none of the systems is free from risk of cost overruns and delays in completion. "Each applicant will be operating at the margin of current technology; construction conditions are frequently harsh; and final plans for design and construction are not yet developed." Nevertheless, each system's risk of cost overrun and completion delay appears to be "acceptable," and "there is virtually no chance that any system would become so costly as to be uneconomic."

In specific regard to the Arctic Gas project, the Commission stated that substantial evidence in the record supports the feasibility of winter construction (using snowroads and snowpads), if reasonable protective measures are applied; that Arctic Gas had devised a reasonable program for execution of such construction; that adequate water had been identified to overcome the risk of abnormally low natural snowfall on the North Slope to build snowroads and workpads; that a pipe laying productivity rate of 0.71 miles per spread per working day projected for the North Slope is "reasonably achievable"; and that cost estimates submitted by Arctic Gas are "reasonably reliable," although some additional expenditures are likely on North Slope segments of the project, as well as on extreme northern sections of the mainline in Canada. In this last connection, the FPC assigned a "high probability" of direct cost increases in the range of 7% to 10% for North Slope construction and in the range of 5% for construction of the overall system, due primarily to the risk of weather conditions more severe than normal.

With respect to the risk of construction delays for Arctic Gas, the Commission reviewed El Paso Alaska's risk analysis (which, among other things, indicated a 100% probability of at least a 1.5-year delay) at some length, but found this study lacked "sufficient realism to make the result a credible test of Arctic Gas' plan." Among other things, the Commission said, the analysis deprived Arctic Gas of 25-30 days of prime construction time on the North Slope in the fall and accumulated seasonal deficiencies throughout the entire construction program, with no provision for mitigative measures. Nevertheless, the Commission asserted, there exists some risk that adverse weather conditions could delay entry upon the tundra, prevent winter work for an extended period, or force premature cessation of construction in the spring. On the other hand, should such conditions occur and construction not be completed on schedule, a full year delay is unlikely. Rather, a delay of eight to nine months is more probable.

Even if an additional winter construction season were required and deliveries delayed for one year, the Commission added, the impact on unit transportation costs for Arctic Gas would be only 12%.

As to the El Paso Alaska project, the Commission found the construction schedule to be "basically credible" and overall construction cost estimates "reasonably reliable." However, the Commission indicated a "high probability" of a 7% to 10% cost increase for facilities in Alaska to cover additional geotechnical research, seismic design and certain other activities required prior to construction. In addition, if Oxnard is selected as the regasification plant site in California, El Paso Alaska would be required either to add another ship to transport the LNG to California (at an estimated capital cost of $200 million) or to expand the capacity of the eight ships now proposed. 1/ The Oxnard site, on the other hand, would result in cost savings for other facilities to be constructed in California.

1/ Judge Litt concluded that an additional ship would be required by El Paso Alaska regardless of whether the California terminal is located at Oxnard or Point Conception and, in addition, that an additional (seventh) liquefaction train would be required at the Gravina Point LNG plant to handle the projected volumes of LNG. By contrast, the Commission concluded that an eight-ship fleet would be adequate to deliver LNG from Gravina Point to Point Conception (but not to Oxnard) and that the six liquefaction trains now contemplated at the Gravina Point plant would provide sufficient reliability.

In the Lower 48 States, the Commission noted that El Paso proposes to construct a new 42-inch pipeline from Waha in the Permian Basin to Refugio, Texas, at an estimated cost of $223 million, to transport approximately 800,000 Mcf/d to pipelines serving the eastern U.S. However, as demonstrated by experience this past winter under the Emergency Natural Gas Act of 1977, excess capacity currently exists on intrastate pipelines traversing the same route. Therefore, if the El Paso Alaska project is selected, the Commission urged consideration of legislation which would enable use of intrastate gas pipelines for transmission of Alaskan natural gas. While the amount of available intrastate capacity in 1982 cannot be predicted at this time, it is nonetheless probable that capital expenditures for the proposed new pipeline could be "substantially reduced through the use of existing intrastate facilities."

Finally, with respect to Alcan, the Commission concluded that cost estimates for the 48-inch alternative -- although not subjected to detailed cross-examination -- appeared to be reasonable in Alaska, although an undetermined cost increase could result from reexamination and modification of the currently proposed alignment along the Alyeska right-of-way so as to locate the gas pipeline further from the oil pipeline than now planned. Specifically, there exists a "high probability" of a cost increase up to 5% of Alcan's estimates for construction in Alaska. For Canadian segments, the Commission added, Alcan's cost estimates -- which are considerably lower than estimates by Arctic Gas for construction in similar terrain -- are subject to uncertainty and hence must be assigned a "high probability" of at least a 10% increase to account for possible underestimation.

The Commission further concluded that Alcan could not complete construction by its scheduled deadline of October 1981, because of both additional time required for preconstruction activities and the potential for delay posed by "extraordinary labor demands" in Canada. At the same time, the Commission considered it probable that the Alcan pipeline could become operational in mid-1982, up to one year earlier than Arctic Gas or El Paso Alaska.

Western Leg

The FPC recommended deferral of a decision on certification of a Western Leg for one to two years when more information will be available regarding the need for additional looping of existing pipeline systems which import gas from Canada. The amount of looping required, the Commission said, is dependent on two currently unknown variables: the quantity of future Canadian imports, and the quantity of Alaskan gas contracted for sale in the western states.

In recommending deferral, the Commission partially accepted the position of its Staff which opposed construction of a Western Leg because of the likelihood of idle capacity on existing facilities in the near future but, at the very least, urged postponement of a decision on the issue until a later stage of the proceedings. The Commission thus rejected the conclusion of Judge Litt that Staff's displacement approach rested on "an unduly pessimistic view" respecting Canadian curtailments and "largely illusory" projections of transportation cost savings, and hence was not a preferable alternative.

The present Western Leg proposals, the Commission noted, assume roughly a 30% division of Alaskan gas for western states and 70% for midwestern and eastern states -- conforming to the division reflected in earlier advance payment agreements which were determined by the Commission in late 1975 to be contrary to the public interest. Since no gas sales contracts have been entered into, the Commission said, the actual division of Alaskan gas volumes between various regions and states cannot be determined now. "Any attempts to establish definitively the division of Alaskan

gas would require that the FPC, in effect, set up a mandatory gas allocation program. Such a measure is neither required nor desirable at this time."

In regard to future imports from Canada, the Commission observed that if three current export licenses expire as scheduled in 1981, 1985 and 1986, Pacific Gas Transmission will have idle capacity of approximately 140 MMcf/d in December 1981, 325 MMcf/d in October 1985, and 745 MMcf/d in October 1986. This excess capacity by 1986 would be sufficient to transport Alaskan gas volumes to West Coast and Mountain states -- assuming such states purchase Alaskan gas in proportion to their current share of U.S. interstate consumption, i.e., approximately 25% of 2.25 Bcf/d or 560 MMcf/d. The future level of gas exports from Canada will be determined by the Canadian Government, the Commission declared, and Canada's views and plans must be known to enable a determination of the extent of idle capacity on present gas importation systems when Alaskan gas becomes available. "These decisions may be affected by the timing and procedures Canada selects for developing its frontier gas supplies. If no new export licenses are granted and existing licenses are not extended, substantial idle capacity will be available on existing transportation facilities."

The FPC also assessed the possibility of delivering Alaskan gas to western states by displacement from the Permian Basin or other traditional producing areas in the Southwest. This would require both sufficient gas supplies to effectuate a displacement plan and idle capacity to transport the displacement gas. In this connection, the FPC concluded that sufficient gas would appear to be available to effectuate a displacement plan if El Paso Natural and Transwestern are assumed to purchase the same share of projected Permian Basin supplies (as projected in the FPC National Gas Survey Report) in the future as they purchased in 1975 (37%). "It is conceivable that at least 1 Bcf/d could be displaced westward by 1990, which is greater than the 659 MMcf/d gas volume entitlement assumed by the western states to be their share of Alaskan gas. Thus, by shifting 659 MMcf/d from other interstate lines to El Paso Natural and Transwestern, the displacement could be done." Also, comparing future supplies projected by El Paso Natural and Transwestern with their current system capacities, the Commission said estimated idle capacity commencing in 1982 is approximately 1.7 Bcf/d on El Paso's system and 0.3 Bcf/d on Transwestern's system. Even if El Paso is authorized to abandon one of its lines from the Permian Basin to California for conversion to oil transportation, its remaining gas transportation facilities would still have idle capacity of approximately 0.5 Bcf/d in 1977 and 1978, and approximately 0.7 Bcf/d in 1979. "These excess capacities are sufficient to deliver a significant share of the western states' purchase of Alaskan gas by displacement."

Deferral of a decision on the Western Leg, the Commission added, will not disadvantage the western states or deny them access to a share of Alaskan gas. Rather, when the final gas transportation system is "fine-tuned" in a subsequent phase of these proceedings, "attention should be focused on overall costs to consumers, fuel efficiency of the systems, and operating flexibility in determining the best method for providing direct access to Alaskan gas for the western states."

Financing and Tarrifs (Including Methodology for Determining Field Price)

The FPC agreed with Judge Litt's conclusion that, in the absence of additional creditworthy parties, financing of an Alaskan gas transportation system will require either consumer or government backstopping, or both, to guarantee project completion. The Commission expressed the view, however, that additional creditworthy parties can be induced to back the project. In this connection, the Commission noted an assertion by the State of Alaska during oral argument that it is searching for a way to participate meaingfully in financing of the El Paso Alaska project and that, if this project is ruled out, it would then seriously consider whether to assist the financing of the Alcan project. Further, the Commission noted, Atlantic Richfield Co. "indicates an open mind regarding gas transportation system investments," and the Treasury Department continues to suggest the possibility of participation by industrial gas consumers. Also, participation of more gas pipeline and distribution companies in the purchase of Alaskan gas and in transportation system financing would be desirable.

Consequently, the Commission focused on financing and tariff proposals designed to provide adequate incentives to private parties and the State of Alaska to make the necessary capital investments, while bearing acceptable risks. In addition, the Commission considered an alternative approach requiring consumers to guarantee repayment of project debt financing but at the same time compensating them for the bearing of increased risks. 1/

The FPC specifically did not recommend federal financial assistance for an Alaskan gas transportation system. "Federal backstopping is a default option to be employed only if it is determined that the social benefits of a transportation system are overriding and private parties are unwilling to undertake the project alone at a reasonable cost." Given the large positive net national economic benefits of all three systems, the FPC continued, the social benefits are undoubtedly adequate to warrant the construction and operation of any of the systems. Also, numerous questions have been raised regarding the achievement of a private financing. Nevertheless, "private benefits are substantial and the risks bearable . . ." under the proposals advanced here. For these reasons plus the opposition of the Treasury Department to federal financial assistance, the Commission decided not to recommend a financial plan contingent on federal guarantees.

Regardless of financing approach adopted, the Commission recommended the following measures to facilitate financing: (1) rolled-in pricing, although "Alaskan gas most likely could be sold competitively on an incremental pricing basis; (2) "reasonably broad" distribution of Alaskan gas across domestic markets, thereby reducing proportional equity investments required of gas pipeline and gas distribution company sponsors to a more manageable size and spreading the economic burdens of extended service interruptions over a wider number of consumers in the event that consumer debt guarantees are required; and (3) establishment of a field price for Prudhoe Bay gas as soon as possible.

In the last connection, the Commission indicated its intent to initiate a proceeding in the near future to determine an appropriate field price (defined to include gathering and conditioning) for Prudhoe Bay gas, as well as to examine vintaging and throughput agreement issues. Prompt action is necessary, the Commission explained, since North Slope producers have identified establishment of a sale price as a precondition to entering into gas sales contracts and since financing is infeasible in the absence of gas sales contracts determining which companies will receive the

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1/ Since some of these proposals were not fully considered in the record, the Commission said, a special proceeding to perfect the details may be needed in the near future.

gas and hence be willing to supply equity capital. Also, the Commission noted, if the maximum price for Prudhoe Bay gas is set relatively high, it might be possible to attract gas producer participation in the transportation system financing either directly or through debt guarantees.

Based on estimated gas gathering and conditioning costs including a 15% after-tax rate of return on investment, the Commission computed a field price of approximately 70¢/MMBtu in current dollars (and approximately 50¢/MMBtu in 1975 dollars).

As an alternative to setting a fixed field price for Prudhoe Bay gas, the Commission suggested determination on the basis of market value less transportation cost, subject to allowance of a minimum field price to ensure that producers recover their incremental costs for producing and conditioning gas. While further evidence is needed to determine a precise definition, the FPC said "market value" of Alaskan gas would most likely be set by reference to the city gate cost of incremental gas or energy supplies, 1/ and the most appropriate transportation cost would seem to be the national average cost to selected major market areas.

Such a pricing formula, the FPC declared, would (1) remove the possibility that producers could exercise monopoly power in the pricing of Alaskan gas, (2) avoid the difficult problem of allocating joint costs of gas produced in association with oil, and (3) provide significant protection to consumers against the possibility of paying a higher than market value for Alaskan gas (even with a cost of service tariff and rolled-in pricing) since transportation cost increases would be offset by corresponding reductions in field price. Further, the "upside profit potential" offered by the formula, as well as the "downside protection" provided by a minimum wellhead price, could stimulate gas producers to assist in financing since they would have a direct incentive to see that the transportation system is constructed and operated as efficiently as possible in order to maximize their profits. "Such considerations might prompt gas producers to desire some amount of management control over the project and thus to invest some equity capital."

In short, the Commission declared, a formula approach to determining the field price for Alaskan gas has "considerable merit." However, because the Commission's authority to approve such a pricing procedure under the just and reasonable standard of the Natural Gas Act is "doubtful," the President should submit legislation to authorize the FPC "to determine field or wellhead rates for Prudhoe Bay gas on the basis of market factors and alternative fuel prices."

The FPC then outlined two alternative financing approaches -- one involving guarantee of debt by the project sponsors, and the other involving consumer debt guarantees.

1/ In this connection, the FPC noted testimony by an Arctic Gas witness (submitted in mid-1976) that the incremental Btu equivalent price of distillate fuel oil at the city gate in 1975 dollars was $2.61/MMBtu and that natural gas should command a premium above this amount. (See REPORT NO. 1059, App. pp17-18.) The FPC report, however, did not mention a recent market value study (submitted on 4/5/77 by Atlantic Richfield) which, on the basis of current statistics, determined an average incremental city gate value of distillate fuel oil and electricity (in residential and commercial markets) of $5.42/MMBtu. Subtracting an estimated transportation cost of $1.60, the study arrived at a market value of $3.82/MMBtu at the pipeline inlet in Alaska. (See REPORT NO. 1101, App. pp6-7.)

A. Project Sponsor Debt Guarantee Approach

The basic objectives of this approach, the Commission said, are to (1) achieve a successful private financing by providing incentives to stimulate the maximum amount of risk bearing by the projects' potential sponsors; (2) minimize the likelihood that consumers will have to pay higher than market value for Alaskan gas, or incur substantial expenses in the case of project noncompletion or extended service interruption; and (3) provide incentives for efficiency in construction and operation of the project.

The essence of the approach is "to allow gas producers and project investors the potential of earning profits equal to the market value of the gas less the cost of producing and transporting it to market, while assuring a minimum return on investment as long as minimum gas deliveries are met." It is hoped that gas producers, additional gas utility companies, the State of Alaska, and creditworthy corporations looking for an attractive investment will thereby assist in financing the gas transportation system. If this approach is not successful in attracting both the required equity investments and debt financing guarantees, the Commission "would be inclined to endorse consumer debt guarantees only after obtaining a better understanding of why the indicated parties did not participate in the financing more fully."

In addition to guarantee of debt by the project sponsors, other elements of this approach would include: (1) a cost of service tariff during normal operation -- subject to automatic reduction to disallow recovery of a proportional amount of net plant and working capital accounts if the average level of gas deliveries fell for 30 days below 60% of a level defined to constitute normal operation; (2) tracking of both gas purchase and transportation costs to gas shippers, and thence to local distribution companies, with limitation of the FPC's suspension powers to proposed increases in operation and maintenance expenses; (3) quarterly audit of project construction costs, with the Commission to determine within 120 days after such audits, whether such costs were prudently incurred and may be recovered through the project's tariff; (4) a 50/50 debt-equity ratio, conforming generally to the capitalization of major natural gas companies in the Lower 48 States; and (5) a variable rate of return on equity ranging from a maximum of 18% to a minimum of 11%.

More specifically, with regard to rate of return on equity, the Commission stated that a 23% overall pretax return on rate base would yield approximately a 13.7% after-tax rate of return on equity (assuming a 10% interest rate and a 50% income tax rate) at a 25/75 debt to equity ratio, an 18% after-tax return at a 50/50 debt-equity ratio, and a 31% after-tax return at a 75/25 debt-equity ratio. "Such after-tax returns on equity are in line with the returns petroleum companies currently earn on their integrated operations, and will likely earn on the Alaskan oil pipeline if comparable D/E ratios are assumed." Thus, with a 50/50 debt-equity ratio, a maximum 18% after-tax return on common equity would appear "just and reasonable" under current financial market conditions for the project sponsor debt-guarantee financing approach.

An 18% rate of return on equity, the Commission added, would be allowed so long as the delivered cost of gas (field price plus transportation cost) does not exceed the market value of the gas. If the minimum field price plus transportation cost were to exceed market value of the gas, however, return on equity would be reduced as necessary to maintain the delivered cost of gas equal to its market value. In other words, the rate of return would be adjusted so as to equate the transportation cost to the difference between the market value of the gas and the minimum field price. At the same time, to provide investors some protection against the project being uneconomic, the Commission recommended a minimum after-tax return on equity of 11% so long as a minimum volume of gas is delivered for a minimum period of time.

While an 11% return is lower than the level currently allowed for most regulated utilities, the Commission noted, "the proposed automatic tracking of costs through to the distribution companies means that project equity investors can have confidence that these returns will be realized."

Should both the field price for gas and the return on transportation system investment be reduced to their minimum levels, the FPC added, consumers would then begin to pay a price higher than market value for Alaskan gas.

B. Consumer Debt Guarantee Approach

Because of uncertainty whether additional creditworthy parties can be induced to participate in financing or whether private parties will be willing to finance the project on the basis described above, the Commission said it is necessary to consider a consumer debt guarantee financing alternative. Such alternative requires measures to protect consumers from bearing unnecessary costs and risks, as well as realistic compensation for the risks that must be borne. "Consumers should not bear a major portion of the project's risk while other parties reap the bulk of the economic benefits."

Above all, the Commission stressed, equity investors should bear the risk of loss of their total equity investment in the event of extended service interruption or noncompletion.

The elements of the consumer debt guarantee approach suggested by the Commission would include, among others, (1) once the project begins operation, an all-events cost of service tariff under which gas shippers, and their customers in turn, would be charged an amount adequate to cover the total dollar cost of service less return on and recovery of equity capital in the event of extended service interruption; (2) noncompletion agreements whereby gas shippers would be committed to cover debt service payments in the event that the project was not completed, with federally regulated gas shippers authorized to flow through such payments to their customers on a current basis; (3) a maximum rate of return on equity of 15%, reflecting the reduction in financial risk to the project sponsors due to consumer guarantees for debt service payments, with a minimum return of 11%; (4) possible adoption of some form of consumer surcharges prior to project operations under certain circumstances, subject to resolution of tax problems regarding such surcharges; and (5) a consumer guarantee fee equal to the difference between the cost of service if the project were financed under the project sponsor debt guarantee approach and the cost of service under a consumer debt guarantee form of financing.

The consumer guarantee fee would be added to the out-of-pocket transportation cost for purposes of calculating the gas field price (under the "market value" formula described above). Thus, "the allowed field price would be approximately the same whether the project sponsor or consumer debt guarantee financing approach were used. However, since the delivered cost of gas is equal to the sum of the field price for gas plus the out-of-pocket transportation cost, consumers would receive gas at a delivered cost lower than market value, as compensation for their risk bearing."

To illustrate, the Commission calculated that, under the project sponsor debt guarantee approach, first year pretax cost of capital payments would be approximately $2.3 billion assuming a $10 billion capital cost, a 50/50 debt to equity ratio, an 18% after-tax return on equity, and a 10% interest rate on debt. Under the consumer debt guarantee financing approach, first year pretax cost of capital payments would be approximately $1.5 billion assuming a 75/25 debt-equity ratio and a 15% return on equity. Therefore, at a gas flow rate of 2.25 Bcf/d (or 821 million Mcf per

year), the first year (1983) consumer guarantee fee would be approximately $0.97/Mcf in nominal dollars, or $0.66/Mcf in 1975 dollars. "Such a fee would be equal to approximately 11% of the project's outstanding debt."

In the event a consumer debt guarantee approach were adopted, the Commission urged various actions to protect consumers from bearing unnecessary risks and costs. These included: (1) imposition of limits, if required, on the initial purchase of Alaskan gas reserves to ensure a reasonably broad distribution across domestic markets; (2) project equity investment to be at risk in the case of noncompletion or service interruption; (3) limitation of consumers' noncompletion liability to approximately 75% of total prudently incurred costs; (4) retention of residual power by federal regulatory authorities to terminate prospectively the all-events cost of service tariff, noncompletion agreements, and consumer surcharge arrangements, if extraordinary cost overruns should occur and the project becomes uneconomic to complete; and (5) contractual commitments by producers regarding minimum average daily volumes to be delivered to shippers, so that the extent of the consumer's risk can be better assessed.

The Commission also recommended certain actions to reduce regulatory risk. First, a procedure should be adopted whereby federal authorities would periodically decide whether costs during a given portion of the construction period were prudently incurred and are recoverable through the project's tariff. Second, if all-events cost of service tariffs and/or noncompletion agreements are required, the FPC would support legislation to bind future federal regulatory authorities to maintain and enforce such arrangements. Third, subject to reserving the right to review whether costs were prudently incurred, the FPC would support passthrough of costs on a current basis, as well as legislation binding federal regulatory authorities to maintain this treatment. Finally, the Commission declared, the Federal Government must maintain a dialogue with state utility commissions to discuss financing alternatives, and it should perhaps sponsor a conference in the near future to consider issues of regulatory risk at the state level, possible actions by the states to alleviate investor concerns, and the need for federal legislation to assure flow through of approved costs at the gas distribution company level.

In regard to financing plans proposed by the three applicants, the Commission considered the El Paso Alaska plan to be most feasible because of the anticipated availability of Title XI federal ship financing guarantees, avoidance of so-called "Canadian Basket" limitations on Canadian investments by U.S. life insurance companies, and its operation solely under the regulatory supervision of the United States. "Operating under a single regulatory authority makes it easier to implement innovations such as the variable rate of return on investment or all-events tariff concepts, which may prove to be essential in arranging a private financing."

Competitive Impact Assessment

The FPC's report to the President included a competitive impact assessment pursuant to a provision of the Alaska Natural Gas Transportation Act requiring the Commission to evaluate the "impact upon competition" for "each transportation system reviewed or considered." Because of the lack of information regarding which U.S. pipelines and distribution companies will obtain Alaskan gas, how much this gas will cost and what pricing method will be used, the Commission said any assessment of the competitive impact of the proposed transportation routes must necessarily be "judgmental."

The FPC concluded that certification of a particular Alaskan gas transportation system will not have any significant impact on pipeline competition within the United States. Though the choice of a particular system will affect the cost of

Alaskan gas between regions, that choice will not significantly affect inter-pipeline competition between regions because such competition generally occurs within a region.

The competitive impact of the Alaskan gas transportation system, the Commission continued, will be determined by a complex interaction of economic, regulatory and engineering factors. The two most important factors will be (1) extensive use of displacement procedures, and (2) imposition of a broad distribution of gas.

Transporting Alaskan gas through the Lower 48 States by displacement, the Commission stated, will entail a greater degree of coordination among U.S. pipelines than has existed to date. This need for coordination "could create the potential for collusive market conduct." On the other hand, if the ownership of Alaskan natural gas is to be widespread (as is recommended), "then transportation economics and the location of existing facilities dictate delivery by displacement for some gas under each proposed transportation system." The Commission stated its opinion that displacement procedures proposed by the various applicants are not in violation of the antitrust laws, although negotiations to implement these procedures could produce agreements of a noncompetitive nature beyond those necessary to effectuate the procedures. "The use of displacement cannot be allowed to serve as a vehicle for the proliferation of restrictive practices." Accordingly, the Commission will permit "only those practices which are indispensable to the successful operation of the displacement procedure."

The Commission stressed its intent to ensure widespread distribution of Alaskan gas through its authority to certificate sales. This means that volumes received by any individual pipeline will be limited, and that impact on overall supply costs will be approximately the same for all pipelines. Consequently, Alaskan gas will have a "neutral effect" on competition between pipelines in regional markets.

More difficult to assess, the Commission asserted, is the competitive impact of a broad distribution plan on the Alaskan gas supply market which, considering pre-1976 advance payment agreements which apportioned nearly all North Slope gas to sponsors of the Arctic Gas project, does not appear to have operated competitively in the past. Even though the advance payment program has been terminated, there is no assurance that the market for Alaskan gas will now operate competitively. The Commission, in fact, is "concerned about the potential for noncompetitive side agreements that may result from Alaskan gas sales." For example, with buyers unable to compete for Alaskan gas on the basis of price, "there will be an incentive for the oil companies to favor pipeline and gas distribution companies that can provide other benefits. One of these benefits could include an agreement by the buyer that he will not compete against the oil company or the oil company's affiliates in various energy markets. If these agreements do take place, they are likely to be tacit understandings that are not readily observed by government agencies."

Even though imposition of a plan for widespread distribution of Alaskan gas is an interference with the gas supply market, the Commission concluded, the overall impact "may be competitive if it reduces the likelihood of restrictive agreements in other energy markets."

The Commission added that the Alaska Natural Gas Transportation Act appears to require that the selected transportation system operate as a common carrier. While common carrier status is desirable under most circumstances because of its pro-competitive effect, the Commission declared, such status for an Alaskan gas transportation system is "incompatible" with the goal of effecting a private financing. Specifically, the presence of a common carrier creates an incentive to become a "free rider" and a disincentive to invest in the system. Hence, from a financing perspective, elimination of the common carrier provision may be required.

Other Matters

Section 5(c) of the Alaska Natural Gas Transportation Act directed the FPC to include in its report to the President a discussion of (1) volumes of Alaskan natural gas which would be available under each transportation system to each region of the U.S. -- directly, indirectly by displacement, or otherwise -- for each year of a 20-year period; (2) transportation costs and delivered prices of gas by region, again by year over a 20-year period; (3) the effects of such volumes, transportation costs and delivered prices on projected natural gas supply and demand in each region and on projected supplies of alternative fuels available by region to offset natural gas shortages occurring in such regions in each year; and (4) estimates of the total delivered cost to users of the natural gas to be transported by each system by year over a 20-year period.

In an effort to comply with the above provision, the FPC requested assistance from FEA which, in response, provided a series of long-term energy supply/demand and price projections under a variety of scenarios. These projections were developed from an existing FEA model (Project Independence Evaluation System -- PIES). The model was run for 1980 (as the base year), 1985 and 1990, applying delivered volumes and estimated costs of each project to 10 demand regions. Volumes were apportioned to the 10 regions on the basis of relative historical consumption. The model assumed a $13 price of imported oil and Alaskan field prices of $1 and $1.50/MMBtu. Three alternatives were examined under each price: (1) rolled-in pricing (Alaskan gas rolled-in with other interstate gas, assuming continued regulation of wellhead prices at current FPC-set rates); (2) incremental pricing (gas consumed in the industrial sector priced on an incremental basis, but with gas consumed in the residential and commercial sectors priced on a rolled-in basis); and (3) deregulation of new interstate gas at the wellhead.

The FPC stated that any conclusions possible from the FPC projections were subject to "considerable qualification" in view of the assumptions and methods.

Finally, the FPC report included some 52 recommended environmental and technical terms and conditions.

Alaska State Legislature

Senate

JUNEAU, ALASKA

Tuesday May 24

TO: Sen Rader

FR: Connie

RE: FPC gas route decision - discussion of financing & tariffs

The May 1 FPC document contains 80 pages on the subject of financing and tariffs. Several interesting points:

(1) Although the State's interest in financing is mentioned, no mention is made of the State's sale of its royalty gas (even though reference is made to the unwillingness of producers to sell.)

(2) Rate of Return - The report acknowledges that a higher return will be needed to attract financing due to the high risks. The hearing record concluded that with a 75/25 debt/equity ratio, a 15-17 % return on equity was too low. The TAPS line is referenced, predicting that with a 7-8% return allowed by the ICC on total assets, this will yield a 28-32% return on equity. (p. 44-45)

(3) Field Price for Gas - "Several factors indicate the need for an early resolution of the issue of the field price for Alaskan gas. First, according to Judge Litt, the gas producers have set as preconditions to entering into gas sales contracts, '...the prior establishment of a sale price, a disclaimer of vintage pricing, and a reversal of Commission policies interpreted by the procuers as requiring that they gurarantee future minimum delivery volumes regardless of field production capabilities.' Until such time as gas sales contracts are entered into, it will not be possible to deterimine which gas pipeline and distribution companies will receive the gas and thus which utilities will have an incentive to provide equity financing for a gas transportation system. Without parties willing to supply equity capital, no private financing for the project is feasible, For this reason alone, it is important to determine an appropriate field price as soon as possible...We, therefore, propose to establish in the near future a proceeding to determine an approprate field price for Prudhoe Bay gas as well as to examine the vintaging and throughput agreement issues." (p. 32-33)

(4) Daily volume The FPC notes how important an assured rate of gas flow is for obtaining financing. This leads me to believe that it is especially crucial for Alaska's conservation authority to not be overly optimistic now, nor expect that it will be allowed to halt flow in the future even if ultimate oil production is threatened: "Finally, the economic viability of any of these huge projects require the availability of substantial quantities of gas for shipment. If customers assume the risk or repaying the project's debt financing in the case of extended service interruption, it would be desirable to have a contractual commitment by the producers regarding the minimum average daily volume that will be delivered to the shipper so that the extent of the consumers' risk can be better assessed. We understand that similar through-put guarantees were made in the Alaskan oil pipeline financing. If gas producers are confident about their ability to supply adequate amounts of gas to justify building a gas transportation system then entering into an agreement would pose little risk to these companies. On the other hand, if the producers have significant uncertainties aobut the minimum deliverable volumes of gas, Federal decisionmakers and project sponsors should know the full details of such uncertainties before finally approving the design of the authorized system and proceeding with the project" (p. 69)
Note: I find it a bit disturbing that the FPC appears to think that the producers have full control over the gas volume produced. No where is the State of Alaska's authority to regulate production for conservation purposes ever mentioned, nor is the initial Plan of Operation referenced.

(5) Financing Alternatives - The report cites the testimony of the 3 competing routes, state public utilities and the US Treasury Dept. The FPC makes its recommendation that federal back-stopping should not be used until it becomes clear that private financing cannot be obtained otherwise. (The report notes that lack of a field price is a major reason why private financing has not yet proven up.)

(6) Incremental vs. Rolled-In Pricing - Despite assertions that Alaskan gas will be of a marketable price, the FPC suggests rolled-in pricing (just like Judge Litt), largely in order to induce financing. (p. 31)

(7) Gas distribtuion - The FPC argues strongly that gas sales should be made to a large number of purchasers with broad geographic distribution. This is for maximizing equity financing and to prevent economic disruption in the event of an extended interruption in service. (p. 37-38)

scomm

#21:17

Summary of Conversation with Mr Swanson of Jensen + Associates of November 30, 1976 - Gregg was in on the full conversation

~

Wanted to have some questions answered mostly dealing with provisions in contract dealing with

- removal of liquids
- pricing schemes
- transportation costs to State
- "cut outs" for State and Companies as well
- other things, such as
- termination provisions

~

His estimate after discussing some of these things and getting a better idea was essentially as follows:

- They will provide us with an independent / objective analysis, regardless of where the chips may fall.

- The portion which will take up most time will be the various pricing provisions
  - it will take time for colleagues, and
  - it will take time for bouncing ideas around

(1) The analysis will probably take the following amt of time.

Eight days of "senior" time; James Jensen and Swanson at $640/d + $520/d ($650/d for testimony) respectively — $4,640±

Fifteen days of "junior" time/people to do the detailed analysis and some of the pricing schemes (they have one person who is quite good and well versed in this area) at $300±/d — $4,500±

(2) Memo (or trip to AK) after analysis has been completed to confer with us and legislators (committee members). Gregg

suggested that instead of a trip to Alaska, the telephone would probably do almost as well considering the costs. The telephone costs were estimated at

$500.00 ±

③ Two days of testimony by Swanson at $650/d — $1,300

Two days travel at 520/d — 1,040

Four days expenses at appx. $50.00/d + transportation at $600.00 at appxl. — $800 ±

$ ~~14,940~~ 12,780

* Materials ⟶

Gregg seemed to think that [redacted] ? $12,000 (the figures mentioned on the phone) was reasonable Gregg mentioned $14,000 on the outside.

* They operate/charge on time + Materials

12/1/76
8:30

Summary of Lipton Call

Will be available for comment on the contract(s).

Either he or someone else from his org will be available although he prefers to come himself.

Would like to be scheduled as late as possible for appearance at hearings to review and "digest" other testimony and presentations. I told him that this would be alright. I further told him, we could keep him posted and informed on those things which we have some control over (such as the submission of consultants' analyses of the contract – he said he appreciated that).

12/2/76

Summary Call With Rush
Moody - 12/2/76 - 11:30

① Rush Moody has a trial scheduled for the dates we have tentatively scheduled for the hearings. The judge did not delay the dates. He will be unavailable from Jan 24 through 31 Therefore, he can be here the week of Jan. 17 or after the 31st.

He would also like to [redacted] visit with Sen Rader and other legislators for a couple of days before testifying (similar to Lipton, [redacted] but for different reasons)

② Fee Schedule -
Prefers to work on an hourly basis, but will work on a fixed fee if Sen Rader insists.

Here is his estimate -

Analysis	2 days
Prepare Summary	1 "
	3 - 3½ days

Written Views to Sen Rader in advance of his arrival	½ day
	4 ± days

travel (coming up)	1
"visiting" before testifying	2
testimony	1
travel (returning)	1
	9 ± days

Plus travel expenses and per diem while here (~ $1,000.00 ?)

He charges $100.00/hr;	
plus 9 days at $100.00/hr	$7,200.
plus	
travel + per diem	$1,000.
	$8,200

$10,000 on the outside

(3) He asked that we advise him ASAP of our dec. so he can start and schedule the work

12/3/76

Left word with Moody's firm for Moody to send us a confirming, brief note on the fee arrangement and the work he will do for us for our files.

JENSEN ASSOCIATES, INC.
84 STATE STREET BOSTON, MASSACHUSETTS 02109
TELEPHONE (617) 227-8115
TELEX 94-0057

November 30, 1976

Ms. Elke Kallab
Legislative Affairs Agency
Pouch Y
Juneau, Alaska 99811

Dear Ms. Kallab:

As we discussed over the telephone on Monday, November 29, 1976, Jensen Associates, Inc. is pleased to submit this proposal to the Legislative Affairs Agency to analyze the economics of the recently signed contract by which the State of Alaska has sold its royalty gas to Tenneco, Southern Natural Gas Company and El Paso Natural Gas Company.

OBJECTIVES

The objective of our analysis is to determine if the contract protects the interests of the State of Alaska and provides it with maximum economic values in the sale of its royalty natural gas over the term of the contract. We shall review the entire Contract, but we shall focus upon the pricing provisions and determine if they protect Alaska's interest in light of different future developments in the United States energy picture.

We shall also scrutinize the renegotiation and termination options, to insure that Alaska is protected in the event of major changes in energy policy and markets. We shall recommend changes in the contract where we believe they are appropriate. The weaknesses and strengths in the contract shall be identified.

We shall analyze the contract in light of recent legislative initiatives in natural gas and their economic impact. However, because others are examining the legal aspects of

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the contract, we shall not address issues in the sphere of legal counsel or concerning the standing of the contract and its provisions in the eyes of the Federal Power Commission or Legislation.

While we are prepared to perform such analysis, it is our understanding that this task will not involve analysis of the sale of natural gas liquids.

METHOD OF APPROACH

We shall draw upon our knowledge of the United States and world energy markets and future trends for this task. In particular we shall draw upon our extensive work in natural gas markets, pricing, and contracting to analyze this contract.

The output of our analysis shall be one or more memorandums which detail our findings, telephone consultation, and the presentation of our findings to the Alaska Legislature.

Our analysis shall be objective and based upon factual analysis and our independent judgement.

CONFLICT OF INTEREST

We do not believe that there is any conflict of interest in our analyzing this contract for the State of Alaska. As professional business and economic analysts our work is objective. While we do present our findings publicly where appropriate, it is as the results of objective analysis. We do not act as public advocates for clients.

As we discussed in our telephone conversation, I have recently presented expert testimony in FPC curtailment hearings on United Gas Pipe Line Company Docket Nos. RP71-29 and RP 71-120 (Phase II). This testimony was on behalf of

six intervenors: General Motors Corporation, Mississippi River Transmission Corporation, Natural Gas Pipeline Company of America, Southern Natural Gas Company, Texas Eastern Transmission Corporation, and Texas Gas Transmission Corporation. This was rebuttal testimony to United Gas Pipe Line Company witnesses. My testimony argued that the category II industrial customersin the United service area in East Texas, Louisiana, Mississippi, Alabama, and the Panhandle of Florida have no greater difficulty in obtaining alternate fuels when natural gas is curtailed than industrial customers further to the north. This work began in mid July, 1976 and ended after the testimony was presented in mid November, 1976. Our fees to Southern Natural Gas are about one percent of our annual billings.

We are performing no work at this time, or in the recent past, for the other purchasers of the royalty gas or for Exxon, Arco, BP or Sohio.

QUALIFICATIONS

Jensen Associates, Inc. is highly qualified by previous experience to perform this analysis. A statement of our qualifications is attached.

BUSINESS RELATIONSHIP

Jensen Associates, Inc., proposes that this work be performed on a time and expenses basis. Until we receive the contract we are not able to estimate the time required to perform proper analysis of it. After we have had a chance to review the contract we will provide a more detailed estimate of costs. However, for your budgeting purposes we would suggest that you plan for professional service fees of $10,000 - 15,000 plus expenses not to exceed 15% of professional service fees unless more than one trip to Alaska were to be required.

We will bill the Legislative Affairs Agency monthly, for payment within ten days, for professional services and expenses. Professional services will reflect the time spent on your behalf. Expenses incurred while working in your behalf on this assignment will be billed at their cost to us and will include travel, communications, report production, and other directly related costs.

Professional services will be billed at our customary rates for the individuals involved. For consulting these rates are: Mr. James T. Jensen, $640 per day; Dr. Carl V. Swanson, $520 per day; Ms. Nancy Pozar, $280 per day; Mr. Edwin F. Hardy, $480 per day; and Mr. John C. Gault, $360 per day. For the presentation of expert testimony the rates are: Mr. Jensen, $900 per day; and Dr. Swanson, $650 per day.

STAFF AND SCHEDULE

Based on present staff schedules I will be in charge of the project here. Mr. James T. Jensen, Mr. Edwin F. Hardy, Mr. John C. Gault, and Ms. Nancy J. Pozar are expected to work with me. When appropriate, other staff members with backgrounds

particularly appropriate to this study may be assigned to the project. Biographies of Mr. Jensen, Mr. Hardy, Mr. Gault, Ms. Pozar, and me are attached. We understand that we should look to you and Mr. Greg Ericson for general direction and policy decisions on behalf of the Legislative Affairs Agency of the State of Alaska.

Based on current commitments, we expect that we will send a memo describing our findings approximately one month after your authorization to proceed with this assignment. I am holding open my schedule for the week of January 24, 1977 for the legislative hearings.

GENERAL PROVISIONS

In the past we have provided analysis and counsel to clients in areas included in this proposal. This experience helps to qualify us to undertake the assignment described above and we expect to continue such work in the future.

To protect your interests we agree that any confidential information we may develop or have furnished to us by you during this assignment will be safeguarded and held in confidence. Furthermore, it is our practice in considering new assignments to decline them whenever it appears to us at all probable that our experience with a past or present client might be used improperly in the new assignment.

ACCEPTANCE

For the purpose of staff scheduling this proposal is made subject to acceptance within 30 days. Should you like more time to consider the proposal or to discuss modifications to it, please let us know.

We look forward to working with you on the analysis of Alaska's royalty gas sales contract, and we will devote our best efforts to accomplishing the objectives described above. If this proposal is acceptable to you, would you please sign and return the enclosed copy as authorization for us to proceed with the work.

Very truly yours,

Carl V. Swanson

Carl V. Swanson
Executive Vice President

CVS/jd

Accepted for_____

By_____

Title_____

Date_____

JENSEN ASSOCIATES, INC.

Consultants

in

ENERGY PLANNING, ECONOMICS, AND LOGISTICS

BOSTON

GENEVA WASHINGTON

CONSULTANTS IN ENERGY

Jensen Associates, Inc. is an independent consulting firm specializing in energy planning, economics and logistics.

We advise businesses, governments and investors worldwide in the interrelated areas of petroleum, natural gas, natural gas liquids, petrochemical feedstocks and electric power. Our focus is upon the business, government policy and economic issues of energy as they are shaped by the interplay of markets, technology, supply, the policies of governments, investments, and the paths of the world's economies.

Jensen Associates, Inc. provides expertise counseling based upon objective, factual analysis and independent judgment. Where appropriate and requested by the client, we will present and defend our findings publicly.

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SERVICES

Market Analysis

Jensen Associates, Inc. has analyzed the pricing, supply routes, supply quantities, interfuel competition, and fuel buyer's plans and price sensitivity of markets. This analysis has examined markets ranging in size from world markets to areas 100 miles in diameter. We have analyzed markets which have included all buyers of energy to specific buyers of specific fuels.

Planning

We provide planning services to energy companies on business strategy, annual plans, and planning techniques, and to large energy consumers on energy supply and fuel purchasing.

Forecasting

Jensen Associates, Inc. forecasts energy supply, demand, and price for clients and it forecasts the course of development of new energy sources. This has involved forecasts of world energy balances, natural gas supplies for the U.S., world LPG supply and demand, prices for petroleum, natural gas and liquefied petroleum gases, and the technical, financial, market and government policy forces acting upon emerging energy sources.

Investment Feasibility and Valuation

We have analyzed the economic feasibility of supply, logistic, and marketing investments in the energy business and have assisted clients to place a value upon existing energy businesses.

Pricing and Contracting

Jensen Associates, Inc. has helped both private and governmental clients set prices for energy, design price indexation formulas, and evaluate and design the price and terms of purchase and sale and logistical contracts. In addition, we have reviewed pricing and purchasing in governmental review and court proceedings as well as assisted in tax and royalty negotiations between producers and host governments.

Governmental Policy and Regulation

Jensen Associates, Inc. has recommended policies to governments and advised them on developments in energy. We have also presented expert testimony before legislative, regulatory, and judicial bodies concerning petroleum, natural gas, natural gas liquids and electric power issues.

Fuel Supply

We have assisted users of energy in their fuel planning and purchasing by analyzing energy development and its impact upon price and security of supply, evaluating price and supply arrangements, identifying supply sources, recommending logistical paths, and, where appropriate, presenting expert testimony.

CLIENTS

Jensen Associates, Inc. serves clients in North America, the Middle East, Europe, the Far East, and Latin America. Much of our consulting is confidential. Consequently, we do not publicize either our clients or the project work. However, the types of clients we serve include:

- integrated oil companies
- national oil companies
- electric power utilities
- governments
- natural gas and oil pipelines
- independent energy marketers
- gas utilities
- importers
- terminal operators
- international shippers
- oil and gas producers
- industrial consumers of energy
- legislatures
- chemical companies
- banks
- investors
- industry associations

PROJECT EXPERIENCE

The representative projects undertaken by Jensen Associates, Inc. provide a measure of our capabilities and experience.

International

- For a multinational oil company, an historical examination of petroleum movements in the Far East and the relationship of oil flows and tanker rates and product pricing in one country.

- For an OPEC country, development of a long-term international petroleum marketing strategy.

- For large fuel buyers, forecasts of international LPG supply and demand.

- For an OPEC national oil company, an analysis of worldwide energy supply and demand forecasts.

- For a foreign producer of LPG, identification of U.S. markets and customers for its product.

- For a national oil company of an OPEC nation, a survey of the major staff departments--economics and planning, supply and distribution, and tanker--of the major international oil companies with recommendations as to the function, organizational structure, and responsibilities of similar departments to be created within the nation's own national oil company.

- For a group of Middle East investors, analysis of the economic viability of a proposed crude and products transshipment terminal.

- For a client negotiating a contract with an OPEC national oil company, analysis and recommendations for a price index in a long-term contract based upon various prices for heating and fuel oil on the U.S. East Coast and Rotterdam.

- For a U.S. company, assistance in negotiations for the development and production of a newly-discovered oil field in an OPEC nation.

- For an international petroleum product shipper, an analysis of the U.S. LPG markets.

- For a European chemical company, analysis of natural gas feedstock contracts.

The representative North American projects undertaken by Jensen Associates, Inc. are classified below under the headings "Energy Industry" and "Government and Regulatory."

Energy Industry--North America

- For a natural gas pipeline company, an analysis of industrial markets, fuel pricing and interfuel competition.
- For oil and gas producers, analysis of Federal Power Commission and Congressional proposals and decisions upon interstate natural gas prices.
- For a petroleum marketer, fuel oil market analysis for a proposed oil terminal acquisition.
- For a major U.S. industrial manufacturing company, a forecasting of the supply of natural gas within the United States.
- For an oil and gas producer, analysis of provincial and federal policies on natural gas prices and contracts in Canada.
- For a major U.S. chemical company, forecasting the development of coal gasification and liquefaction plants in the U.S. considering technical, financial, regulatory, environmental and political factors.
- For a products transportation company, a market analysis for a proposed LPG import terminal.
- For an electrical power generation utility, forecasting the growth of electricity demand by petrochemical producers.
- For a medium-size oil producer, a forecast of the price of propane for twenty years including U.S. propane economics as well as estimates of worldwide availability.
- For a group of gas distribution companies, an analysis of the impact upon natural gas supply to them if the Federal Power Commission were to assume jurisdiction over wellhead sales of natural gas to intrastate pipelines.

- For an energy importer, an analysis of the risks and potential of alternatives of indexing the price of a product to various published price series within the United States and Europe.

- For a major manufacturing company, assistance in locating, negotiating for, and contracting to purchase supplies of natural gas at the wellhead, and assistance in negotiating for the wildcat drilling for natural gas.

- For an importer, economic and logistical analysis of liquefied natural gas (LNG) projects using a computer simulation model.

- For a major industrial company, assistance in the establishment of an energy forecasting program including evaluation of and recommendations upon the use of energy supply and demand models.

Government and Regulatory--North America

- For the Federal Energy Administration, an evaluation of the natural gas supply and curtailment situation for the heating season November 1975 to March 1976 and recommendations for and evaluation of alternative changes in regulations to bring increased supply to the interstate gas markets.

- For industrial consumers, pipelines and the U.S., extensive, expert testimony on the allocation of natural gas shortages before the Federal Power Commission, state public utility commissions and the U.S. Senate Committees on Commerce and on Interior and Insular Affairs.

- For an industry group of electricity consumers, analysis of the economic impact of changing electric power rate structures and expert testimony before the U.S. House of Representatives' Subcommittee on Energy and Power concerning the marginal cost pricing of electricity.

- For a government agency, an analysis of the impact upon petrochemical development of changes in pricing and regulation of natural gas.

- For the U.S. Congress, an analysis of natural gas shortages and a review of alternative policies.

- For the American Gas Association, expert testimony on natural gas reserves estimates before the U.S. House of Representatives' Subcommittee on Oversight and Investigation.

- For an electric power utility, expert testimony in a court proceeding on the future price of fuel oil.

STAFF

Jensen Associates, Inc. has an experienced and highly qualified staff of consultants with backgrounds in business, economics, engineering and governmental policy analysis. Most of the senior staff have advanced degrees and all have published papers or books, and have been asked to speak before professional groups. Biographies of individual staff members are available.

CARL V. SWANSON

Dr. Swanson is the Executive Vice President of Jensen Associates, Inc., an independent energy consulting firm with offices in Boston, Massachusetts, Washington, D.C., and Geneva, Switzerland. Dr. Swanson has consulted with private and government clients for the past fourteen years. His work addresses economic, and planning issues in petroleum, natural gas, LPG's and electricity rate design. This work has required forecasting supply, demand, and price of various forms of energy; analysis of markets; analysis of and recommendations for governmental action; assistance in pricing; the design of contract terms; examination of logistics; evaluation of supply sources; testimony in regulatory and legislative proceedings; and evaluation and analysis of proposed investments.

Dr. Swanson's recent consulting work includes:

- For producers, transporters, and marketers, several studies on the future supply, demand, pricing and markets for propane and butane.
- Testimony before the U. S. House of Representatives' Subcommittee on Energy and Power on marginal cost pricing of electricity.
- Analysis and policy recommendations to the U. S. government on natural gas supply and curtailment for the 1975-76 winter.
- Several studies on the logistics and economics of liquefied natural gas (LNG) import projects using models representing the shipping, terminalling, storage, and distribution of LNG.
- For a Mid-east client, evaluation of the economic feasibility of a crude and products transshipment terminal.
- Assistance on pricing and contract terms in natural gas, LPG and LNG purchase and sale, and transportation contracts including the development of price index formulas.
- Testimony on alternate fuels before the Federal Power Commission in the United Gas Pipe Line curtailment proceeding.

- Development and implementation for a chemical manufacturing organization of a model-based planning and strategic decision-making process which integrates marketing, production, raw material supply, and finance.

- For a petroleum products marketer, an evaluation of the market opportunities and risks faced by a pipeline terminal being considered for purchase.

- Forecasts of U. S. energy balances and petroleum products demand to 1985.

Prior to the founding of Jensen Associates, Inc., Dr. Swanson headed North Cape Associates which provided energy planning, logistics and economic consulting services. For five years, Dr. Swanson was on the faculty of M.I.T.'s Sloan School of Management where his teaching and research focused upon the practical use of computer information systems and models to improve marketing, production, investment and supply decision-making.

While at the Massachusetts Institute of Technology, Dr. Swanson consulted with private and governmental organizations including: Arthur D. Little, Inc., the RAND Corporation, the MITRE Corporation, the U. S. Army, and the Institute Nationale de la Recherche Agronomique in Paris.

Dr. Swanson has taught at the Graduate School of Business Studies in London; he was a U. S. delegate to the first U. S./ U.S.S.R. Management Conference, "Use of Computers for Management in Industry," Torino, Italy, 1970; and he has presented and published papers on information systems, modeling, planning, energy, and management. He received the degrees of Bachelor of Science in Economics and Electrical Engineering from the Massachusetts Institute of Technology, and Doctor of Philosophy in Management, with emphasis upon Economics and Finance, from M.I.T.'s Sloan School of Management.

NANCY J. POZAR

Nancy J. Pozar is a member of Jensen Associates, Inc. research staff and is primarily concerned with analysis of the supply side of energy questions, both in the United States and worldwide.

Ms. Pozar participated in an analysis of the Far East in which the region was examined as a supply/demand situation in and of itself. A net import/export balance for regional crude production and products availability for the Far East as a whole and then for each of six distinct sub-regions was derived. Sub-regional flows of crude and products were then examined and ultimately related to refining economics, tanker rates and then to product pricing in one particular country in the Far East.

On the supply side of U.S. energy problems, Ms. Pozar has examined both natural gas and petroleum availabilities in detail. She assisted in the preparation of legal testimony related to the currently limited domestic supply of natural gas. Final testimony was presented before Federal district court. Ms. Pozar has examined availability assumptions presented in recently published domestic energy analyses (among them the Project Independence Blueprint and the Ford Foundation energy study) looking comparatively at estimates of present reserves of energy resources, forecasts of future reserves additions and alternative resource availability as well as the effects of shifts in sectoral and regional demand on resource supplies.

Ms. Pozar has also been active in analyzing U.S. natural gas markets, regulation and pricing. In a recent major study, she focussed on the effects of gas price on gas supplies in both interstate and intrastate gas markets as well as on the interaction of these two markets. Federal Power Commission regulation was reviewed from the Natural Gas Act through more recent pricing mechanisms (emergency sales, limited-term certificates, optional pricing procedures, the small producer exemption and the uniform national rate). The interstate regulatory actions were then correlated with interstate gas supply and prices. On the intrastate side, major gas consuming and producing states were identified and the nature of the intrastate market in each was analyzed. Intrastate markets in the major gas producing states were then scrutinized as to changes in gas production, intrastate vs. interstate sales and sectoral consumption in the last few years. This analysis was subsequently used in forecasting both intrastate and interstate gas price levels.

Prior to joining Jensen Associates, Inc., Ms. Pozar was employed in the energy section of Arthur D. Little, Inc. She holds a Bachelor of Arts degree from the Department for Near and Middle Eastern Studies of the University of Michigan in Ann Arbor, Michigan.

EDWIN F. HARDY

Mr. Hardy is a Senior Professional and Washington Office Manager of Jensen Associates, Inc. He has managed and performed technical and economic analysis and lent his experience to business investment, supply, and marketing decisions in the energy area. Mr. Hardy has worked extensively in the analysis and forecasting of supplies and reserves of natural gas and the development of sources for synthetic and other supplemental supplies of gas. In addition, he has broad experience in the technology and economics of petroleum refining including market analysis and economics, and refinery technology and economics.

Prior to joining Jensen Associates, Inc., Mr. Hardy was Director of the Planning Division of the American Gas Association, responsible for its planning activities. He held the responsibility for coordinating and publishing the annual reserve estimates of natural gas and natural gas liquids in the United States, initiating and coordinating gas industry efforts to increase supply of natural gas and supplemental gas, developing research programs, and providing information, analysis, and forecasts for the public, the government, and the gas industry. In addition, Mr. Hardy had the responsibility for analysis of gas curtailments, LPG supply and demand, oil supply and oil imports. Mr. Hardy was the American Gas Association staff executive for the Gas Supply Committee and the Committee on Natural Gas Reserves and its observer for the Potential Gas Committee.

Prior to joining the American Gas Association, Mr. Hardy was in line management with the Atlantic Research Corporation for a number of years, becoming a Director and Plant Manager with overall responsibility for business acquisition, planning, budgeting, pricing, production, personnel administration, and all other activities associated with his plant.

Immediately after college, Mr. Hardy worked with the Humble Oil and Refining Company (now Exxon, USA) in Baton Rouge, Louisiana. There Mr. Hardy coordinated engineering and construction during the building of new petroleum refining units. He designed new petroleum products, performed the accompanying market and economic analysis, supervised the start-up of new plants and supported follow-on production operations. His last assignment at Humble was Technical Group Head in charge of mechanical engineering for all petroleum products with responsibility for economic evaluation, environmental impacts, utilization of waste heat, and the design of process units.

Mr. Hardy has a Bachelors Degree in Civil Engineering from the University of Virginia and has completed graduate courses at Louisiana State University in civil engineering, finance and business. Mr. Hardy is a registered professional engineer in the state of Louisiana and is a member of Tau Beta Pi, Phi Eta Sigma, and the Raven Society.

Mr. Hardy has presented a number of papers including "The Emergence of Gas Utilities as a Factor in World Petroleum Economics," "Future Natural Gas Supply Reactions to Higher Prices--Projections of the AGA TERA Model," and "SNG Supply and Demand."

JOHN C. GAULT

Dr. Gault is a member of the Professional Staff of Jensen Associates, Inc., an independent energy consulting firm, with offices in Boston, Massachusetts and Washington, D.C. Dr. Gault has consulted for several years for private and government clients in areas of energy planning and economics.

His fields of particular interest include energy economics, public utility regulation, the study of the effects of taxation upon the use of exhaustible resources, and analysis of legislation, markets, and investment proposals. Dr. Gault has contributed to research reports in the areas of electricity demand forecasting, peak load pricing, electric generation plant siting, and natural gas pricing and curtailment methods.

Other subjects of recent research have included analysis of Canadian petroleum tax policy, forecasting U.S. natural gas prices, forecasting energy demand and supply in the United States and Canada, study of the siting of oil transshipment terminals, and analysis of oil price indexing, alternative electric rate structures, and the effects of horizontal divestiture on the U.S. oil industry.

Dr. Gault also has experience in the negotiation and analysis of petroleum production agreements and collateral investment projects in oil producing countries.

Prior to joining Jensen Associates, Inc., Dr. Gault worked for approximately five years in Jordan, Lebanon, and Saudi Arabia. Assignments included teaching Economics at the American University of Beirut and feasibility analysis of large projects for an international investment bank, headquartered in Beirut. While pursuing his graduate education, Dr. Gault was a Research Associate in a natural gas cost analysis project.

Dr. Gault received a B.A. in Economics from Yale University and a Ph.D. in Economics and Middle Eastern Studies from Harvard University. He is a member of Phi Beta Kappa and received a Harvard Graduate Prize Fellowship. The title of his Ph.D dissertation is "Natural Gas Price Regulation and the Theory of Exhaustible Resources."

JAMES T. JENSEN

Mr. Jensen is President of Jensen Associates, Inc., an independent energy consulting firm located in Boston, Massachusetts. For eighteen years prior to his establishment of Jensen Associates, Inc., Mr. Jensen was a Senior Staff Member of the Energy Group of Arthur D. Little, Inc. Throughout his career, he has concentrated on petroleum, natural gas, and energy economics and their applications to the management of energy-oriented organizations. His major interests have been in the fields of energy planning, economics, and forecasting, and in the judgment of investment and feasibility decisions in the energy industries.

His clients cover a broad international spectrum from government agencies to corporate clients in energy or energy-related businesses. He is a recognized authority on the allocation of U.S. natural gas shortages and has testified extensively before the Federal Power Commission, various state public utility commissions, and U.S. Senate Committees on Interior and Insular Affairs and on Commerce. Trends in energy demand and competition have been a major part of his work. He has been in charge of several long-range research planning reports for the American Gas Association. He was responsible for an analysis and forecast of the United Kingdom energy market to 1990 and the probable impact of North Sea gas discoveries on energy competition and pricing there. For an oil producing government he undertook a study entitled, "The Outlook for the Worldwide Petroleum Industry."

Investment feasibility has been an important part of his assignments. His project feasibility studies have included refineries, transport facilities, petrochemical plants, and liquefied natural gas projects. The studies have involved projects in Europe, South America, North Africa, and the Far East as well as the United States.

Some of his recent publications include: "Prospects for Tanker Shipments of Liquefied Natural Gas into the Continental United States," A.I.M.E., February, 1967; "The Chemical Refinery in Perspective," American Chemical Society, 1970; "Energy Policy Issues for the United States During the Seventies," The National Energy Forum, 1971; "An Economic Rationale for Rationing Gas Supplies in the United States," A.I.M.E., 1973; "International Oil--Shortage, Cartel, or Emerging Resource Monopoly?" Vanderbilt Journal of Transnational Law, 1974.

He has been a visiting faculty member of the Petroleum Economics and Management Seminar conducted by Northwestern University and of both the Financial Analysts Seminar and Life

Officers Investment Seminar under the sponsorship of the University of Chicago Business School. He has also lectured on energy topics for programs at Harvard University and at M.I.T.

Mr. Jensen holds a Bachelor's degree in Chemical Engineering from the Massachusetts Institute of Technology and a Master's degree from the Harvard Graduate School of Business Administration. He is a member of the American Petroleum Institute, the Society of Petroleum Engineers, and the American Chemical Society.

Summary of Conversation with Rush Moody (from the time I came in) November 24 or 25?

Is interested! Will get back to us by Monday, if possible with a fee arrangement

Will do legal analysis of the relative benefits and burdens of the contracts if they are approved:

He thought he would need
2 days for analysis
2 days for testimony
2 days for travel

Record Room A
Supreme Court
Building

We told Mr Moody —

① That we did not want a long brief no one will read. Just a good review and analysis

② We informed him of our concern about C-o/-I. He agreed to

resend the list of clients they have (which he originally sent to Eric)

③ We hold him of the tentative dates for the hearings — Jan 24-26? —

THE LEGISLATURE

JUNEAU, ALASKA 99811
907-465-3800

LEGISLATIVE AFFAIRS AGENCY

December 20, 1976

MEMORANDUM

SUBJECT: Obligation of Funds

TO : Mort Charney
Director

FROM : Elke Kallab
Research Analyst

Please obligate the following amounts from the Joint Gas Pipeline Impact Committee account:

$19,000 Jensen Associates, Inc.

$11,000 Rush Moody

Attached are telegrams contracting for the services of the above organization and individual. Formal contracts for both will follow.

In addition, Gregg Erickson received verbal authorization from Senator Rader on December 17, 1976 to obligate the remaining Joint Gas Pipeline Impact Committee Funds to the Legislative Council. A confirming authorizing letter from Senator Rader will follow.

EK:cm

TO: Sen. John Rader

FYI

Elke K.

Speediset ® Moore Business Forms, Inc.

NIGHT LETTER

12/17/76

Rush Moody
Suite 1120
1701 Pennsylvania Avenue, N.W.
Washington, D.C. 20006

298- 5550

JUST CONTACTED SENATOR JOHN RADER THIS AFTERNOON AND HE HAS CONFIRMED THE ARRANGEMENTS OUTLINED IN YOUR LETTER OF DECEMBER 3. FORMAL CONTRACT FOR YOUR SIGNATURE WILL FOLLOW. DATES OF APPEARANCE WILL BE WORKED OUT AT MUTUAL CONVENIENCE. TOTAL AMOUNT OF CONTRACT INCLUDING TRAVEL AND EXPENSES NOT TO EXCEED $11,000.

GREGG K. ERICKSON

DIRECTOR OF RESEARCH

ek/mo/cm

NIGHT LETTER

12/17/76

Carl V. Swanson
Jensen Associates, Inc.
84 State Street
Boston, Massachusetts 02109

227-8115

JUST CONTACTED SENATOR RADER THIS AFTERNOON AND HE HAS CONFIRMED THE ARRANGEMENTS OUTLINED IN YOUR LETTER OF NOVEMBER 30. FORMAL CONTRACT FOR YOUR SIGNATURE WILL FOLLOW. DATES OF APPEARANCE WILL BE WORKED OUT AT MUTUAL CONVENIENCE. TOTAL AMOUNT OF CONTRACT INCLUDING TRAVEL AND EXPENSES NOT TO EXCEED $19,000.

GREGG K. ERICKSON

DIRECTOR OF RESEARCH

ek/mo/cm

Sum-mary of conversation with
Messrs Swanson and Jensen
12/7/76 1:45

① They have received the contract & on first examination it appears well drafted.

However, it is their feeling that gas shipments will not begin before 1983–1985.

– They feel that the perceptions on pricing policies will differ quite markedly in the '80s than from today, making their review of the economics of the sale much more subject to judgement and their long term experience in their field than previously anticipated.

– Furthermore, FPC's most recent ruling, 7-70-A, exempts Alaska specifically. While the FPC has been dealing with developing

nationwide rate-making policy, thus giving some indication what can be expected, the ruling makes it questionable what will happen in Alaska; again as it pertains to pricing. This will make their work more difficult since they cannot rely on lower 48 pricing developments.

Thus they wish to advise, (for budgeting purposes) that the outside figure of $15,000 should be considered the more reasonable one with the 15% maximum for expenses. (Thus, we are now talking about [redacted] $17,250 + travel + per diem, or almost $19,000.

(2) Both, Jensen and Swenson felt that it might be necessary to [redacted] provide for two trips to Alaska.

The additional trip - which would take place in early January - would be for the purpose of

discussing issues of concern, which you may not want "public".
(In reply to my question what they meant by this Mrs. Jensen mentioned something about a client who he had consulted what he thought was private; [redacted] it was subsequently released and Mr Jensen said he would have handled it differently had he known that his remarks would be made public.)

I told Leath (again) that at the moment the Chairman of the Jt JPIC did not see the legislature as being in an adversary position vis-à-vis the administration as regards the sale

They called to let us know how to "budget" for their services now that they have seen the contract.

MEMORANDUM

SUBJECT: Telephone Conversation with C.V. Swanson of Jenson Associates on November 29, 1976

TO : Gregg K. Erickson
Director of Research

FROM : Elke Kallab EK
Research Analyst

I called Mr. Swanson today 11/29/76 to inquire if he (his firm) would be interested and available to do the economic analysis of the royalty gas sales contracts.

The following is a summary of the conversation.

1. Yes, they can review the contract. They are well versed in the sale of natural gas. They are energy consultants, doing work for
   - -producers
   - -transporters
   - -consumers

2. They could meet the tentative hearing date of January 24.

3. Conflict of Interest-
   Mr. Swanson said that this must be determined, to a certain degree, by us since we might have our own ideas. He stated that they are an economic analysis firm, and that they perform objective work.

   Mr. Swanson mentioned the following examples of conceivable C-of-I.

   a. Jensen Associates represented the following companies in the United Gas Pipeline pro tem proceeding before

the FPC:

General Motors

Texas Eastern Gas Pipeline

Southern Natural

Texas Gas

Mississippi River Transmission

Natural Gas Pipeline of America

If I got the story straight, the issue involved a situation where United Gas Pipeline (are they the same as United Gas Transmission? They were one of the companies which had applied for a share of the royalty gas but "dropped out" since the share was too small. If they are we could have a problem, I suppose. I mentioned United Gas Transmission as a non-purchaser to Mr. Swanson, but did not get a reaction at the time. The similarity in name struck me only now! I will check with the Royalty Board) decided to restrict/curtail its sales of natural gas to certain industrial customers, which UGP claimed would have a difficult time converting to alternate fuels.

The above six companies, were (are) industrial customers of UGP affected negatively by the attempt of UGP to curtail deliveries.

In any event, I have asked that he give us the details in writing.

b. They represent two medium-sized oil companies

-Amerada-Hess

-American Independent Oil Co; as well as

-Signal Oil and Gas

(I guess only A-H could conceivably cause a problem).

c. Jenson Associates have represented major gas pipelines in the past.

Mr. Swanson said he would mail us the following immediately.

-their professional credentials;

-a list of some of their clients (past and present, particularly those which might be relevant to our contracting with them)

-their fee schedule;

-a copy of their standard contract form;

-an elaboration on possible C-of-I clients.

I indicated to Mr. Swanson that we were pressed for time, and that we wanted to finalize a contract as quickly as feasible, but that no decision would be made until all the data was available to submit to you and John, so he could decide.

EK:cm

Contract Between

State of Alaska

LEGISLATIVE AFFAIRS AGENCY

On Behalf Of

The Joint Gas Pipeline Committee

And

JENSEN ASSOCIATES, INC.

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, acting on behalf of the Alaska State Legislature, hereinafter referred to as the "Agency" and JENSEN ASSOCIATES, INC., hereinafter referred to as the "Consultant."

THE PURPOSE OF THIS AGREEMENT is to provide specialized professional economic consulting services to the Alaska State Legislature.

IT IS, THEREFORE, MUTUALLY AGREED THAT:

CLAUSE I - STATEMENT OF WORK

(a) The Consultant shall assume responsibility for the preparation of, and submit to the Agency, a brief written economic analysis of the State of Alaska's Proposed Royalty Gas Sales Agreements. This analysis shall be as described in the Consultant's proposal of November 30, 1976, attached to this contract as Appendix "A" and incorporated herein by this reference as though set out in full.

(b) The Consultant shall be available to appear and present expert witness testimony before committees of the Tenth Alaska State Legislature, First Session, on the subject of the above analysis.

CLAUSE II - PERIOD OF PERFORMANCE

(a) The Consultant shall submit to the Agency a final report containing the completed economic analysis on or before January 20, 1977.

(b) The Consultant shall be available to testify before committees of the Tenth Alaska State Legislature, First Session, at a time mutually agreeable to the Consultant and the Agency.

(c) This agreement may be terminated--

(1) By mutual consent; or

(2) For breach of the agreement or any material part thereof.

(d) This agreement expires June 30, 1977, or with the adjournment of the First Session of the Tenth Alaska State Legislature, or with the completion of the contract as provided in paragraphs (a) and (b) of Clause I.

CLAUSE III - COMPENSATION AND METHOD OF PAYMENT

(a) For the economic analysis of the State of Alaska's Proposed Royalty Gas Sales Agreements and two days of expert witness testimony thereon before legislative committees of the Tenth Alaska State Legislature, First Session, the Consultant shall receive up to $15,000.00 as follows:

(1) The amount of $10,000.00 upon completion and submission to the Agency of the economic analysis; and

(2) The amount of $5,000.00 upon the completion of expert witness testimony to legislative committees.

(b) The Consultant shall be reimbursed for expenses incurred in travel as follows:

(1) The costs of coach class air transportation to and from Alaska for the purpose of testifying before legislative committees; and

(2) The expenses incident to such travel, which shall be reimbursed according to AS 39.20 (currently, this provides reimbursement at a flat per diem rate of $50.00 per day).

(c) The Consultant shall be reimbursed for actual costs of telephone expenses incurred in the preparation of the economic analysis.

(d) Payments under paragraphs (b) and (c) of Clause III of this contract shall be made by the Agency to the Consultant in response to billings submitted to the Agency on a monthly basis.

(e) Total payments, including travel and expenses, to the Consultant under this contract shall not exceed $19,000.00, except by written authorization, in advance of the work or the incurring of the expense, by the Agency.

(f) In the event this contract is terminated prior to completion of the work specified in paragraphs (a) and (b) of Clause I, the Consultant's basic charge shall be recomputed on a prorated basis according to the percentage of work satisfactorily completed.

CLAUSE IV - RECORDS, DOCUMENTS, AUDIT

The Consultant shall maintain accurate records, including detailed time records. The records are subject to inspection at all reasonable times. All documents, reports and writings generated as a consequence of work done under this contract shall become the property of the State of Alaska, and on completion of the work or at the termination of this contract shall be delivered to the Agency.

CLAUSE V - RESOURCE AND REFERENCE MATERIAL NEEDED FOR PREPARATION OF THE ANALYSIS

(a) The Agency will assist the Consultant in obtaining source material as necessary, but final responsibility for these items rests with the Consultant.

(b) It is not contemplated that any confidential resource or reference material will be required to prepare the analysis.

CLAUSE VI - CONFIDENTIALITY OF COMMUNICATIONS

It is contemplated that all work done under this contract will be made public by the Legislature. However, all communications between the Agency or the Legislature and the Consultant, including the final report, shall be held confidential by the Consultant until released by the Agency, or other Legislative entity to which they were addressed.

CLAUSE VII - PRIOR, CURRENT AND FUTURE REPRESENTATION

(a) The letter of proposal from the Consultant, dated November 30, 1976 describes the past representation of a client known to have an interest in the disposition of Alaska natural gas. The Agency has determined that this does not constitute a conflict of interest for the purposes of this contract.

(b) The Consultant shall, during the period of this agreement, notify the Agency of any new clients or change in status of any existing clients which might tend to create a conflict of interest.

(c) The Consultant agrees that prior to the termination of the contract in accordance with Clause II, he shall not undertake to represent any client--

(1) In proceedings on Alaska natural gas transportation issues before the Federal Power Commission or the U.S. Department of the Interior; or

(2) In proceedings concerning Alaska natural gas before any agency or instrumentality of the State of Alaska.

CLAUSE VIII - OTHER AGREEMENTS OR UNDERSTANDINGS

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement.

JENSEN ASSOCIATES, INC.

Carl V. Swanson

Date

LEGISLATIVE AFFAIRS AGENCY
(By direction of the
Chairman of the
Joint Gas Pipeline Committee)

Gregg K. Erickson

12/21/76
Date

Approved as to Form

Billy J. Pearson
Agency Legal Counsel

Dec. 27, 1976
Date

JENSEN ASSOCIATES, INC.
94 STATE STREET BOSTON, MASSACHUSETTS 02109
TELEPHONE (617) 227-8115
TELEX 94-0057

November 30, 1976

Ms. Elke Kallab
Legislative Affairs Agency
Pouch Y
Juneau, Alaska 99811

Dear Ms. Kallab:

As we discussed over the telephone on Monday, November 29, 1976, Jensen Associates, Inc. is pleased to submit this proposal to the Legislative Affairs Agency to analyze the economics of the recently signed contract by which the State of Alaska has sold its royalty gas to Tenneco, Southern Natural Gas Company and El Paso Natural Gas Company.

OBJECTIVES

The objective of our analysis is to determine if the contract protects the interests of the State of Alaska and provides it with maximum economic values in the sale of its royalty natural gas over the term of the contract. We shall review the entire Contract, but we shall focus upon the pricing provisions and determine if they protect Alaska's interest in light of different future developments in the United States energy picture.

We shall also scrutinize the renegotiation and termination options, to insure that Alaska is protected in the event of major changes in energy policy and markets. We shall recommend changes in the contract where we believe they are appropriate. The weaknesses and strengths in the contract shall be identified.

We shall analyze the contract in light of recent legislative initiatives in natural gas and their economic impact. However, because others are examining the legal aspects of

the contract, we shall not address issues in the sphere of legal counsel or concerning the standing of the contract and its provisions in the eyes of the Federal Power Commission or Legislation.

While we are prepared to perform such analysis, it is our understanding that this task will not involve analysis of the sale of natural gas liquids.

METHOD OF APPROACH

We shall draw upon our knowledge of the United States and world energy markets and future trends for this task. In particular we shall draw upon our extensive work in natural gas markets, pricing, and contracting to analyze this contract.

The output of our analysis shall be one or more memorandums which detail our findings, telephone consultation, and the presentation of our findings to the Alaska Legislature.

Our analysis shall be objective and based upon factual analysis and our independent judgement.

CONFLICT OF INTEREST

We do not believe that there is any conflict of interest in our analyzing this contract for the State of Alaska. As professional business and economic analysts our work is objective. While we do present our findings publicly where appropriate, it is as the results of objective analysis. We do not act as public advocates for clients.

As we discussed in our telephone conversation, I have recently presented expert testimony in FPC curtailment hearings on United Gas Pipe Line Company Docket Nos. RP71-29 and RP 71-120 (Phase II). This testimony was on behalf of

six intervenors: General Motors Corporation, Mississippi River Transmission Corporation, Natural Gas Pipeline Company of America, Southern Natural Gas Company, Texas Eastern Transmission Corporation, and Texas Gas Transmission Corporation. This was rebuttal testimony to United Gas Pipe Line Company witnesses. My testimony argued that the category II industrial customers in the United service area in East Texas, Louisiana, Mississippi, Alabama, and the Panhandle of Florida have no greater difficulty in obtaining alternate fuels when natural gas is curtailed than industrial customers further to the north. This work began in mid July, 1976 and ended after the testimony was presented in mid November, 1976. Our fees to Southern Natural Gas are about one percent of our annual billings.

We are performing no work at this time, or in the recent past, for the other purchasers of the royalty gas or for Exxon, Arco, BP or Sohio.

QUALIFICATIONS

Jensen Associates, Inc. is highly qualified by previous experience to perform this analysis. A statement of our qualifications is attached.

BUSINESS RELATIONSHIP

Jensen Associates, Inc., proposes that this work be performed on a time and expenses basis. Until we receive the contract we are not able to estimate the time required to perform proper analysis of it. After we have had a chance to review the contract we will provide a more detailed estimate of costs. However, for your budgeting purposes we would suggest that you plan for professional service fees of $10,000 - 15,000 plus expenses not to exceed 15% of professional service fees unless more than one trip to Alaska were to be required.

We will bill the Legislative Affairs Agency monthly, for payment within ten days, for professional services and expenses. Professional services will reflect the time spent on your behalf. Expenses incurred while working in your behalf on this assignment will be billed at their cost to us and will include travel, communications, report production, and other directly related costs.

Professional services will be billed at our customary rates for the individuals involved. For consulting these rates are: Mr. James T. Jensen, $640 per day; Dr. Carl V. Swanson, $520 per day; Ms. Nancy Pozar, $280 per day; Mr. Edwin F. Hardy, $480 per day; and Mr. John C. Gault, $360 per day. For the presentation of expert testimony the rates are: Mr. Jensen, $900 per day; and Dr. Swanson, $650 per day.

STAFF AND SCHEDULE

Based on present staff schedules I will be in charge of the project here. Mr. James T. Jensen, Mr. Edwin F. Hardy, Mr. John C. Gault, and Ms. Nancy J. Pozar are expected to work with me. When appropriate, other staff members with backgrounds

particularly appropriate to this study may be assigned to the project. Biographies of Mr. Jensen, Mr. Hardy, Mr. Gault, Ms. Pozar, and me are attached. We understand that we should look to you and Mr. Greg Ericson for general direction and policy decisions on behalf of the Legislative Affairs Agency of the State of Alaska.

Based on current commitments, we expect that we will send a memo describing our findings approximately one month after your authorization to proceed with this assignment. I am holding open my schedule for the week of January 24, 1977 for the legislative hearings.

GENERAL PROVISIONS

In the past we have provided analysis and counsel to clients in areas included in this proposal. This experience helps to qualify us to undertake the assignment described above and we expect to continue such work in the future.

To protect your interests we agree that any confidential information we may develop or have furnished to us by you during this assignment will be safeguarded and held in confidence. Furthermore, it is our practice in considering new assignments to decline them whenever it appears to us at all probable that our experience with a past or present client might be used improperly in the new assignment.

ACCEPTANCE

For the purpose of staff scheduling this proposal is made subject to acceptance within 30 days. Should you like more time to consider the proposal or to discuss modifications to it, please let us know.

We look forward to working with you on the analysis of Alaska's royalty gas sales contract, and we will devote our best efforts to accomplishing the objectives described above. If this proposal is acceptable to you, would you please sign and return the enclosed copy as authorization for us to proceed with the work.

Very truly yours,

Carl V. Swanson

Carl V. Swanson
Executive Vice President

CVS/jd

Accepted for_____

By_____

Title_____

Date_____

Contract Between

State of Alaska

LEGISLATIVE AFFAIRS AGENCY

On Behalf Of

The Joint Gas Pipeline Committee

And

RUSH MOODY, JR., ESQ.

Of

Vinson, Elkins, Searls, Connally & Smith

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, acting on behalf of the Alaska State Legislature, hereinafter referred to as the "Agency," and MR. RUSH MOODY, JR., hereinafter referred to as the "Consultant."

THE PURPOSE OF THIS AGREEMENT is to provide specialized professional legal consulting services to the Alaska State Legislature.

IT IS, THEREFORE, MUTUALLY AGREED THAT:

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(a) The Consultant shall assume responsibility for the preparation of, and submit to the Agency a short written legal analysis of "the benefits and burdens" accruing to the State of Alaska's Proposed Royalty Gas Sales Agreements. This analysis shall be as described in the Consultant's letter of December 3, 1976, attached to this contract as Appendix "A" and incorporated herein by this reference as though set out in full.

(b) The Consultant shall, at a time mutually agreeable to the Consultant and the Agency, appear and present expert witness testimony before committees of the Tenth Alaska State Legislature, First Session, on the subject of the above analysis.

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(a) The Consultant shall submit to the Agency the report containing the legal summary on or before January 20, 1977.

(b) The Consultant shall be available to testify before committees of the Tenth Alaska State Legislature, First Session, at a time mutually agreeable to the Consultant and the Agency.

(c) This agreement may be terminated--

(1) By mutual consent; or

(2) For breach of the agreement or any material part thereof.

(d) This agreement expires June 30, 1977, or with the adjournment of the First Session of the Tenth Alaska State Legislature, or with the completion of the contract as provided in paragraphs (a) and (b) of Clause I.

CLAUSE III - COMPENSATION AND METHOD OF PAYMENT

(a) For the legal analysis of the State of Alaska's Proposed Royalty Gas Sales Agreements and two days of expert witness testimony thereon before legislative committees of the Tenth Alaska State Legislature, First Session, the Consultant shall receive up to $9,000.00 as follows:

(1) The amount of $6,000.00 upon completion and submission to the Agency of the legal analysis; and

(2) The amount of $3,000.00 upon the completion of expert witness testimony to legislative committees.

(b) The Consultant shall be reimbursed for expenses incurred in travel as follows:

(1) The costs of coach class air transportation to and from Alaska for the purpose of testifying before legislative committees; and

(2) The expenses incident to such travel, which shall be reimbursed according to AS 39.20 (currently, this provides reimbursement at a flat per diem rate of $50.00 per day).

(c) The Consultant shall be reimbursed for actual costs of telephone expenses incurred in the preparation of the economic analysis.

(d) Payments under paragraphs (b) and (c) of Clause III of this contract shall be made by the Agency to the Consultant in response to billings submitted to the Agency on a monthly basis.

(e) Total payments, including travel and expenses, to the Consultant under this contract shall not exceed $11,000.00, except by specific written authorization of the excess amount by the Agency.

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The Consultant shall maintain accurate records, including detailed time records. The records are subject to inspection at all reasonable times. All documents, reports and writings generated as a consequence of work done under this contract shall become the property of the State of Alaska, and on completion of the work or at the termination of this contract shall be delivered to the Agency.

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(a) Specific requests for information regarding details of negotiations and areas of compromise leading to the finalization of the Proposed Royalty Gas Sales Agreements will be made available to the Consultant by appropriate state agencies.

(b) The Agency will assist the Consultant in obtaining other source material as necessary, but final responsibility for these items rests with the Consultant.

(c) It is not contemplated that any confidential resource or reference material will be required to prepare the analysis.

CLAUSE VI - CONFIDENTIALITY OF COMMUNICATIONS

It is contemplated that all work done under this contract will be made public by the Legislature. However, all communications between the Agency or the Legislature and the Consultant, including the final report, shall be held confidential by the Consultant until released by the Agency, or other Legislative entity to which they were addressed.

CLAUSE VII - PRIOR, CURRENT AND FUTURE REPRESENTATION

Except as disclosed in Consultant - Letter of [illegible], 1976,

(a) The Consultant and his Firm do not represent any client who has, a material interest in the disposition of the Alaska natural gas to be disposed of under this contract, as provided in paragraph (d) of Clause II.

(b) The Consultant shall, during the period of this agreement, notify the Agency of any clients, new clients, or change in status of existing clients which might create a conflict of interest.

(c) The Consultant agrees that prior to the termination of the contract provided in Clause II, whichever comes first, he shall not undertake to represent any client--

(1) In proceedings on Alaska natural gas transportation issues before the Federal Power Commission or the U.S. Department of the Interior; or

(2) In proceedings concerning Alaska natural gas before any agency or instrumentality of the State of Alaska.

CLAUSE VIII - OTHER AGREEMENTS OR UNDERSTANDINGS

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the sub-

ject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement.

VINSON, ELKINS, SEARLS, CONNALLY & SMITH

Rush Moody, Jr.

Jan 11, 1977
Date

LEGISLATIVE AFFAIRS AGENCY
(By direction of the
Chairman of the
Joint Gas Pipeline Committee)

Gregg K. Erickson

2/27/76
Date

Approved as to Form

Agency Legal Counsel

Dec 27, 1976
Date

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TELEX: 24140

December 3, 1976

Ms. Elke Tallab
Legislative Affairs Agency
State of Alaska
Pouch Y
Juneau, Alaska 99811

Dear Elke:

Advice to the Legislature with respect to the contracts for sale of the State's royalty gas would involve the following:

(1) Review of contracts.

(2) Review of Commissioner Martin's negotiation files, or summaries of those files, to understand the areas of compromise.

(3) Preparation of an analysis of the contracts from the standpoint of the benefits and burdens accruing to the State.

(4) Conferences in Alaska with appropriate legislative and executive department people.

(5) Appearance at a hearing for exposition of my opinions.

It is difficult to assess the time necessary for the accomplishment of these tasks since I do not know what volume of material is involved for an intelligent appraisal of the contracts, and, accordingly, it would be difficult for me to establish a fixed fee for the Legislature's consideration. I would prefer, therefore, to consider this representation on the basis of my standard hourly charge of $100 per hour, plus reimbursement of necessary travel and telephone expense.

On the basis of the best guess that I can make at this time, it seems to me that the total effort should not involve more than 70 to 80 hours. In arriving at this estimate, I am assuming that the Legislature would be interested only in my opinions concerning the contracts as negotiated; if my representation involved redrafting or renegotiation efforts, in conjunction with a possible Legislative conditional approval of the contracts if they are amended in certain respects, then, of course, the time involved could be substantially greater.

If this work is undertaken, I would expect to begin it immediately upon receipt of the necessary documents and files, and I would anticipate that I would be prepared to come to Alaska anytime after February 1, 1977 for the necessary conferences and hearings. I would expect to regard the representation as completed upon exposition of my views to the appropriate Legislative committee. I understand, of course, that it would be wholly inappropriate for me to accept any other representation with respect to these contractual matters while I am representing the State.

Please let me hear from you at your earliest convenience. I can hold my calendar open to meet the time schedules suggested in this letter for a reasonable period of time, but the necessity for other commitments will arise fairly soon.

If you need anything further from me, please do not hesitate to call.

Best regards,

Very truly yours,

Rush Moody, Jr.

RM:bw

VINSON, ELKINS, SEARLS, CONNALLY & SMITH
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LONDON OFFICE
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December 30, 1976

Mr. Gregg K. Erickson
Director, Research Services
Legislative Affairs Agency
State of Alaska
Pouch Y, State Capitol
Juneau, Alaska 99811

Dear Gregg:

I have received your wires of December 17 and 18, and I will look forward to hearing from you further.

I enclose copies of letters which I wrote on April 16 to Guy Martin, and on May 4 to Eric Eckholm with respect to Vinson, Elkins' general range of client representation. I know of no changes since the letter of May 4, except that my firm has officially withdrawn from representation of Northwest in the FPC transportation case.

If you need anything further from me, please do not hesitate to call.

With best regards,

Very truly yours,

Rush Moody, Jr.

RM:bw
Encl.

May 4, 1976

Mr. Eric Eckholm
Administrative Assistant
Gas Pipeline Impact Committee
Alaska State Legislature
Juneau, Alaska 99811

Dear Eric:

Thank you for your letter of April 28. You will never convince me that sunshine in Juneau is rare, since my personal experience is that the sun shines at least 80 percent of the time.

I understand from your letter that you have a copy of my advice to Guy Martin of various client representation which Vinson, Elkins, is, and has been, involved in. The situation is, simply, that Vinson, Elkins does enjoy a wide representation of a number of clients which are, or might be, affected by the manner and means of Alaska's resource development. The firm represents substantial energy users with plants in many different parts of the country; the firm represents interstate transporters of natural gas such as Texas Eastern Transmission Company, Transwestern Pipeline Company, and Panhandle Eastern Pipeline Company; the firm represents producers such as Shell, Mobil, and Union of California; and the firm represents suppliers of equipment and materials to the producing and transmission sector, such as Rowan Companies, Inc. and Reed Tool company. Obviously I am not trying to be exhaustive in my listing of clients, since it is the nature of the representation, rather than the volume of the representation, which seems to me to be material. Insofar as I can determine, the firm's representation of clients such as those named above has not involved appearance in any proceeding where the State of Alaska is a party, with the exception of the representation, which I mentioned in my letter to Guy Martin, of Northwest Pipeline

Company. For that client, Vinson, Elkins has, for many months, participated in the FPC proceedings relating to transportation of North Slope gas. We are, however, in the process of withdrawing from the Northwest representation, and after this week, we will not be representing Northwest before the FPC in this case. I understand that the firm has also rendered advice to Union of California with respect to some of its Cook Inlet affairs, and advice has been given to Rowan with respect to some North Slope contract matters.

I have not appeared for Northwest in the FPC proceeding, and quite obviously will not do so. This work has been handled by other attorneys in the firm. I have not personally dealt with Union of California or with Rowan on any Alaskan matter.

From newspaper accounts, I understand that one of the companies which have been in negotiation with the State for its royalty gas is United Gas Pipe Line Company, and I know from my earlier work for the Committee that Tennessee Gas Pipeline Company has also been involved. You should be aware that the firm is handling one piece of business (not related to Alaska) for United, and I have undertaken one legal matter (not related to Alaska) for Tennessee Gas Transmission Company.

It was with the realization that the legal representation which I undertake personally is crucial to a decision as to whether I can, or should, represent the State or undertake new work for the Committee, that I undertook to spell out these matters for Guy Martin before I would discuss representation with him; I think it equally important that my firm's representation be made clear because I am a partner in this firm, what the firm does necessarily has a relationship to what I do.

This whole area of possible conflicts is one about which there must be no misunderstanding. I do not feel it appropriate to commit myself to further representation of the Committee, if representation is tendered, without knowing in considerable detail the nature of the work that the Committee would expect of me, for it is only in the light of the specifics that I could judge, and the Committee could judge, whether a conflict exists, or whether one might reasonably be anticipated to arise in the future.

All of this makes for a difficult letter for me to write because I have enjoyed my work for the Committee, I would like to believe that it has been constructive, and I would like to remain involved in trying to assist in the development of rational and responsible State policies with respect to its natural resources. I truly believe that Alaska has a most rare opportunity of planning wisely for its future, and that this is the critical time for the State to exercise initiative.

Eric, I think it would be best if you discussed this letter with Senator Rader, and let him discuss it with the Committee, if he deems this to be an appropriate course of action, and then let me know whether we should talk further about legal representation. I understand the necessity to avoid the appearance of a conflict of interest, irrespective of whether an actual conflict exists, and indeed I feel so strongly about this matter that if anyone has any question whatsoever as to the propriety of my doing any further work for the Committee, I would not want to go further.

My best regards to you, to Senator Rader, and to the members of the Committee, all of whom I have so enjoyed knowing and working with.

Very truly yours,

Rush Moody, Jr.

RM:bw

April 16, 1976

Commissioner Guy R. Martin
Department of Natural Resources
The State of Alaska
Pouch M
Juneau, Alaska 99811

Dear Guy:

I greatly appreciate your call, but before we discuss my representation of the State of Alaska further, you need to be aware of my firm's existing representation of clients who are or might be involved in Alaska.

Generally, Vinson, Elkins represents a number of clients with oil and gas interests, either as producers, transporters, users, or suppliers of equipment and services. For example, the firm represents Union Oil of California, Rowan Drilling Co., Southern Natural Gas Co., Texas Eastern Pipeline Co., Panhandle Eastern Pipe Line Co., Tennessee Gas Pipeline Co., Northwest Pipeline Co. and United Gas Pipeline Co. in some matters. Virtually all of this representation is in connection with non-Alaskan matters, although counsel has been given to Union with respect to some Cook Inlet problems, and Northwest Pipeline has had Vinson, Elkins representation in connection with its FPC application to transport a portion of the North Slope gas.

You should weigh carefully whether my services to the State would create any possible problems or difficulties, and I must make sure that I am not creating a conflict of interest situation. I will talk with my partners, but you should let me know as

quickly as possible whether or not, under the circumstances, the representation you have in mind is proper and appropriate from the State's point of view.

With best regards,

Rush Moody, Jr.

RM:bw

Contract Between

State of Alaska

LEGISLATIVE AFFAIRS AGENCY

On Behalf Of

The Joint Gas Pipeline Committee

And

RUSH MOODY, JR., ESQ.

Of

Vinson, Elkins, Searls, Connally & Smith

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IN WITNESS WHEREOF, the parties have executed this agreement.

VINSON, ELKINS, SEARLS, CONNALLY & SMITH

Rush Moody, Jr.

Date

LEGISLATIVE AFFAIRS AGENCY
(By direction of the
Chairman of the
Joint Gas Pipeline Committee)

Gregg K. Erickson

2/27/76
Date

Approved as to Form

Agency Legal Counsel

Dec. 27, 1976
Date

Appendix "A"

VINSON, ELKINS, SEARLS, CONNALLY & SMITH
ATTORNEYS AT LAW
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LONDON OFFICE
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LONDON, W1X 7PB, ENGLAND
TEL: 01 491-7236
TELEX: 24140

December 3, 1976

Ms. Elke Tallab
Legislative Affairs Agency
State of Alaska
Pouch Y
Juneau, Alaska 99811

Dear Elke:

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Best regards,

Very truly yours,

Rush Moody, Jr.

RM:bw

JENSEN ASSOCIATES, INC.

Consultants

in

ENERGY PLANNING, ECONOMICS, AND LOGISTICS

BOSTON

GENEVA WASHINGTON

CONSULTANTS IN ENERGY

Jensen Associates, Inc. is an independent consulting firm specializing in energy planning, economics and logistics.

We advise businesses, governments and investors worldwide in the interrelated areas of petroleum, natural gas, natural gas liquids, petrochemical feedstocks and electric power. Our focus is upon the business, government policy and economic issues of energy as they are shaped by the interplay of markets, technology, supply, the policies of governments, investments, and the paths of the world's economies.

Jensen Associates, Inc. provides expertise counseling based upon objective, factual analysis and independent judgment. Where appropriate and requested by the client, we will present and defend our findings publicly.

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Telephone: 471-8446
Telex: 23358/TRADU CH

WASHINGTON, D.C.

1625 I Street, N.W.
Washington, D.C., U.S.A. 20006

Telephone: (202) 659-4226

SERVICES

Market Analysis

Jensen Associates, Inc. has analyzed the pricing, supply routes, supply quantities, interfuel competition, and fuel buyer's plans and price sensitivity of markets. This analysis has examined markets ranging in size from world markets to areas 100 miles in diameter. We have analyzed markets which have included all buyers of energy to specific buyers of specific fuels.

Planning

We provide planning services to energy companies on business strategy, annual plans, and planning techniques, and to large energy consumers on energy supply and fuel purchasing.

Forecasting

Jensen Associates, Inc. forecasts energy supply, demand, and price for clients and it forecasts the course of development of new energy sources. This has involved forecasts of world energy balances, natural gas supplies for the U.S., world LPG supply and demand, prices for petroleum, natural gas and liquefied petroleum gases, and the technical, financial, market and government policy forces acting upon emerging energy sources.

Investment Feasibility and Valuation

We have analyzed the economic feasibility of supply, logistic, and marketing investments in the energy business and have assisted clients to place a value upon existing energy businesses.

Pricing and Contracting

Jensen Associates, Inc. has helped both private and governmental clients set prices for energy, design price indexation formulas, and evaluate and design the price and terms of purchase and sale and logistical contracts. In addition, we have reviewed pricing and purchasing in governmental review and court proceedings as well as assisted in tax and royalty negotiations between producers and host governments.

Governmental Policy and Regulation

Jensen Associates, Inc. has recommended policies to governments and advised them on developments in energy. We have also presented expert testimony before legislative, regulatory, and judicial bodies concerning petroleum, natural gas, natural gas liquids and electric power issues.

Fuel Supply

We have assisted users of energy in their fuel planning and purchasing by analyzing energy development and its impact upon price and security of supply, evaluating price and supply arrangements, identifying supply sources, recommending logistical paths, and, where appropriate, presenting expert testimony.

CLIENTS

Jensen Associates, Inc. serves clients in North America, the Middle East, Europe, the Far East, and Latin America. Much of our consulting is confidential. Consequently, we do not publicize either our clients or the project work. However, the types of clients we serve include:

- integrated oil companies
- national oil companies
- electric power utilities
- governments
- natural gas and oil pipelines
- independent energy marketers
- gas utilities
- importers
- terminal operators
- international shippers
- oil and gas producers
- industrial consumers of energy
- legislatures
- chemical companies
- banks
- investors
- industry associations

PROJECT EXPERIENCE

The representative projects undertaken by Jensen Associates, Inc. provide a measure of our capabilities and experience.

International

- For a multinational oil company, an historical examination of petroleum movements in the Far East and the relationship of oil flows and tanker rates and product pricing in one country.

- For an OPEC country, development of a long-term international petroleum marketing strategy.

- For large fuel buyers, forecasts of international LPG supply and demand.

- For an OPEC national oil company, an analysis of worldwide energy supply and demand forecasts.

- For a foreign producer of LPG, identification of U.S. markets and customers for its product.

- For a national oil company of an OPEC nation, a survey of the major staff departments--economics and planning, supply and distribution, and tanker--of the major international oil companies with recommendations as to the function, organizational structure, and responsibilities of similar departments to be created within the nation's own national oil company.

- For a group of Middle East investors, analysis of the economic viability of a proposed crude and products transshipment terminal.

- For a client negotiating a contract with an OPEC national oil company, analysis and recommendations for a price index in a long-term contract based upon various prices for heating and fuel oil on the U.S. East Coast and Rotterdam.

- For a U.S. company, assistance in negotiations for the development and production of a newly-discovered oil field in an OPEC nation.

- For an international petroleum product shipper, an analysis of the U.S. LPG markets.

- For a European chemical company, analysis of natural gas feedstock contracts.

The representative North American projects undertaken by Jensen Associates, Inc. are classified below under the headings "Energy Industry" and "Government and Regulatory."

Energy Industry--North America

- For a natural gas pipeline company, an analysis of industrial markets, fuel pricing and interfuel competition.

- For oil and gas producers, analysis of Federal Power Commission and Congressional proposals and decisions upon interstate natural gas prices.

- For a petroleum marketer, fuel oil market analysis for a proposed oil terminal acquisition.

- For a major U.S. industrial manufacturing company, a forecasting of the supply of natural gas within the United States.

- For an oil and gas producer, analysis of provincial and federal policies on natural gas prices and contracts in Canada.

- For a major U.S. chemical company, forecasting the development of coal gasification and liquefaction plants in the U.S. considering technical, financial, regulatory, environmental and political factors.

- For a products transportation company, a market analysis for a proposed LPG import terminal.

- For an electrical power generation utility, forecasting the growth of electricity demand by petrochemical producers.

- For a medium-size oil producer, a forecast of the price of propane for twenty years including U.S. propane economics as well as estimates of worldwide availability.

- For a group of gas distribution companies, an analysis of the impact upon natural gas supply to them if the Federal Power Commission were to assume jurisdiction over wellhead sales of natural gas to intrastate pipelines.

- For an energy importer, an analysis of the risks and potential of alternatives of indexing the price of a product to various published price series within the United States and Europe.

- For a major manufacturing company, assistance in locating, negotiating for, and contracting to purchase supplies of natural gas at the wellhead, and assistance in negotiating for the wildcat drilling for natural gas.

- For an importer, economic and logistical analysis of liquefied natural gas (LNG) projects using a computer simulation model.

- For a major industrial company, assistance in the establishment of an energy forecasting program including evaluation of and recommendations upon the use of energy supply and demand models.

Government and Regulatory--North America

- For the Federal Energy Administration, an evaluation of the natural gas supply and curtailment situation for the heating season November 1975 to March 1976 and recommendations for and evaluation of alternative changes in regulations to bring increased supply to the interstate gas markets.

- For industrial consumers, pipelines and the U.S., extensive, expert testimony on the allocation of natural gas shortages before the Federal Power Commission, state public utility commissions and the U.S. Senate Committees on Commerce and on Interior and Insular Affairs.

- For an industry group of electricity consumers, analysis of the economic impact of changing electric power rate structures and expert testimony before the U.S. House of Representatives' Subcommittee on Energy and Power concerning the marginal cost pricing of electricity.

- For a government agency, an analysis of the impact upon petrochemical development of changes in pricing and regulation of natural gas.

- For the U.S. Congress, an analysis of natural gas shortages and a review of alternative policies.

- For the American Gas Association, expert testimony on natural gas reserves estimates before the U.S. House of Representatives' Subcommittee on Oversight and Investigation.

- For an electric power utility, expert testimony in a court proceeding on the future price of fuel oil.

STAFF

Jensen Associates, Inc. has an experienced and highly qualified staff of consultants with backgrounds in business, economics, engineering and governmental policy analysis. Most of the senior staff have advanced degrees and all have published papers or books, and have been asked to speak before professional groups. Biographies of individual staff members are available.

JAMES T. JENSEN

Mr. Jensen is President of Jensen Associates, Inc., an independent energy consulting firm located in Boston, Massachusetts. For eighteen years prior to his establishment of Jensen Associates, Inc., Mr. Jensen was a Senior Staff Member of the Energy Group of Arthur D. Little, Inc. Throughout his career, he has concentrated on petroleum, natural gas, and energy economics and their applications to the management of energy-oriented organizations. His major interests have been in the fields of energy planning, economics, and forecasting, and in the judgment of investment and feasibility decisions in the energy industries.

His clients cover a broad international spectrum from government agencies to corporate clients in energy or energy-related businesses. He is a recognized authority on the allocation of U.S. natural gas shortages and has testified extensively before the Federal Power Commission, various state public utility commissions, and U.S. Senate Committees on Interior and Insular Affairs and on Commerce. Trends in energy demand and competition have been a major part of his work. He has been in charge of several long-range research planning reports for the American Gas Association. He was responsible for an analysis and forecast of the United Kingdom energy market to 1990 and the probable impact of North Sea gas discoveries on energy competition and pricing there. For an oil producing government he undertook a study entitled, "The Outlook for the Worldwide Petroleum Industry."

Investment feasibility has been an important part of his assignments. His project feasibility studies have included refineries, transport facilities, petrochemical plants, and liquefied natural gas projects. The studies have involved projects in Europe, South America, North Africa, and the Far East as well as the United States.

Some of his recent publications include: "Prospects for Tanker Shipments of Liquefied Natural Gas into the Continental United States," A.I.M.E., February, 1967; "The Chemical Refinery in Perspective," American Chemical Society, 1970; "Energy Policy Issues for the United States During the Seventies," The National Energy Forum, 1971; "An Economic Rationale for Rationing Gas Supplies in the United States," A.I.M.E., 1973; "International Oil--Shortage, Cartel, or Emerging Resource Monopoly?" Vanderbilt Journal of Transnational Law, 1974.

He has been a visiting faculty member of the Petroleum Economics and Management Seminar conducted by Northwestern University and of both the Financial Analysts Seminar and Life

Officers Investment Seminar under the sponsorship of the University of Chicago Business School. He has also lectured on energy topics for programs at Harvard University and at M.I.T.

Mr. Jensen holds a Bachelor's degree in Chemical Engineering from the Massachusetts Institute of Technology and a Master's degree from the Harvard Graduate School of Business Administration. He is a member of the American Petroleum Institute, the Society of Petroleum Engineers, and the American Chemical Society.

JOHN C. GAULT

Dr. Gault is a member of the Professional Staff of Jensen Associates, Inc., an independent energy consulting firm, with offices in Boston, Massachusetts and Washington, D.C. Dr. Gault has consulted for several years for private and government clients in areas of energy planning and economics.

His fields of particular interest include energy economics, public utility regulation, the study of the effects of taxation upon the use of exhaustible resources, and analysis of legislation, markets, and investment proposals. Dr. Gault has contributed to research reports in the areas of electricity demand forecasting, peak load pricing, electric generation plant siting, and natural gas pricing and curtailment methods.

Other subjects of recent research have included analysis of Canadian petroleum tax policy, forecasting U.S. natural gas prices, forecasting energy demand and supply in the United States and Canada, study of the siting of oil transshipment terminals, and analysis of oil price indexing, alternative electric rate structures, and the effects of horizontal divestiture on the U.S. oil industry.

Dr. Gault also has experience in the negotiation and analysis of petroleum production agreements and collateral investment projects in oil producing countries.

Prior to joining Jensen Associates, Inc., Dr. Gault worked for approximately five years in Jordan, Lebanon, and Saudi Arabia. Assignments included teaching Economics at the American University of Beirut and feasibility analysis of large projects for an international investment bank, headquartered in Beirut. While pursuing his graduate education, Dr. Gault was a Research Associate in a natural gas cost analysis project.

Dr. Gault received a B.A. in Economics from Yale University and a Ph.D. in Economics and Middle Eastern Studies from Harvard University. He is a member of Phi Beta Kappa and received a Harvard Graduate Prize Fellowship. The title of his Ph.D dissertation is "Natural Gas Price Regulation and the Theory of Exhaustible Resources."

EDWIN F. HARDY

Mr. Hardy is a Senior Professional and Washington Office Manager of Jensen Associates, Inc. He has managed and performed technical and economic analysis and lent his experience to business investment, supply, and marketing decisions in the energy area. Mr. Hardy has worked extensively in the analysis and forecasting of supplies and reserves of natural gas and the development of sources for synthetic and other supplemental supplies of gas. In addition, he has broad experience in the technology and economics of petroleum refining including market analysis and economics, and refinery technology and economics.

Prior to joining Jensen Associates, Inc., Mr. Hardy was Director of the Planning Division of the American Gas Association, responsible for its planning activities. He held the responsibility for coordinating and publishing the annual reserve estimates of natural gas and natural gas liquids in the United States, initiating and coordinating gas industry efforts to increase supply of natural gas and supplemental gas, developing research programs, and providing information, analysis, and forecasts for the public, the government, and the gas industry. In addition, Mr. Hardy had the responsibility for analysis of gas curtailments, LPG supply and demand, oil supply and oil imports. Mr. Hardy was the American Gas Association staff executive for the Gas Supply Committee and the Committee on Natural Gas Reserves and its observer for the Potential Gas Committee.

Prior to joining the American Gas Association, Mr. Hardy was in line management with the Atlantic Research Corporation for a number of years, becoming a Director and Plant Manager with overall responsibility for business acquisition, planning, budgeting, pricing, production, personnel administration, and all other activities associated with his plant.

Immediately after college, Mr. Hardy worked with the Humble Oil and Refining Company (now Exxon, USA) in Baton Rouge, Louisiana. There Mr. Hardy coordinated engineering and construction during the building of new petroleum refining units. He designed new petroleum products, performed the accompanying market and economic analysis, supervised the start-up of new plants and supported follow-on production operations. His last assignment at Humble was Technical Group Head in charge of mechanical engineering for all petroleum products with responsibility for economic evaluation, environmental impacts, utilization of waste heat, and the design of process units.

Mr. Hardy has a Bachelors Degree in Civil Engineering from the University of Virginia and has completed graduate courses at Louisiana State University in civil engineering, finance and business. Mr. Hardy is a registered professional engineer in the state of Louisiana and is a member of Tau Beta Pi, Phi Eta Sigma, and the Raven Society.

Mr. Hardy has presented a number of papers including "The Emergence of Gas Utilities as a Factor in World Petroleum Economics," "Future Natural Gas Supply Reactions to Higher Prices--Projections of the AGA TERA Model," and "SNG Supply and Demand."

NANCY J. POZAR

Nancy J. Pozar is a member of Jensen Associates, Inc. research staff and is primarily concerned with analysis of the supply side of energy questions, both in the United States and worldwide.

Ms. Pozar participated in an analysis of the Far East in which the region was examined as a supply/demand situation in and of itself. A net import/export balance for regional crude production and products availability for the Far East as a whole and then for each of six distinct sub-regions was derived. Sub-regional flows of crude and products were then examined and ultimately related to refining economics, tanker rates and then to product pricing in one particular country in the Far East.

On the supply side of U.S. energy problems, Ms. Pozar has examined both natural gas and petroleum availabilities in detail. She assisted in the preparation of legal testimony related to the currently limited domestic supply of natural gas. Final testimony was presented before Federal district court. Ms. Pozar has examined availability assumptions presented in recently published domestic energy analyses (among them the Project Independence Blueprint and the Ford Foundation energy study) looking comparatively at estimates of present reserves of energy resources, forecasts of future reserves additions and alternative resource availability as well as the effects of shifts in sectoral and regional demand on resource supplies.

Ms. Pozar has also been active in analyzing U.S. natural gas markets, regulation and pricing. In a recent major study, she focussed on the effects of gas price on gas supplies in both interstate and intrastate gas markets as well as on the interaction of these two markets. Federal Power Commission regulation was reviewed from the Natural Gas Act through more recent pricing mechanisms (emergency sales, limited-term certificates, optional pricing procedures, the small producer exemption and the uniform national rate). The interstate regulatory actions were then correlated with interstate gas supply and prices. On the intrastate side, major gas consuming and producing states were identified and the nature of the intrastate market in each was analyzed. Intrastate markets in the major gas producing states were then scrutinized as to changes in gas production, intrastate vs. interstate sales and sectoral consumption in the last few years. This analysis was subsequently used in forecasting both intrastate and interstate gas price levels.

Prior to joining Jensen Associates, Inc., Ms. Pozar was employed in the energy section of Arthur D. Little, Inc. She holds a Bachelor of Arts degree from the Department for Near and Middle Eastern Studies of the University of Michigan in Ann Arbor, Michigan.

CARL V. SWANSON

Dr. Swanson is the Executive Vice President of Jensen Associates, Inc., an independent energy consulting firm with offices in Boston, Massachusetts, Washington, D.C., and Geneva, Switzerland. Dr. Swanson has consulted with private and government clients for the past fourteen years. His work addresses economic, and planning issues in petroleum, natural gas, LPG's and electricity rate design. This work has required forecasting supply, demand, and price of various forms of energy; analysis of markets; analysis of and recommendations for governmental action; assistance in pricing; the design of contract terms; examination of logistics; evaluation of supply sources; testimony in regulatory and legislative proceedings; and evaluation and analysis of proposed investments.

Dr. Swanson's recent consulting work includes:

- For producers, transporters, and marketers, several studies on the future supply, demand, pricing and markets for propane and butane.
- Testimony before the U. S. House of Representatives' Subcommittee on Energy and Power on marginal cost pricing of electricity.
- Analysis and policy recommendations to the U. S. government on natural gas supply and curtailment for the 1975-76 winter.
- Several studies on the logistics and economics of liquefied natural gas (LNG) import projects using models representing the shipping, terminalling, storage, and distribution of LNG.
- For a Mid-east client, evaluation of the economic feasibility of a crude and products transshipment terminal.
- Assistance on pricing and contract terms in natural gas, LPG and LNG purchase and sale, and transportation contracts including the development of price index formulas.
- Testimony on alternate fuels before the Federal Power Commission in the United Gas Pipe Line curtailment proceeding.

- Development and implementation for a chemical manufacturing organization of a model-based planning and strategic decision-making process which integrates marketing, production, raw material supply, and finance.

- For a petroleum products marketer, an evaluation of the market opportunities and risks faced by a pipeline terminal being considered for purchase.

- Forecasts of U. S. energy balances and petroleum products demand to 1985.

Prior to the founding of Jensen Associates, Inc., Dr. Swanson headed North Cape Associates which provided energy planning, logistics and economic consulting services. For five years, Dr. Swanson was on the faculty of M.I.T.'s Sloan School of Management where his teaching and research focused upon the practical use of computer information systems and models to improve marketing, production, investment and supply decision-making.

While at the Massachusetts Institute of Technology, Dr. Swanson consulted with private and governmental organizations including: Arthur D. Little, Inc., the RAND Corporation, the MITRE Corporation, the U. S. Army, and the Institute Nationale de la Recherche Agronomique in Paris.

Dr. Swanson has taught at the Graduate School of Business Studies in London; he was a U. S. delegate to the first U. S./U.S.S.R. Management Conference, "Use of Computers for Management in Industry," Torino, Italy, 1970; and he has presented and published papers on information systems, modeling, planning, energy, and management. He received the degrees of Bachelor of Science in Economics and Electrical Engineering from the Massachusetts Institute of Technology, and Doctor of Philosophy in Management, with emphasis upon Economics and Finance, from M.I.T.'s Sloan School of Management.

Contract Between

State of Alaska

LEGISLATIVE AFFAIRS AGENCY

On Behalf Of

The Joint Gas Pipeline Committee

And

JENSEN ASSOCIATES, INC.

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, acting on behalf of the Alaska State Legislature, hereinafter referred to as the "Agency" and JENSEN ASSOCIATES, INC., hereinafter referred to as the "Consultant."

THE PURPOSE OF THIS AGREEMENT is to provide specialized professional economic consulting services to the Alaska State Legislature.

IT IS, THEREFORE, MUTUALLY AGREED THAT:

CLAUSE I - STATEMENT OF WORK

(a) The Consultant shall assume responsibility for the preparation of, and submit to the Agency, a brief written economic analysis of the State of Alaska's Proposed Royalty Gas Sales Agreements. This analysis shall be as described in the Consultant's proposal of November 30, 1976, attached to this contract as Appendix "A" and incorporated herein by this reference as though set out in full.

(b) The Consultant shall be available to appear and present expert witness testimony before committees of the Tenth Alaska State Legislature, First Session, on the subject of the above analysis.

CLAUSE II - PERIOD OF PERFORMANCE

(a) The Consultant shall submit to the Agency a final report containing the completed economic analysis on or before January 20, 1977.

(b) The Consultant shall be available to testify before committees of the Tenth Alaska State Legislature, First Session, at a time mutually agreeable to the Consultant and the Agency.

(c) This agreement may be terminated--

(1) By mutual consent; or

(2) For breach of the agreement or any material part thereof.

(d) This agreement expires June 30, 1977, or with the adjournment of the First Session of the Tenth Alaska State Legislature, or with the completion of the contract as provided in paragraphs (a) and (b) of Clause I.

CLAUSE III - COMPENSATION AND METHOD OF PAYMENT

(a) For the economic analysis of the State of Alaska's Proposed Royalty Gas Sales Agreements and two days of expert witness testimony thereon before legislative committees of the Tenth Alaska State Legislature, First Session, the Consultant shall receive up to $15,000.00 as follows:

(1) The amount of $10,000.00 upon completion and submission to the Agency of the economic analysis; and

(2) The amount of $5,000.00 upon the completion of expert witness testimony to legislative committees.

(b) The Consultant shall be reimbursed for expenses incurred in travel as follows:

(1) The costs of coach class air transportation to and from Alaska for the purpose of testifying before legislative committees; and

(2) The expenses incident to such travel, which shall be reimbursed according to AS 39.20 (currently, this provides reimbursement at a flat per diem rate of $50.00 per day).

(c) The Consultant shall be reimbursed for actual costs of telephone expenses incurred in the preparation of the economic analysis.

(d) Payments under paragraphs (b) and (c) of Clause III of this contract shall be made by the Agency to the Consultant in response to billings submitted to the Agency on a monthly basis.

(e) Total payments, including travel and expenses, to the Consultant under this contract shall not exceed $19,000.00, except by written authorization, in advance of the work or the incurring of the expense, by the Agency.

(f) In the event this contract is terminated prior to completion of the work specified in paragraphs (a) and (b) of Clause I, the Consultant's basic charge shall be recomputed on a prorated basis according to the percentage of work satisfactorily completed.

CLAUSE IV - RECORDS, DOCUMENTS, AUDIT

The Consultant shall maintain accurate records, including detailed time records. The records are subject to inspection at all reasonable times. All documents, reports and writings generated as a consequence of work done under this contract shall become the property of the State of Alaska, and on completion of the work or at the termination of this contract shall be delivered to the Agency.

CLAUSE V - RESOURCE AND REFERENCE MATERIAL NEEDED FOR PREPARATION OF THE ANALYSIS

(a) The Agency will assist the Consultant in obtaining source material as necessary, but final responsibility for these items rests with the Consultant.

(b) It is not contemplated that any confidential resource or reference material will be required to prepare the analysis.

CLAUSE VI - CONFIDENTIALITY OF COMMUNICATIONS

It is contemplated that all work done under this contract will be made public by the Legislature. However, all communications between the Agency or the Legislature and the Consultant, including the final report, shall be held confidential by the Consultant until released by the Agency, or other Legislative entity to which they were addressed.

CLAUSE VII - PRIOR, CURRENT AND FUTURE REPRESENTATION

(a) The letter of proposal from the Consultant, dated November 30, 1976 describes the past representation of a client known to have an interest in the disposition of Alaska natural gas. The Agency has determined that this does not constitute a conflict of interest for the purposes of this contract.

(b) The Consultant shall, during the period of this agreement, notify the Agency of any new clients or change in status of any existing clients which might tend to create a conflict of interest.

(c) The Consultant agrees that prior to the termination of the contract in accordance with Clause II, he shall not undertake to represent any client--

(1) In proceedings on Alaska natural gas transportation issues before the Federal Power Commission or the U.S. Department of the Interior; or

(2) In proceedings concerning Alaska natural gas before any agency or instrumentality of the State of Alaska.

CLAUSE VIII - OTHER AGREEMENTS OR UNDERSTANDINGS

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement.

JENSEN ASSOCIATES, INC.

Carl V. Swanson

Carl V. Swanson

4 January 77

Date

LEGISLATIVE AFFAIRS AGENCY
(By direction of the
Chairman of the
Joint Gas Pipeline Committee)

Gregg K. Erickson

Gregg K. Erickson

12/21/76

Date

Approved as to Form

Agency Legal Counsel

Dec. 27, 1976

Date

JENSEN ASSOCIATES, INC.
84 STATE STREET BOSTON, MASSACHUSETTS 02109
TELEPHONE (617) 227-8115
TELEX 94-0057

November 30, 1976

Ms. Elke Kallab
Legislative Affairs Agency
Pouch Y
Juneau, Alaska 99811

Dear Ms. Kallab:

As we discussed over the telephone on Monday, November 29, 1976, Jensen Associates, Inc. is pleased to submit this proposal to the Legislative Affairs Agency to analyze the economics of the recently signed contract by which the State of Alaska has sold its royalty gas to Tenneco, Southern Natural Gas Company and El Paso Natural Gas Company.

OBJECTIVES

The objective of our analysis is to determine if the contract protects the interests of the State of Alaska and provides it with maximum economic values in the sale of its royalty natural gas over the term of the contract. We shall review the entire Contract, but we shall focus upon the pricing provisions and determine if they protect Alaska's interest in light of different future developments in the United States energy picture.

We shall also scrutinize the renegotiation and termination options, to insure that Alaska is protected in the event of major changes in energy policy and markets. We shall recommend changes in the contract where we believe they are appropriate. The weaknesses and strengths in the contract shall be identified.

We shall analyze the contract in light of recent legislative initiatives in natural gas and their economic impact. However, because others are examining the legal aspects of

the contract, we shall not address issues in the sphere of legal counsel or concerning the standing of the contract and its provisions in the eyes of the Federal Power Commission or Legislation.

While we are prepared to perform such analysis, it is our understanding that this task will not involve analysis of the sale of natural gas liquids.

METHOD OF APPROACH

We shall draw upon our knowledge of the United States and world energy markets and future trends for this task. In particular we shall draw upon our extensive work in natural gas markets, pricing, and contracting to analyze this contract.

The output of our analysis shall be one or more memorandums which detail our findings, telephone consultation, and the presentation of our findings to the Alaska Legislature.

Our analysis shall be objective and based upon factual analysis and our independent judgement.

CONFLICT OF INTEREST

We do not believe that there is any conflict of interest in our analyzing this contract for the State of Alaska. As professional business and economic analysts our work is objective. While we do present our findings publicly where appropriate, it is as the results of objective analysis. We do not act as public advocates for clients.

As we discussed in our telephone conversation, I have recently presented expert testimony in FPC curtailment hearings on United Gas Pipe Line Company Docket Nos. RP71-29 and RP 71-120 (Phase II). This testimony was on behalf of

six intervenors: General Motors Corporation, Mississippi River Transmission Corporation, Natural Gas Pipeline Company of America, Southern Natural Gas Company, Texas Eastern Transmission Corporation, and Texas Gas Transmission Corporation. This was rebuttal testimony to United Gas Pipe Line Company witnesses. My testimony argued that the category II industrial customers in the United service area in East Texas, Louisiana, Mississippi, Alabama, and the Panhandle of Florida have no greater difficulty in obtaining alternate fuels when natural gas is curtailed than industrial customers further to the north. This work began in mid July, 1976 and ended after the testimony was presented in mid November, 1976. Our fees to Southern Natural Gas are about one percent of our annual billings.

We are performing no work at this time, or in the recent past, for the other purchasers of the royalty gas or for Exxon, Arco, BP or Sohio.

QUALIFICATIONS

Jensen Associates, Inc. is highly qualified by previous experience to perform this analysis. A statement of our qualifications is attached.

BUSINESS RELATIONSHIP

Jensen Associates, Inc., proposes that this work be performed on a time and expenses basis. Until we receive the contract we are not able to estimate the time required to perform proper analysis of it. After we have had a chance to review the contract we will provide a more detailed estimate of costs. However, for your budgeting purposes we would suggest that you plan for professional service fees of $10,000 - 15,000 plus expenses not to exceed 15% of professional service fees unless more than one trip to Alaska were to be required.

We will bill the Legislative Affairs Agency monthly, for payment within ten days, for professional services and expenses. Professional services will reflect the time spent on your behalf. Expenses incurred while working in your behalf on this assignment will be billed at their cost to us and will include travel, communications, report production, and other directly related costs.

Professional services will be billed at our customary rates for the individuals involved. For consulting these rates are: Mr. James T. Jensen, $640 per day; Dr. Carl V. Swanson, $520 per day; Ms. Nancy Pozar, $280 per day; Mr. Edwin F. Hardy, $480 per day; and Mr. John C. Gault, $360 per day. For the presentation of expert testimony the rates are: Mr. Jensen, $900 per day; and Dr. Swanson, $650 per day.

STAFF AND SCHEDULE

Based on present staff schedules I will be in charge of the project here. Mr. James T. Jensen, Mr. Edwin F. Hardy, Mr. John C. Gault, and Ms. Nancy J. Pozar are expected to work with me. When appropriate, other staff members with backgrounds

particularly appropriate to this study may be assigned to the project. Biographies of Mr. Jensen, Mr. Hardy, Mr. Gault, Ms. Pozar, and me are attached. We understand that we should look to you and Mr. Greg Ericson for general direction and policy decisions on behalf of the Legislative Affairs Agency of the State of Alaska.

Based on current commitments, we expect that we will send a memo describing our findings approximately one month after your authorization to proceed with this assignment. I am holding open my schedule for the week of January 24, 1977 for the legislative hearings.

GENERAL PROVISIONS

In the past we have provided analysis and counsel to clients in areas included in this proposal. This experience helps to qualify us to undertake the assignment described above and we expect to continue such work in the future.

To protect your interests we agree that any confidential information we may develop or have furnished to us by you during this assignment will be safeguarded and held in confidence. Furthermore, it is our practice in considering new assignments to decline them whenever it appears to us at all probable that our experience with a past or present client might be used improperly in the new assignment.

ACCEPTANCE

For the purpose of staff scheduling this proposal is made subject to acceptance within 30 days. Should you like more time to consider the proposal or to discuss modifications to it, please let us know.

We look forward to working with you on the analysis of Alaska's royalty gas sales contract, and we will devote our best efforts to accomplishing the objectives described above. If this proposal is acceptable to you, would you please sign and return the enclosed copy as authorization for us to proceed with the work.

Very truly yours,

Carl V. Swanson

Carl V. Swanson
Executive Vice President

CVS/jd

Accepted for_____

By_____

Title_____

Date_____

would fuel inflation and partly because of lingering suspicion that the industry is withholding gas supplies to force deregulation. "The oil and gas companies have no interest in dealing with the current emergency," James F. Flug, director of the Energy Action Committee, told a House subcommittee last week. "The more people who are cold and out of work and out of school, the easier it is to stampede the nation into a deregulation frenzy."

A SECRET SUPPLY?

Most energy experts reject the notion that the industry is deliberately withholding supplies of natural gas—though it is true that some gas is too costly to pump at today's prices. The FPC recently heard charges that Shell Oil Co. had shut in 2 trillion cubic feet of gas. Shell admitted that it had such reserves, but it explained that production of 31 per cent of them was awaiting the proper equipment, that 25 per cent couldn't be produced until nearby fields were worked, that 25 per cent more was awaiting the construction of pipelines, and 19 per cent wasn't entirely proved out. "I keep hearing about gas that's being squirreled away," says President Carter's energy coordinator James Schlesinger, "but whenever we get close to it, it becomes evanescent."

The great irony is that natural gas was once nothing more than an annoying byproduct of oil, and drillers burned it off at the wellhead. Wayne Gibbens, now president of the Mid-Continent Oil & Gas Association, recalls watching the blazing spectacle from his Texas home in the 1940s: "For 50 or 100 miles on the horizon, so much gas was being flared it was like daylight at midnight." But after the development of a strong, seamless pipe that made long-distance pipelines possible, natural gas became a valuable commodity.

From the very beginning, the FPC regulated the prices that pipelines could charge utilities and industry. But the all-important wellhead price that the producers charged the pipelines was free of control. Then, in the early 1950s, the Phillips Petroleum Co. jacked up wellhead prices and the state of Wisconsin and other states promptly sued the firm. In a landmark case in 1954, the Supreme Court ordered a reluctant FPC to set rates for gas sold to the interstate pipelines. Two years later, the industry got Congress to pass a deregulation bill—only to have it vetoed by President Eisenhower when it turned out that industry lobbyists had allegedly tried to bribe Sen. Francis Case of South Dakota. The industry has never been able to get another deregulation bill out of Congress.

With gas prices artificially held down, users quickly switched from coal and oil to gas. Demand soared, and by 1967 it began to outrun the industry's ability to find new supplies. Reserves available to interstate pipelines dropped from 198 trillion cubic feet in 1967 to 107 trillion cubic feet in 1975. "The interstate system has eaten away at existing reserves for eight consecutive years," says former FPC commissioner Rush Moody Jr. Finally, last summer, the FPC nearly tripled the price of newly discovered gas —to $1.42—in an effort to spur exploration, but consumer groups have since blocked the move in court. President Carter pledged during his campaign to deregulate new gas on an experimental basis, but the issue is now so controversial that Congress may not go along despite the emergency.

Would deregulation reduce the chronic shortage? In the short run, probably not. It takes up to three years to bring new onshore gas fields into production, up to seven years offshore. But eventually, experts say, deregulation would ease the crunch somewhat. According to the Federal Energy Administration, production will fall from more than 19 trillion cubic feet in 1976 to 16 trillion cubic feet by 1985 if prices are not deregulated. If they are, domestic production would increase, but only to 21 trillion cubic feet—the level of 1974.

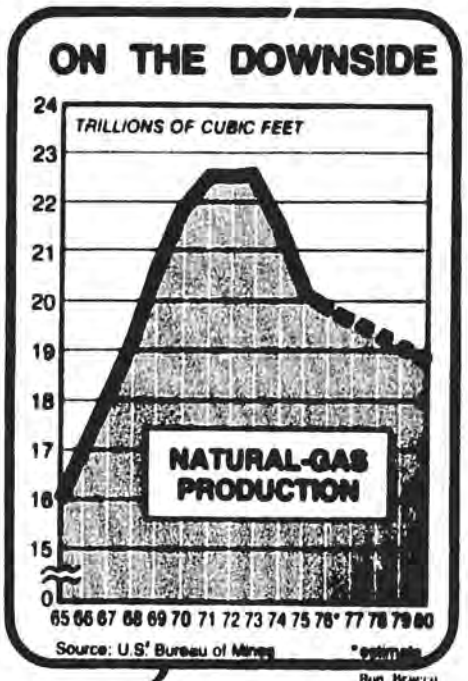
NO BONANZA IN SIGHT

Gas from the North Slope of Alaska could add 1.2 trillion cubic feet annually, but there is as yet no pipeline to carry it south. Imports of liquefied natural gas might account for an additional 1.1 trillion cubic feet a year. But experts expect virtually no help before 1990, if then, from the much-discussed schemes to produce gas from coal. Nor do they think there are many large gas fields just waiting to be discovered. "There's still gas to find," says John McDonnell, a vice president for marketing at Gulf Oil. "But we can't expect any of the bonanzas of the past."

In the end, it's clear that the nation will just have to make do with less gas—which may mean allocating the available fuel to users that have no suitable alternative and switching everyone else to coal or electricity or solar power. More immediately, the Carter Administration is stressing conservation of all energy. And once the emergency allocation legislation clears Congress, it is likely the President will push for at least partial deregulation of gas prices. But unless the nation learns more from the current gas crisis than it did from the oil crunch of 1973-74, the outlook is not very hopeful.

—DAVID PAULY with JAMES BISHOP Jr. in Washington and bureau reports





Pennsylvania's Governor Shapp, (left) and New Jersey's Byrne (right) at Washington gas hearing: Begging for more from less

thermostats are kept no higher than 65 degrees. The White House may have an ally; electrical companies in some hard-hit areas have hinted that they might stop residential service for short periods—this might immobilize thermostats and reduce heat. Schlesinger and his aides are also urgently searching for other remedies. Their problem is that the Federal government doesn't have the emergency authority over gas allocation that it does over oil, and any new legislation would be politically controversial. The President could request power to control the disposition of intrastate gas supplies, or he might seek "end-use" authority, by which businesses and homeowners may be forced to convert to fuels other than gas. "We are looking for rifle-shot actions," a Schlesinger aide said. "And if the legislation doesn't work, we will have to get more authority. We are . . . jawboning everybody we can find."

Beyond anything that may be done in the next few months, the U.S. will still need to find a more lasting solution to its crisis. The problem, quite simply, is that the country's natural-gas reserves are perilously meager. The majority of producers have refused to commit the vast sums necessary to locate and extract new supplies as long as their earnings are restricted by Federal price controls on interstate sales. One possible result of this winter's shortage is that the Administration and Congress may move toward deregulation in order to stave off a recurrent crisis.

A NEW ATTITUDE

That alone will not guarantee a future free of energy crises, for the U.S. is a notorious waster of resources. Schlesinger's energy advisers believe that the country squanders fully 50 per cent of all the energy it uses. By better insulation of homes, for example, a year's worth of fuel consumption could be saved. The Carter Administration is virtually certain to try to encourage such steps, primarily through a combination of deregulated—and therefore higher—prices and mandatory actions. The President is expected to urge higher utility rate prices in peak hours, stricter mandatory standards for the insulation of new buildings and more efficient automobiles.

Carter will put his proposals into an over-all energy program for Congress this spring. But no new laws are likely to solve the problem—somehow the country must take a new attitude toward using energy. There has always been more than a touch of the preacher in Carter's personality, and his leadership in this crisis will likely be the greatest test of his powers of moral suasion. "There isn't any quick fix," said one of his men last week. "We are facing real trouble unless people share and cut back. We are heading into a real test of democracy in an era of resource constraints."

—RICHARD STEELE with JAMES BISHOP Jr. and TOM JOYCE in Washington, CHRIS J. HARPER in Chicago, JON LOWELL in Detroit, VERN E. SMITH in Atlanta and bureau reports



Checking the gas flow at Cincinnati power plant: From nuisance to U.S. necessity

Why the Big Shortage?

Why has America run out of gas? If it is any consolation, energy experts could at least say that they gave fair warning. Since the 1960s, they've been pointing out that the nation was depleting its natural-gas supply—and after three years of abnormally mild winters, this season's brutal cold snap turned a nagging shortage into a full-scale crisis. The critics were quick to blame a greedy industry for not developing new sources much sooner, and the industry was just as quick to fault Washington for foolhardy regulation. The immediate problem was to rush what little gas was still available to the worst-hit areas. But over the longer term, the natural-gas industry seems headed for major change.

In some respects, natural gas is America's most important fuel. It accounts for fully 30 per cent of U.S. energy consumption. It heats half the homes in America and furnishes 50 per cent of industry's energy. The only clean-burning fossil fuel, natural gas is virtually pollution-free, and it is a vital raw material in the manufacture of fertilizer, glass and numerous chemicals.

The gas is drawn mainly from deep wells in Texas, Louisiana, Oklahoma and other states and from offshore rigs in the Gulf of Mexico. Since gas is generally found with oil, the chief producers are the major oil companies—Exxon, Mobil, Gulf and Shell. They, in turn, sell the gas to more than 100 pipeline companies (Panhandle Eastern, Columbia Gas and Texas Eastern, for example) which own and operate more than 200,000 miles of interstate pipeline that distribute gas to local utilities and industry.

Everything went smoothly enough until the late 1960s. But then, soaring demand began to exceed new supply. Federal Power Commission chairman John Nassikas warned in 1969 that "natural-gas supplies are diminishing to critical levels." Domestic production began falling in 1974 (chart, page 20) and the industry accelerated the depletion of its proven reserves. Even though the last three winters were mild, the pipeline companies were forced to curtail deliveries to industry customers with firm contracts—in some cases cutting them off completely. "The trend is decreasing supplies, dwindling reserves and declining exploration," says David Foster, executive vice president of the Natural Gas Supply Committee, a Washington lobbying group.

CHRONIC CRISIS

But though the basic facts are clear, there is still considerable disagreement over the causes of the natural-gas shortage and what should be done. As gas-industry men see it, Federal regulation has caused a chronic shortage that turns into crisis during a prolonged cold wave. Because prices are kept below market levels, they say, supply can't possibly keep up with demand. Cheap gas is snapped up by consumers, while producers have little incentive to look for new gas. At the same time they claim that regulation by the Federal government has distorted distribution. The FPC has kept the price of gas sold interstate to as low as 52 cents per 1,000 cubic feet—enough to heat an average home for a little more than three days—while unregulated intrastate prices have risen as high as $2.25. "The gas goes where the money is—to the intrastate system—and we can't buy it," complains spokesman Howard Sorenson of Northern Natural Gas Co., an Omaha-based pipeline company.

Congress, however, has been reluctant to decontrol gas prices, partly because

SCOMM

#21:18

Not critical to read this.

Alaska State Legislature

Senate

JUNEAU, ALASKA

S. Rader — I'll do you a more in depth memo later. →

5/10/77

TO: Senator Rader
FR: Connie Barlow, Assistant
RE: Materials distributed at May 5 Royalty Board meeting

cc: Poland, Croft, Huber, Colletta
Malone, Osterback, Gruening

Don Wold, executive director of the Royalty Board supplied our office with materials relating to the Royalty Board meeting that took place on May 5, 6. I asked for a few extra copies to pass on to interested legislators. These are attached:

(1) Final Policies for Disposition of Royalty Oil & Gas

The Board adopted a set of 8 policies following testimony on 10 draft policies by Hammond, Rader, Osterback, and Silides.

(2) Statement of Governor Hammond on Royalty Oil Disposition

(Note: Osterback and Silides supplied written statements too.)

(3) "Criteria Document" (lead agency in preparation was DPDP)

Board hopes to use this document for determining the "net benefit" of the various refinery proposals; and in order to specify how the existing proposals need to be more detailed. (Phase I questions are to be incorporated in the final solicitation notice of May 15) Don Wold is looking for comments on this document by Board members, purchasers, and legislators.

SCHEDULE

The Board informally adopted a schedule for completing a large-volume refinery sale:

May 15 - final solicitation of proposals (specific questions pulled out of "Criteria Document")
Aug 1 - preliminary proposals due
Nov 1 - final proposals due
Dec 1 - final selection of proposal, negotiation begin
Feb 1 - contract submitted for legislative approval.

AGO 667753

Alaska State Legislature

Senate

JUNEAU, ALASKA

5/10/77

TO: Senator Rader
FR: Connie Barlow, Assistant
RE: Materials distributed at May 5 Royalty Board meeting

cc: Poland, Croft, Huber, Colletta
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AGO 667754

POLICY STATEMENT MADE BY

The Alaska Royalty Oil and Gas
Development Advisory Board

May 5 & 6, 1977

1. The Royalty Oil and Gas Board shall recommend disposition of royalty oil and gas (through in-value taking, in-kind taking, sales, and sales conditions) in such a manner to maximize net benefits to the State. These net benefits include not only price, but also the various economic, social, and environmental ramifications, including employment, local training, Alaskan ownership, secondary effects, tax base, and many other factors.

2. The baseline price for any royalty oil or gas sale shall not be less than the price that would be received for that oil or gas if taken "in-value".

3. Preference will be given first to existing in-state facilities with no alternate sources of oil or gas, and second to those who will construct new in-state facilities or expand existing in-state facilities.

4. A portion of royalty oil will be withheld, meet from long-term committment in order to anticipated future small local demands.

5. With the exception of small sales to public utilities, sales will be for specified volumes or proportions of production, constant throughout the year, rather than for flexible volume "options" to be called by the purchaser.

6. Sales of royalty oil and gas for in-state processing will attempt to insure that products for in-state use are priced at the lowest possible price, within the limits of the general net benefit policy and the pricing policy.

7. Products produced from royalty oil and exported from the State must be surplus to the State's domestic and industrial product needs.

8. In general royalty oil and gas will be disposed of in long-term contracts, rather than in "piece lots" as may be done by a private-sector trader or dealer.

Gov — ① same for as in value

② low product, hope doesn't have to get into destin
(L.R. - process & sell in-bulk).

③ special utilities. Not price. Only:
① priority ② volume flex.

↑ Silides bad. discourages coal.
Shouldn't encourage future dependence.

Trip — What state have to sell? ① avail ② long-term ③ flex.
Why no producers?

— refinery vs. other small industries. —
— new industry vs expansion of existing (prob: subsidize later). —

— other energy - combine bid to coal. — Sulid & Trip.
↑ yes:

① in-state prod — Tesoro.
② employ.
) more than $ expl.

2 way transport.

Silides - do policy. Statute purposely vague. ← Trip disagrees. & Sil.
not paid
no time
no expertise
"advisory"
Gall - comfort of internal 60-day decision.
AK oil Co.
"cornerstone of public security"
~~Statute~~

Silides - take back in all contracts (except hedged only for export).
(Bid against)
don't require go to prod first
"is time to reassess statutes" (but hedges on prices)

Trip - completing of process - legis / RB, / admin rules ← purchasers
Sil - don't get rid of legis oversight. — good is slow.

AGO 667756

Sil refining - already up to capacity in-state [illegible] for export.

SB 274 —

S - State should take in-hand.
Legis not so good - just frustration.

Trip - how dep/

S - ask Mobil.

LR - Short-term sale more dangerous than in-value

Gall - in value - hi - ARCO.

~~Gal~~

Lo Resch / Sil - Together look thru statutes over intern

COMMENTS BY GOVERNOR JAY S. HAMMOND
ALASKA ROYALTY OIL AND GAS BOARD
MAY 5, 1977

MR. CHAIRMAN AND MEMBERS OF THE BOARD, I AM DELIGHTED TO TAKE THIS OPPORTUNITY TO DISCUSS PRESENT AND FUTURE POLICIES REGARDING DISPOSITION OF OUR ROYALTY SHARE OF ALASKA'S OIL AND NATURAL GAS. I FEEL AN OPEN PUBLIC DISCUSSION OF WHAT OUR POLICIES AS ALASKAN CITIZENS SHOULD BE IS ESPECIALLY GERMANE AT THIS TIME, AS THE BOARD ENTERS INTO CONSIDERATION OF HOW TO DERIVE MAXIMUM BENEFIT OF OUR ROYALTY SHARE OF PRUDHOE BAY OIL. ANY SALE OF THIS OIL WILL INDEED BE A MAJOR ACTION BY THE PEOPLE OF ALASKA, INVOLVING IN ALL LIKELIHOOD MORE THAN A BILLION BARRELS OF OIL AND POSSIBLY UPWARDS OF $10 BILLION. THE PEOPLE OF ALASKA ARE INDEED FORTUNATE THAT A GROUP SUCH AS YOURSELF HAS AGREED TO LEND

AR 067750

SOME CASES WITHOUT COMPENSATION WHATSOEVER. I CERTAINLY COMMEND THE PUBLIC MEMBERS OF THIS BOARD FOR THEIR DEDICATION TO THE PEOPLE OF ALASKA IN THESE IMPORTANT TIMES.

I HOPE WE CAN HAVE A USEFUL DISCUSSION TODAY REGARDING THE PRINCIPLES WHEREBY WE CAN, IN THE NAME OF THE PEOPLE OF ALASKA, BEST USE THIS GREAT AMOUNT OF MINERAL WEALTH THAT IS OURS BY VIRTUE OF THE ROYALTY PROVISIONS OF THE PRUDHOE BAY LEASES. I FEEL THAT THE PRINCIPLES THE BOARD AND THE LEGISLATURE ESTABLISH NOW, WITH THE HELP OF THE PEOPLE OF THE STATE, SHOULD APPLY TO ALL FORESEEABLE FUTURE USE OF ROYALTY OIL AND GAS. THEREFORE, IT IS EXTREMELY CRITICAL THAT WE DEFINE REALLY WHAT WE WANT TO GAIN FROM ANY DISPOSITION OF THIS OIL AND GAS.

THE ALASKA PUBLIC FORUMS THAT I HAVE ATTENDED THROUGHOUT THE STATE HAVE, AS I AM SURE YOU ARE AWARE, ADDRESSED THIS VERY PROBLEM. MY PARTICIPATION IN THE FORUM HAS GIVEN ME SOME DEFINITE IMPRESSIONS REGARDING WHAT THE PEOPLE OF THE STATE WANT DONE WITH ROYALTY OIL AND GAS. THE PEOPLE'S UNDERLYING GOALS SEEM TO BE TO ENCOURAGE IN-STATE USE, AND WHATEVER POSITIVE DEVELOPMENTAL SPINOFFS MAY OCCUR FROM IT, SHORT OF SELLING AT CUT-RATE PRICES. THE PEOPLE, IT IS OBVIOUS TO ME, WANT TO ENCOURAGE HEALTHY INDUSTRY, AND DECIDEDLY DO NOT WISH TO ENCOURAGE INDUSTRY THAT MUST BE SUBSIDIZED FROM OUR NONRENEWABLE RESOURCE WEALTH (IN THE FORM OF REDUCED PRICE FOR ROYALTY OIL AND GAS). THEREFORE, I SUGGEST THAT THE BOARD NOT CONSIDER ANY SALES OF ROYALTY OIL AND GAS AT BELOW THE PRICE THE STATE WOULD GET WERE IT TO TAKE THE OIL OR GAS IN VALUE. THIS SHOULD BE THE BOTTOM LINE.

AGO 667759

THIS, THEN, SHOULD BE OUR "BOTTOM LINE."

WHAT SHOULD THAT "BOTTOM LINE" BE REGARDING IN-STATE USE OF THE ROYALTY OIL AND GAS? I THINK BOTH THE STATUTE AND THE PEOPLE ARE VERY CLEAR ON THIS POINT: IN-STATE USES THAT PROVIDE A HEALTHY NET BENEFIT TO THE STATE AS A WHOLE SHOULD BE UNABASHEDLY ENCOURAGED. THOSE THAT PROVIDE A NET LOSS SHOULD NOT BE AIDED WITH OUR ROYALTY OIL AND GAS. IT IS BECOMING CLEAR THAT OUR ROYALTY OIL AND GAS PROVIDE NOT ONLY A VERY VALUABLE LIQUID ASSET, BUT ALSO AN EXTREMELY VALUABLE LEVER WHICH, IF WE ACT INTELLIGENTLY, WE MAY USE TO ENCOURAGE THE TYPES OF INDUSTRY WE ALL WANT IN THE STATE. THESE ARE THE INDUSTRIES THAT EMPLOY RESIDENT ALASKANS, THAT ARE CLEAN AND NOT POLLUTING, THAT RETURN TO THE PEOPLE OF THE STATE MORE IN TAXES AND OTHER BENEFITS THAN THEY TAKE FROM US IN INCREASED PUBLIC SERVICES, STATE PAYROLLS, CRIME, SOCIAL PROBLEMS, ETC.

THERE CERTAINLY ARE INDUSTRIES THAT WILL PROVIDE A CLEAR NET BENEFIT TO ALASKANS, WHEN ALL ECONOMIC, SOCIAL, ENVIRONMENTAL, AND OTHER FACTORS ARE TAKEN INTO ACCOUNT, AND THESE ARE THE INDUSTRIES THAT WE SHOULD USE OUR ROYALTY OIL AND GAS TO ENCOURAGE.

I THINK THAT THE APPROACH BEFORE YOU IS A GOOD ONE. AS I UNDERSTAND IT, THIS APPROACH WOULD ASK ALL POTENTIAL PURCHASERS OF OUR PRUDHOE BAY OIL IN THIS CASE TO ANSWER A LONG SERIES OF TOUGH QUESTIONS. IN THEIR AGGREGATE, THESE ANSWERS WILL ALLOW US TO CALCULATE WHICH, IF ANY, OF THESE FIRMS IS OFFERING THE "DEAL" THAT IS IN THE BEST NET BENEFIT OF THE PEOPLE OF THE STATE, CONSIDERING ALL THESE FACTORS. I FEEL THAT THESE QUESTIONS SHOULD BE ASKED SPECIFICALLY, THAT THE ANSWERS CAN BE GIVEN WITHOUT PUTTING TOO MUCH EXTRA STRESS ON THE APPLICANTS, AND THAT THE DECISION CAN BE MADE PUBLICLY AND EXPEDITIOUSLY ONCE THE ANSWERS ARE IN. I HOPE THAT THE BOARD ADOPTS THIS APPROACH AND USES IT TO NEGOTIATE A SALE THAT IS CLEARLY IN THE NET BEST INTERESTS OF THE PEOPLE OF ALASKA.

I HAVE BEEN REPEATEDLY ASKED "DO YOU FAVOR A REFINERY IN ALASKA?" MY ANSWER HAS ALWAYS BEEN, YES I DO FAVOR A REFINERY IN ALASKA AS LONG AS IT PAYS ITS OWN WAY ON A NET BASIS, AND IS ENVIRONMENTALLY SOUND. I THINK THAT IF THE BOARD APPROACHES THESE POTENTIAL OIL PURCHASERS THROUGH THE METHOD OUTLINED ABOVE, WE WILL ALL KNOW VERY CLEARLY WHICH PROPOSALS WILL PAY THEIR OWN WAY AND ARE ENVIRONMENTALLY SOUND. I AM EQUALLY SURE THAT THE FACILITY WE ENCOURAGE THROUGH COMMITMENT OF OUR ROYALTY OIL WILL BE A VERY WELCOME CORPORATE CITIZEN OF THE STATE OF ALASKA.

ACO 667760

I HAVE ALWAYS FELT THAT A MAJOR PART OF ANY ROYALTY OIL OR GAS CONTRACT SHOULD BE THE BENEFITS THAT ALASKAN CITIZENS GAIN IN THE FORM OF LOWER PRICES FOR HEATING FUEL, GASOLINE, AIRCRAFT FUEL, WATERCRAFT FUEL, AND OTHER PETROLEUM PRODUCTS. IT HAS ALWAYS SEEMED TO ME A SINGULAR TRAVESTY THAT THE NATION'S MOST ENERGY-RICH STATE SHOULD PAY TWO-WAY TRANSPORTATION FOR OUR FUELS AND PETROLEUM PRODUCTS. I HAVE HEARD SEVERAL INTRIGUING SUGGESTIONS AS TO HOW IN-STATE PRODUCT PRICE MAY BE AFFECTED BY ROYALTY OIL AND GAS SALES, BUT DO NOT KNOW WHAT THE BEST ANSWER IS AT THIS POINT. I HAVE INSTRUCTED COMMISSIONER LERESCHE, AND WOULD HOPE THAT THE BOARD CONCURS, TO SEEK AN APPROPRIATE BENEFICIAL SOLUTION TO IN-STATE PRODUCT PRICES AS PART OF A LARGE SALE OF PRUDHOE OIL. I HOPE THAT THIS DOES NOT INVOLVE THE STATE ASSUMING ROLES, SUCH AS DISTRIBUTOR, WHICH MORE PROPERLY BELONG IN THE PRIVATE SECTOR, BUT WOULD HOPE THE BOARD CONSIDERS ALL SUGGESTIONS FOR SOLUTIONS TO THIS IN-STATE PRICE PROBLEM.

I MENTIONED BEFORE THAT OUR ROYALTY OIL IS A LEVER FOR ACHIEVING THE KIND OF GROWTH WE WANT IN ALASKA. AS A COROLLARY TO THIS, IT WOULD SEEM APPROPRIATE TO ME TO RESERVE THIS LEVER FOR USE WHERE IT DOES THE MOST GOOD. IN GENERAL, I WOULD EXPECT PERSPECTIVE PURCHASERS OF ROYALTY OIL AND GAS TO EXHAUST POSSIBILITIES OF PURCHASING OIL OR GAS FROM THE OTHER PRODUCERS, BEFORE THEY APPROACH THE STATE FOR OUR ONE-EIGHTH SHARE. IF WE DO NOT GRANT CUT-RATE PRICES, WHICH I THINK WE SHOULD NOT, THERE IS NO REASON FOR PERSPECTIVE PURCHASERS TO PREFER US TO OTHER PRODUCERS, AND I FEEL WE SHOULD RESERVE OUR ROYALTY PORTION FOR USE WHEN OTHER ALTERNATIVES ARE NOT AVAILABLE. I THINK IT ALSO FOLLOWS

FROM THIS THAT EXISTING FACILITIES IN-STATE, WITH EXISTING SUPPLY CONTRACTS, SHOULD NOT GENERALLY BE PURCHASERS OF OUR ROYALTY OIL AND GAS, UNLESS, OF COURSE, THEY EXPAND IN SUCH A WAY THAT MEETS THE NET BENEFIT CRITERIA WE HAVE ALREADY DISCUSSED. OF COURSE, PUBLIC UTILITIES ARE AN EXCEPTION TO THIS.

PUBLIC UTILITIES ARE NONPROFIT INSTRUMENTS OF THE CITIZENS OF ALASKA, AND THEREFORE SHOULD RECEIVE SOME MANNER OF SPECIAL TREATMENT FROM THE ROYALTY OIL AND GAS BOARD. I PERSONALLY FEEL, HOWEVER, THAT THIS SPECIAL TREATMENT SHOULD NOT INCLUDE SPECIAL CUT-RATE PRICING WHICH WOULD MERELY BE A SUBSIDIZATION OF CONSUMERS IN ONE AREA OF THE STATE AT THE EXPENSE OF THE POCKETBOOKS OF ALL ALASKANS. THERE ARE WAYS AROUND THIS WHICH THE LEGISLATURE MIGHT EXPLORE, INCLUDING ENERGY TAX CREDITS FOR ALL CITIZENS, DISCOUNTED BY THE AMOUNT OF LOCAL SUBSIDY TO PUBLIC UTILITIES THROUGH CUT-RATE ROYALTY OIL AND GAS PRICING, BUT UNTIL THESE ARE INSTITUTED, WE SHOULD GIVE NO SELECT GROUP OF ALASKANS SPECIAL TREATMENT OVER ALL OTHERS.

I DO FEEL, THOUGH, THAT PUBLIC UTILITIES SHOULD HAVE FIRST CALL ON ROYALTY OIL AND GAS AT THE GOING PRICE, AND THEREFORE THAT SOME REASONABLE PROPORTION SHOULD BE HELD FROM ANY LARGE-SCALE SALE OF PRUDHOE BAY ROYALTY OIL. IN ADDITION, I FEEL IT APPROPRIATE THAT MAXIMUM FLEXIBILITY IN VOLUME BE ALLOWED TO PUBLIC UTILITIES, WHEN SUCH FLEXIBLE VOLUME SALES ARE SMALL ENOUGH TO NOT DISRUPT THE ENTIRE ROYALTY OIL OR GAS PICTURE.

ADD 067762

IN SUMMARY, OUR ROYALTY OIL AND GAS IS NOT ONLY A HUGE FINANCIAL ASSET, BUT ALSO A VERY SIGNIFICANT SOCIAL LEVER, WHEREBY WE MAY ENCOURAGE THAT HEALTHY TYPE OF ALASKAN INDUSTRY THAT SERVES TO THE BENEFIT OF US ALL, AND THAT WHICH ALL ALASKANS WELCOME INTO OUR STATE.

I VERY MUCH APPRECIATE THE OPPORTUNITY TO SHARE MY THOUGHTS WITH YOU THIS MORNING, AND HOPE WE CAN USE THE REST OF MY TIME TO DISCUSS IN DETAIL THE POINTS I HAVE MENTIONED OR ANY OTHER MATTERS YOU WOULD LIKE TO BRING UP.

THANK YOU VERY MUCH.

ACO 667793

ALASKA ROYALTY OIL AND GAS
In-State Use - A Developers Guide

DRAFT

Prepared For:
Alaska Royalty Oil and Gas Development Advisory Board

AGO 667764

INTRODUCTION

This guide includes the following components:

A. State Information Needs - Phase I Preliminary Submittal

B. State Information Needs - Phase II Pre-Proposal Submittal

C. Preliminary Siting Criteria

D. State Evaluation Factors

E. State Permitting Requirements

The purpose of the guide is to provide a means for improving the flow of information between the State and a prospective developer, in order to generate a mutually acceptable proposal for in-state facilities making use of Alaska's non-renewable resources. This is not a formal Request for Proposal, nor does it in any way supercede applicable State and local leasing, permitting or regulatory requirements. It is intended solely to:

1. ensure that the State receives, on a timely basis, the necessary information to evaluate a potential development;

2. provide a prospective bidder with information on how the State will be evaluating a project as well as some of the requirements and criteria that a developer will be expected to meet.

A. State Information Needs - Phase I Preliminary Submittal

The preliminary list includes basic types of information that a developer should provide the State in order to initiate the evaluation process. The State will utilize this information to perform a preliminary analysis of the proposed project. The State will make this evaluation available to the developer along with any additional questions and/or concerns.

B. State Information Needs - Phase II Pre-Proposal Submittal

Following the Phase I evaluation, a more detailed analysis of the potential project will be undertaken by the State. A prospective developer will be expected to provide a more specific set of information to satisfy the Phase II evaluation. After satisfactory completion of this phase, efforts can be geared to finalizing a mutually acceptable proposal package and, subsequently, a formal contract.

C. Preliminary Siting Criteria

In order to assist a developer in preparing a description of the proposed facility and locating potential acceptable sites, a preliminary set of State siting criteria is included in the guide.

D. **State Evaluation Factors**

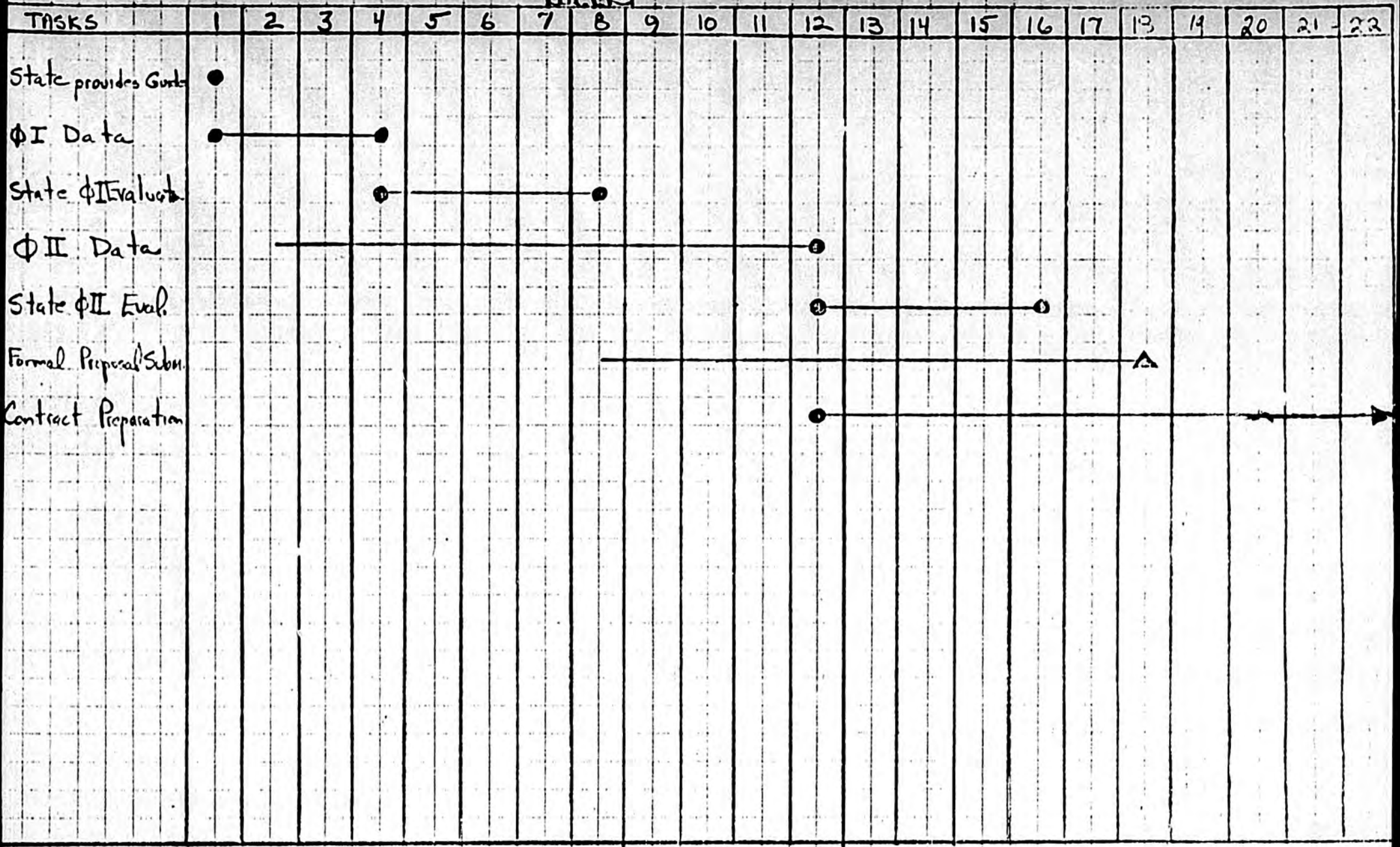
The State will perform a formal two phase evaluation process. The particular areas of State concern, examples of evaluation factors and agency evaluation responsibilities are described in this internal document. This information should assist developers in understanding how their inputs will be utilized by the State, and the key factors of concern to the State. A more formalized comprehensive interagency project evaluation procedure is now in the process of being developed.

E. State Permitting Requirements

A draft inventory of State permits is included to assist the prospective developer in understanding the scope of required actions necessary prior to development activities. The applications for the appropriate State permits are not a part of the above information flow and evaluation process. If a proposal is accepted, formal applications must be submitted.

A working committee of key State personnel has been established to assist in the information exchange/evaluation process. This group will be available to respond to particular questions, clarify the procedures, provide available data (environmental standards and regulations, site-specific land uses, critical habitat areas, local socioeconomic characteristics, to name just a few), as well as to expedite State evaluation of a proposed project. Following is a tentative timing schedule of activities.

TIME TABLE



AGO 667767

INFORMATION NEEDS - DEVELOPER RESPONSIBILITIES

A. Phase I - Preliminary Submittal

B. Phase II - Pre-Proposal Submittal

A. INFORMATION NEEDS - DEVELOPER RESPONSIBILITY

PHASE I - PRELIMINARY SUBMITTAL

PHYSICAL CHARACTERISTICS

- General project description - site and logistical support requirements; type, pattern and timing of activities; project phasing; life of facility; product mix/volume;

- Site development concept; potential locations (general rationale) (see: Preliminary Siting Criteria)

- Power needs; raw material needs; access needs and transportation activities; construction material needs - General

- Water utilization requirements

- Technology scale-up requirements

ECONOMIC/FINANCIAL CHARACTERISTICS

- Estimated direct revenues to State and locality (source and timing)

- Financing and ownership schemes

- Labor demands - skills, full-time/part-time/seasonal, short-term/long-term

- Approaches to local and statewide hiring and training

- Preliminary estimates of availability and price of products and/or by-products for local and state-wide use

- Approaches/alternatives for sharing in the responsibility to: provide additional needed public facilities and services; provide in-state service industries; compensate or offset potential negative environmental, economic and fiscal impacts to State and locality

- General information on contribution to local and State economy

- Estimates of type and quantity of inputs demanded by industry

- Expected contributions of State and/or locality - land, infrastructure, tax incentives, below-market-price raw materials, etc.

ENVIRONMENTAL CHARACTERISTICS

- General environmental implications and conflicts expected

- Projected discharges and emissions

- Overview of mitigation strategies/alternatives - spills contingency, air pollution control, site protection, solid waste and waste water disposal, toxic and hazardous substance control, erosion control, etc.

MISC.

- Data collection and study plans and schedule

- Public participation schemes

- Plans for joint government (State and Local) and developer planning and study efforts

B. INFORMATION NEEDS - DEVELOPER RESPONSIBILITY

PHASE II - Proposal Submittal

PHYSICAL CHARACTERISTICS

- Alternative site locations and designs and recommended site and design (with rationale and statement of why recommended site and design are superior)
- Project description (from design to close-down) - specific site and logistical support requirements; operational (including expansion or contraction) plans; product mix/volume; site development plans; provisions for protective or buffer zones
- Readjusted (if necessary) power needs; raw material needs; access needs, transportation loads, density and frequency of transportation activities, types of vehicles and/or vessels; communications requirements; construction material utilization plan and potential sources
- Water consumption and utilization plans; potential sources/conflicts
- Specific technology scale-up requirements
- Convertibility of facilities for other uses (bulk storage, industrial park); potential concurrent uses of facilities (general cargo area, recreational facilities); conversion schemes
- Prior site and construction material negotiations with local landowners/government

ECONOMIC/FINANCIAL CHARACTERISTICS

- Direct revenues to State and locality (timing and sources)
- Updated financing and ownership plans; opportunities for local equity participation
- Updated labor demands - skills, job classifications, full-time/part-time/seasonal, short-term/long-term
- Local and state-wide hiring and training (management and high skills) plans (including phasing and construction/operation separation)
- Refined estimates of availability and price of products and by-products; marketing schemes and/or commitments
- Prior negotiations with suppliers, distributors, transport services, unions

- **Commitments for sharing in the responsibility to: (1) provide additional needed public services and facilities; (2) provide in-state service industries; (3) compensate or offset potential negative environmental, economic and fiscal impacts to the State and locality; (4) provide adequate monitoring, surveillance and quality control programs**

- Specific expected State and/or local contributions--land, tax incentives, below-market-price raw materials, low-cost power, etc.

ENVIRONMENTAL CHARACTERISTICS

- Volume and timing of all discharges and emissions

- **Degree of dredging required (if any) and proposed disposal plans and locations**

- Probable primary and secondary impacts; probable adverse effects which cannot be avoided; anticipated irretrievable commitment of resources

- Mitigation strategies - spills contingency; air pollution control; site protection; solid waste and waste water management; revegetation, reclamation and/or restoration schemes; erosion control; stream protection; etc.

- Visual impacts; potential noise and dust problems

- Adequacy (at recommended site) of soils and local geology for solid waste and sewage disposal

- Recycling and conversion schemes; energy conservation and alternative energy use strategies

MISC.

- Monitoring, surveillance and quality control strategies

- Estimates of energy efficiency of project

- Data collection and analysis plans and schedule - base line data; environmental and engineering studies; technology assessment; risk analysis; EIS preparation

- Perceived or expected external constraining factors - Federal permits, NEPA, political opposition, land claims, etc.

- Cost breakdown including: estimated capital/construction/ operating costs; training programs; public participation; studies; etc.

- Initial schedule for public inputs (on proposal and potential sites)

- Non-resident employee orientation program plans

C. PRELIMINARY SITING CRITERIA

C. PRELIMINARY SITING CRITERIA

The following preliminary siting criteria can be utilized to assist a prospective developer in: (1) locating potential sites; (2) responding to the information needs of the State:

1. Compatibility - Ensure that facility sites are compatible with existing and projected land and water uses;

2. Consolidation - Utilize existing sites and facilities that are capable of handling anticipated demand while meeting the other siting criteria;

3. Traffic - Avoid siting facilities where the most likely vehicular and/or vessel route(s) would interfere with: community activities; population centers; fishing and/or harbor operations;

4. Access - Facilities should be sited such that access to navigable waterways and recreational areas shall not be foreclosed;

5. Safety - Site fuel, crude oil and LNG storage and transfer areas: downwind from populated areas to reduce the hazard of fire and explosion to human population; at elevations sufficiently above mean sea level to escape the highest tsunami run-up;

6. Pipelines - Align pipeline routes away from active faults, areas of subsidence, glacial surge;

7. Resource Protection - Site facilities so that areas of particular historic, agricultural, scenic, recreational and unique environmental, wildlife habitat, and cultural values will be protected;

8. Site Preparation - Avoid sites where extensive site clearing, dredging and construction in productive wetlands, estuaries, deltas or other sensitive areas would be required;

9. Environmental Management - Site facilities in areas of least biological productivity, diversity and uniqueness and where effluents, emissions and spills can be controlled or contained easily;

10. Air Quality - Site facilities where the probability of chronic air quality problems would be low;

11. Water Quality/Supply - Site facilities where the probability of water quality degradation would be low and where the existing water supply would not be adversely affected;

12. Local Preference - Locate facilities where local preferences are supportive of such development.

D. Examples of State Evaluation Factors

ECONOMIC CONSIDERATIONS

AREA OF CONCERN

Impact on governmental resources and responsibilities

EVALUATION FACTORS (Examples)

- net governmental fiscal balance over time--local and state-wide (particularly revenue shortfalls)
- change in quality and quantity (per capita) of public services or goods
- long-term convertability of facilities for public or private use; potentials for concurrent use

AGENCY RESPONSIBILITY

Department of Revenue, Department of Community and Regional Affairs, Division of Budget and Management, Department of Public Works, Department of Highways

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AREA OF CONCERN

Direct contribution to local and state-wide private economy (includes changes resulting from the development itself and activities accompanying it due to expanded markets)

EVALUATION FACTORS (Examples)

- change in real per capita income and product (due to project and attendent service facility expansions)
- short- and long-run price impacts (e.g. short-run shortages of private goods or facilities; long-run private economies of scale, increased competition, changes in transportation costs)

AGENCY RESPONSIBILITY

Department of Commerce and Economic Development, Department of Revenue

ECONOMIC CONSIDERATIONS

AREA OF CONCERN

Employment

EVALUATION FACTORS (Examples)

- change in local and regional (% and #) employed, unemployed, under-employed Alaskans
- type, level and salaries of jobs
- time characteristics of jobs and their distribution (short- vs. long-term)
- level of training and Alaska hire commitment (amount of labor imported)
- degree to which manpower training dovetails with timing of employment requirements

AGENCY RESPONSIBILITY

Department of Labor, Department of Commerce and Economic Development, Department of Community and Regional Affairs

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AREA OF CONCERN

Distributional aspects and implications of the development

EVALUATION FACTORS (Examples)

- distribution of income and jobs associated with the project among groups (in-state vs. out-of-state; local vs. state-wide, current residents vs. in-migrants; Native/non-Native; income classes; sectors of the economy)
- opportunities for local (participation--investment)
- ownership of assets (in-state vs. out-of-state)
- changes in land value and ownership

AGENCY RESPONSIBILITY

Department of Community and Regional Affairs, Department of Revenue, Department of Labor, Department of Commerce and Economic Development

ECONOMIC CONSIDERATIONS

AREA OF CONCERN

Indirect or spinoff economic activities (the primary project's impact on future economic developments)

EVALUATION FACTORS (Examples)

- the possibility of related developments (either producing inputs for the production process of the primary industry or utilizing outputs of the primary industry)
- size and impact of such development (measured in ways similar to economic impact of primary industry)

AGENCY RESPONSIBILITY

Department of Commerce and Economic Development, Department of Community and Regional Affairs, Department of Revenue

SOCIAL

AREA OF CONCERN

Lifestyle changes and social conflicts

EVALUATION FACTORS (Examples)

- the potential for value conflicts between local residents and expected in-migrants
- potential for cross-cultural conflicts between local residents and expected in-migrants
- conflict with subsistence use of wildlife
- growth management capability
- degree of local control and self-determination
- impact on quality of rural lifestyle or village lifestyle amenities
- public sentiment (local and state-wide)

AGENCY RESPONSIBILITY

Department of Community and Regional Affairs, Department of Health and Social Services, Department of Education, Department of Fish and Game

COMPATIBILITY WITH PLANS, PROGRAMS AND POLICIES

AREA OF CONCERN

Natural resources and land use alternatives

EVALUATION FACTORS (Examples)

- impact on forest sustained yield
- impact on fishery resources/areas of high biologic-commercial productivity
- impact on mineral extraction (including oil and gas)
- impact on available water supply
- impact on agricultural potentials
- impact on fish and wildlife habitats/populations
- impact on recreational potentials
- impact on wilderness, historic, scenic and sensitive environmental areas
- construction material demands

AGENCY RESPONSIBILITY

Department of Natural Resources, Department of Fish & Game, Department of Environmental Conservation, Department of Commerce and Economic Development

AREA OF CONCERN

Safety and Health

EVALUATION FACTORS (Examples)

- air, water and noise pollution (degree of localization; impact on human settlements, environmentally sensitive areas, highly scenic areas)
- dust, spills, thermal discharges (same as above)
- safeguards for transport and storage of toxic and hazardous substances
- drainage pattern impacts
- adequacy of soils and local geology for solid waste and sewage disposal
- compliance with State, local, and Federal environmental standards and criteria

AGENCY RESPONSIBILITY

Department of Environmental Conservation, Department of Fish and Game, Department of Natural Resources, Department of Health and Social Services

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AREA OF CONCERN

Environmental Management

EVALUATION FACTORS (Examples)

- monitoring, surveillance and quality control strategies
- development time frame (to build up environmental protection capabilities)
- degree of commitment of irretrievable resources and/or irreversible consequences
- environmental data sufficiency
- degree of internalization of environmental costs

AGENCY RESPONSIBILITY

Department of Environmental Conservation, Department of Fish and Game

TECHNICAL CONSIDERATIONS

AREA OF CONCERN

Construction feasibility/probability of construction delays/cost overrun potentials

EVALUATION FACTORS (Examples)

- technology requirements
- data base/engineering studies sufficiency
- infringement on high hazard areas
- legal and/or regulatory constraints
- degree of consolidation/concentration of facilities
- external constraints (political, economic, logistic)
- expansion potentials
- energy efficiency of project/energy conservation measures
- use of alternative energy sources

AGENCY RESPONSIBILITY

All departments

E. STATE PERMITTING REQUIREMENTS

TABLE OF CONTENTS

I. Permits issued by the Department of Environmental Conservation

1. Waste Water Disposal Permit
2. Solid Waste Disposal Permit
3. Air Emissions Permit
4. Pesticides Permit
5. Surface Oiling Permit
6. Open Burning Permit

II. Permits issued by the Department of Fish and Game

7. Anadromous Fish Protection Permit
8. Critical Habitat Areas Permit
9. State Game Refuge Land Use Permit

III. Permits issued by the Department of Highways

10. Encroachment Permit
11. Utility Permit
12. Driveway Permit
13. Overweight - Oversize Permit

IV. Permits issued by the Department of Natural Resources

A. Parks and Recreation and Public Use - Special Land Use Permits

14. Investigation and Collection Permit
15. State Park Incompatible Use Permit
16. Access Routes Permit

B. Oil and Gas Permits - Drilling Permits

17. Drilling Permit
18. Drilling Deviation Permit

C. Oil and Gas - Regulatory Orders

19. Well Spacing Permit
20. Notice of Abandonment
21. Plugging Procedure
22. Well Marker
23. Water Wells
24. Temporary Abandonment
25. Location Cleanup
26. Multiple Completion of Wells
27. Commingling of Production
28. Earthen Reserviors
29. Disposal of Brine of Other Wastes

D. Oil and Gas - Plan of Operations

30. Additional Recovery Methods

E. Oil and Gas - Coal Conservation

31. Development Work

F. Land and Waters - Leasing of Lands

32. Right-of-Way or Easement Permit
33. Special Land Use Permit

G. Land and Waters - Tide and Submerged Lands

34. Tidelands Permit
35. Tideland Right-of-Way and/or Easement Permit
36. Limited Personal Use Permit

H. Land and Waters - Water Use

37. Permit to Appropriate Water
38. Dam Construction
39. Application for Preferred Use

I. Land and Waters - Timber

40. Use of Timber and Materials
41. Authorization for Transportation Facilities

J. Land and Waters - Materials Sales

42. Special Material Use Permit

K. Land and Waters - Mineral Leasing

43. Noncompetitive Procedures
44. Coal Prospecting Permit
45. Sodium Leasing Method
46. Potassium Leasing Method
47. Geothermal Resources Leasing Method

L. Land and Waters - Offshore Permits

48. Tide and Submerged Lands

M. Land and Waters - Millsites

49. Surface Use Permit

N. Land and Waters - Forest Protection

50. Burning Permit

AC-0 667 784B

O. Land and Waters - Miscellaneous Land Use

51. Operations on State Land Requiring Permits
52. Subleases of State Lands
53. Right-of-Way Permit
54. Abandonment of or Reduction or Impairment of Services of Pipeline by Leasee Carrier
55. Applications for Right-of-Way Leases and Certificates
56. Preservation of Archaeological Resources

Appendix A - Department of Environmental Conservation Contacts List

Appendix B - Department of Fish and Game Contacts List

Appendix C - Department of Highways Contacts List - District Engineers

Appendix D - Department of Highways Contacts List - Overweight-Oversize Permit Contacts

Appendix E - Department of Natural Resources Contacts List

Permits Issued by
the Department of Environmental Conservation

1. Waste Water Disposal Permit

A person conducting any operation which results in the disposal of solid or liquid waste material into the waters or onto the lands of the State must procure a permit from the Department of Environmental Conservation before disposing of the waste material. The permit must be obtained for direct disposal and for disposal into publicly operated sewerage systems. The permit does not apply to persons discharging only domestic sewage into the sewerage system.

Procedure: Permit applicant should contact the Department of Environmental Conservation Regional Environmental Supervisor. See Department of Environmental Conservation "Contacts List" in appendix.

Requirements: The Department may require the submission of plans for sewage and industrial waste disposal or treatment or both for publicly or privately owned or operated industrial establishments, community, public or private property subdivision or development.

Authority for Permit:
* AS 46.03.100. Waste disposal permit.
* AS 46.03.090. Plans for pollution disposal.
* AS 46.03.110 and 720. Waste disposal permit procedure.
* 18. AAC. 72.030. Pretreatment.

Criteria for Issuance: AAC Title 18, Chapter 70 and 72.

2. Solid Waste Disposal Permit

No person may establish, modify or operate a solid waste disposal facility without a permit, except the following:

1) a single family or duplex residence on which solid waste is generated and disposed of, on-premises;

2) a farm on which solid waste generated from the operation of that farm is disposed; and

3) incinerator facilities having a total rated capacity of less than 200 pounds of solid waste per hour.

Procedure: Permit applicant should contact the Department of Environmental Conservation Regional Environmental Supervisor for appropriate forms. Application for permit shall contain:

1) completed permit application forms;

2) detailed plans and specifications for facility;

3) certification of compliance with local ordinances and zoning requirements;

4) a report detailing the proposed methods for operation, population of area to be served, characteristics, quantity and source of material to be processed; and

5) 60 days public notice and public hearing.

Requirements: Detailed plans and specifications for the facility are required, as outlined above.

Authority for Permit:
* AS 46.03.020. Powers of the department.
* AS 46.03.100. Waste disposal permit.

Criteria for Issuance: AAC Title 18, Chapter 60, Solid Waste Management.

3. Air Emissions Permit

A permit is required to operate a facility capable of emitting quantities of pollutants injurious to human health or welfare, animal or plant life or property.

Procudure: Applicant should contact the Department of Environmental Conservation Regional Supervisor.

Requirements: No person may construct or modify a facility requiring a permit to operate until detailed plans and specifications are submitted to the Department and approved.

Authority for Permit:

* AS 46.03.010. Declaration of policy.
* AS 46.03.140. Emission control requirements.
* AS 46.03.150. Classification and reporting.
* AS 46.03.160. Additional contaminant control measures.
* AS 46.03.170. Variances.
* 18 AAC 50.120. Permit to operate.

Citeria for Issuance:

* 18 AAC 50.020. Ambient Air Quality Standards.
* 18 AAC 50.030. Open Burning.
* 18 AAC 50.040. Incinerators.
* 18 AAC 50.050. Industrial Processes and Fuel Burning Equipment.
* 18 AAC 50.120. Permit to operate.

4. Pesticides Permit

No person may, without a permit issued by the Department, apply or cause to be applied any pesticide or broadcast chemical.

Procedure: The permit applicant should contact the Department of Environmental Conservation Regional Environmental Supervisor for the appropriate form.

Requirements: An application for a permit to use pesticides shall include information relating to the name of the pest to be controlled, the type of formulation to be used, and percentage of active ingredients, the quantity of active ingredients to be applied per unit area, and other information.

Authority for Permit:
* AS 46.03.320. Authority.
* AAC Title 18, Chaper 90. Pesticide and Broadcast Chemical Control.

Criteria for Issuance:
* AAC Title 18, Chapter 90. Pesticide and Broadcast Chemical Control.

5. Surface Oiling Permit

No person may discharge, cause to be discharged, or permit the discharge of oil, asphalt, bitumen or a residuary product of petroleum onto the lands of the State unless that person has been granted a surface oiling permit.

Procedure: Applicant should contact the Department of Environmental Conservation Regional Environmental Supervisor for the appropriate form.

Requirements: An application for a surface oiling permit shall be made on forms prescribed by the Department and shall contain information considered necessary to the Department.

Authority for Permit:
* 18 AAC 75.010. Surface Oiling Permit.
* AS 46.03.020. Powers of the Department.
* AS 46.03.740. Oil pollution.

Criteria for Issuance:
* AAC Title 18, Chapter 75.

6. Open Burning Permit

Open burning for disposal of oils, oily waters, asphalts and tars and similar wasted materials is prohibited unless conducted under a permit from the Department.

Procedure: Applicant should contact the Department of Environmental Conservation Regional Environmental Supervisor.

Requirements: Emission data may be required prior to grant of the permit.

Authority for Permit:
* AS 46.3.020. Powers of the Department.
* 18 AAC 50.030. Open Burning.
* 18 AAC 50.120. Permit to Operate.

Criteria for Issuance:
* 18 AAC 50.020. Ambient Air Quality Standards.

7. Anadromous Fish Protection Permit

If a person or governmental agency desires to construct a hydraulic project, or use, divert, obstruct, pollute, or change the natural flow or bed of a specified river, lake or stream, or use wheeled, tracked, or excavating equipment or log-dragging equipment in the bed of the specified river, lake, or stream, the person or governmental agency shall notify the Department of Fish and Game before the beginning of the construction or use.

Procedure: Permit applicant should contact the Department of Fish and Game Regional Habitat Supervisor for his region. See Department of Fish and Game "Contacts List" in appendix.

Requirements: If the Commissioner of the Department of Fish and Game determines to do so, he shall require the person or government agency to submit to him full plans and specifications for the proper protection of fish and game in connection with the construction or work, or in connection with the use, and the approximate date the construction or work or use will begin, and shall require the person to obtain written approval from him as to the sufficiency of the plans and specifications before the proposed construction or use is begun.

Authority for Permit:
* AS 16.05.870. Protection of Fish and Game.
* 5 AAC 95.010. Waters important to Anadromous Fish.

Copies of the List of Waters Important to Anadromous Fish or of information contained therein may be obtained by writing the Lieutenant Governor or the Department of Fish and Game, Habitat Protection Section, Subport Building, Juneau, Alaska, 99801, or may be obtained from ADF&G Regional Habitat Supervisors.

8. Critical Habitat Areas Permit

Before the use, lease or other disposal of land under private ownership or State jurisdiction and control, within State Fish and Game critical habitat areas, the person or responsible State department or agency shall notify the Department of Fish and Game.

Procedure: The responsible person should contact the Department of Fish and Game Regional Habitat Supervisor for his region.

Requirements: If the Board of Fish and Game so determines, it shall instruct the Commissioner to require the person or governmental agency to submit full plans for the anticipated use, full plans and specifications of proposed construction work, complete plans and specifications for the proper protection of fish and game, and the approximate date when the construction work is to commence, and shall require the person or governmental agency to obtain the written approval of the Commissioner as to the sufficiency of the plans and specifications before construction is commenced.

Authority for Permit:
* AS 16.20.250. Multiple land use.
* AS 16.20.260. Submission of plans and specifications.

Criteria for Issuance:
Determination of Board of Fish and Game.

9. State Game Refuge Land Use Permit

Where the use, lease or disposal of real property in State game refuges is under the control or jurisdiction of the State, whether through Federal permit or State ownership, the responsible State department or agency shall notify the Department of Fish and Game before initiating any use, lease or disposal of real property.

Procedure: The responsible State department or agency should contact the Commissioner of the Department of Fish and Game.

Requirements: If the Commissioner so determines, he may require the person or governmental agency to submit full plans and specifications for the anticipated use, full plans and specifications of proposed construction work, complete plans and specifications for the proper protection of fish and game, and the approximate date when the construction work is to commence, and shall require the person or agency to obtain written approval of the Commissioner as to the sufficiency of the plans and specifications before construction is commenced.

Authority for Permit:
* AS 16.20.050. Multiple land use.
* AS 16.20.060. Submission of plans and specifications.

Criteria for Issuance:
Determination of the Commissioner.

10. Encroachment Permit

An encroachment may be constructed, placed, changed or maintained across or along a highway but only in accordance with regulations adopted by the Department. No encroachment may be constructed, placed, maintained or changed until it is duly authorized by a written permit issued by the Department of Highways.

Procudure: Applicant should contact the Department of Highways District Engineer for his region. See Department of Highways "Contact List" in appendix.

Requirements: During routine maintenance patrol, road and weather condition inspection, or at regular intervals as deemed necessary, maintenance personnel shall inspect right-of-way for encroachments. When an encroachment is found, District Right-of-Way will make a recommendation to the District Engineer as to whether the encroachment should be permitted or removed.

Authority for Permit:
* AS 19.25.200. Encroachment permits.

Criteria for Issuance: State of Alaska Department of Highways Standard Operating Procedure, S.O.P. #0000-14.

11. Utility Permit

An electric transmission, telephone, or telegraph line, pole line, railway, ditch, sewer, water, heat, or gas main, flume, or other structure which by law may be constructed, placed or maintained across or along a highway by a person or political subdivision may be maintained or constructed only in accordance with regulations prescribed by the Department. No utility project of this nature may be undertaken until it is authorized by a written permit issued by the Department.

Procedure: Applicant should contact the Department of Highways District Engineer in his region.

Requirements: Plans are required.

Authority for Permit:
* AS 19.25.010. Use of right-of-ways for utilities.
* 17 AAC 15.010. Application for utility permit.
* 17 AAC 15.020. Utility Permit.

Criteria for Issuance: See Alaska Administrative Code 17 AAC 15.010-020.

12. Driveway Permit

Before starting the construction of driveways or performing any work upon the right-of-way, the property owner shall first apply for and obtain a revocable permit from the Department of Highways.

Procedure: Applicant should contact the Department of Highways District Engineer for his region.

Requirements: Applicant must perform all work in accordance with permit.

Authority for Permit:
* 17 AAC 10.020. Driveways and Road Approaches.
* AS 19.05.020. Regulations.

Criteria for Issuance:
* 17 AAC 10.020. Driveways and Road Approaches.

Driveway Regulations can be obtained at Department of Highways District Offices.

13. Overweight - Oversize Permit

The Department of Highways, with respect to highways under its jurisdiction, may:

1) establish limitations on weight and load of vehicles;

2) issue special written permits authorizing the operation of overweight vehicles; and

3) prohibit the operation or impose restrictions on vehicular use of highways during certain seasons of the year.

Procedure: Applicant should contact the Department of Highways District Office for application form 14-156.

Requirements: Permits may be issued for operation of oversize-overweight vehicles when:

1) Application has been made in writing, good cause has been shown and all pertinent requirements are met;

2) The applicant has completely described his load and vehicle route and time of travel;

3) The applicant has certified that the load cannot "reasonably" be dismantled or disassembled to meet the legal load and size requirements. Disassembly may be required by the District Engineer to assure the safety of the traveling public or the highways and its appurtenances;

4) The applicant has affirmed that the vehicle or vehicles meet all requirements of the Alaska Department of Commerce and the Transportation Commission; and

5) The proposed move will not be detrimental to the public safety or damage the roadway structure or bridges as determined under State requirements.

Authority for Permit:

* AS 19.10.060. Regulation of weight and load of vehicles and use of highways during certain seasons.
* AS 28.05.020. Authority for Commissioner of Highways to adopt regulations.
* 17 AAC 25.010. Penalty and Exclusion.
* 17 AAC 25.020. Width of Vehicles.
* 17 AAC 25.030. Height and Length of Vehicles and Loads.

Criteria for Issuance: * 17 AAC 25.010-030.

Alaska Oversize and Overweight Permit Movements State of Alaska, Department of Highways, Maintenance Division, P. O. Box 1467, Juneau, Alaska, 99802.

AGO 667799

Parks, Recreation and Public Use - Special Land Use Permits

14. Investigation and Collection Permits

A person qualified under 11 AAC 16.040 may apply to the director upon an application form provided by him for a permit to investigate or collect historic, prehistoric or archaeological resources of the State.

Procedure: Applicant should contact the Department of Natural Resources District Office. See "Contacts List" in appendix.

Requirements: Person must qualify as having some experience in anthropology or field archaeology.

Authority for Permit:
* AS 41.20.040. Division within Department of Natural Resources.
* AS 41.35.050. Regulations.
* AS 41.35.080. Permits.
* 11 AAC 16.030. Investigation and Collection Permits.

Criteria for Issuance:
* 11 AAC 16.040. Qualified Person.

15. State Park Incompatible Use Permit

Incompatible uses (e.g., mineral exploration, cutting of timber) of public lands within a State park are allowable only with a permit. Permits will be issued where it is determined that the ecology of the area will not be damaged and public use values will be protected.

Procedure: Applicant should contact the Department of Natural Resources District Office.

Requirements: Contact District Office.

Authority for Permit:
* AS 41.20.020. Duties of Department of Natural Resources.
* AS 41.20.040. Division within Department of Natural Resources.
* 11 AAC 18.010. State Park Incompatible Uses.

Criteria for Issuance:
* 11 AAC 18.010. State Park Incompatible Uses.

16. Access Routes Permit

A permit is required to gain an access route across State park land or water to privately owned property wholly or partially within a State park.

Procedure: Contact the Department of Natural Resources District Office.

Requirements: Permittee must construct access route according to specifications provided by the director.

Authority for Permit:

* AS 41.20.020. Duties of the Department of Natural Resources.
* AS 41.20.040. Division within the Department of Natural Resources.
* 11 AAC 18.020. Access Routes.

Criteria for Issuance: Determined by Director of Parks and Recreation.

17. Drilling Permits

A person wishing to drill or deepen any well for oil and gas must first submit an application accompanied with a fee of $100.00, and then obtain permit.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division. See "Contacts List" in appendix.

Requirements: $100.00 fee. A survey plat must accompany the application showing the precise location of the drilling activity.

Authority for Permit:
* AC 31.05.090. Permits and fees to drill wells.
* 11 AAC 22.005. Permit to Drill or Deepen.

Criteria for Issuance:
* 11 AAC 22.005. Permit to Drill or Deepen.

18. Drilling Deviation Permit

A permit is required before a well operator may intentionally deviate from the vertical, except for the purposes of straightening the hole, side-tracking junk, or correcting mechanical difficulties.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Application for permit shall include:

1) surface and proposed producing interval locations in terms of distances from lease and section boundaries;

2) reason for deviation;

3) list of affected operators and a showing that each has been furnished a copy of the application by certified mail, or a showing that the applicant is the only affected operator; and

4) neat and accurate plat of lease and all affected operators and the surface and proposed producing interval locations as well.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.050. Deviation.

Criteria for Issuance:
* 11 AAC 22.050. Deviation.

19. Well Spacing Permit

A person must apply for and receive an exception to the well spacing regulations before deviation from the regulations is allowed.

Procedure: Permit applicant should contact the Department of Natural Resources Minerals and Energy Division.

Requirements: An application must indicate the affected operators, and include a plat of the proposed action.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.055. Well Spacing.

Criteria for Issuance:
* 11 AAC 22.055. Well Spacing.

20. Notice of Abandonment

Before beginning work on any well, notice of intention to abandon must be filed, and approval must be given.

Procedure: Person should contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Notice must show the reason for abandonment and must be accompanied by a detailed statement of proposed work including such information as kind, location, size of plugs, and plans for mudding, etc.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.100. Notice.

Criteria for Issuance:
* 11 AAC 22.100. Notice.

21. Plugging Procedure

To deviate from the plugging procedure set up in the regulations, approval upon application must be obtained.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Follow procedures outlined in 11 AAC 22.110., Plugging Procedures.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.110. Plugging Procedure.

Criteria for Issuance:
* 11 AAC 22.110. Plugging Procedure.

22. Well Marker

In order to waive well marker requirements, the surface owner must request and receive approval.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Contact Minerals and Energy Division.

Authority for Permit:
* AS 31.05.030. Powers and Duties of the Department.
* 11 AAC 22.120. Well Marker.

23. Water Wells

Written authority for a well to be used as a fresh water well must be applied for and approved.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Contact Minerals and Energy Division.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.140. Water Wells.

24. Temporary Abandonment

Approval is required if a well is to be temporarily abandoned.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: If approved, a plug must be placed at the top and bottom of the well casing in such a manner as to prevent the intrusion of any foreign matter into the well. The well shall be left full of mud.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.150. Temporary Abandonment.

25. Location Cleanup

Time extension must be obtained for the well operator to deviate from the cleanup regulations.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Contact the Minerals and Energy Division.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.170. Location Cleanup.

26. Multiple Completion of Wells

No well may be put into multiple production without approval.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Approval will require evidence of adequate and complete separation as ascertained by pressure or circulation tests.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.210. Multiple Completion of Wells.

27. Commingling of Production

An order approving commingling in the same well bore of production from two or more wells must be obtained before such practice is permitted.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Proposing operator must certify that contact has been made with the affected parties and no opposition is furnished to committee within 15 days.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.215. Commingling of Production.

28. Earthen Reservoirs

Permission must be obtained to store oil in earthen pits.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Contact Minerals and Energy Division.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.220. Earthen Reservoirs.

29. Disposal of Brine and Other Wastes

Permission is required for the disposal of salt water.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: It must be shown that the disposal of salt water will not contaminate fresh water or endanger other natural resources.

Authority for Permit:
* AS 31.05.030. Powers and duties of the Department.
* 11 AAC 22.250. Disposal of Brine and Other Wastes.

Note: The items listed under the above heading involve the need for administrative approvals and orders from the Oil and Gas Conservation Committee. These approvals on various well operations are, in effect, permits to do various types of work once a well is completed or to abandon a well. However, the forms and procedures do not bear the title permit.

30. Additional Recovery Methods

A permit is required for any method of pressure maintenance or methods of additional recovery used other than primary recovery techniques.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Application must contain a plat showing the unit, lease or group of leases within the proposal project, along with other related information.

Authority for Permit:
* AS 31.05.020. Waste Prohibited.
* 11 AAC 22.400. Application.

31. Development Work

No development work shall be done on coal deposits on State lands without the advance approval of the State geologist.

Procedure: Contact the Department of Natural Resources - Minerals and Energy Division.

Requirements: Contact the Minerals and Energy Division.

Authority for Permit:
* AS 27.20.005. Purposes.
* AS 27.20.010. Rules and Regulations.
* 11 AAC 46.010. Advance Approval.

32. Right-of-Way or Easement Permit

The Division of Lands Director may issue permits for roads, trails, ditches, pipelines, drill sites, log storage, telephone and transmission lines or similar uses or improvements.

Procedure: Applicant should contact the nearest District Office of the Department of Natural Resources.

Requirements: Plats are required, as well as an application fee.

Authority for Permit:

* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.035. Powers and duties of the Director.
* AS 38.05.075. Leasing procedures.
* AS 38.05.330. Permits.
* 11 AAC 58.200. Right-of-Way or Easement Permit.

33. Special Land Use Permit

The Director of the Division of Lands may issue special land use permits on such terms and conditions as he deems to be in the interests of Alaska.

Procedure: Applicant should contact the nearest District Office of the Department of Natural Resources.

Requirements: Provide information as to the nature of the proposed activity.

Authority for Permit:
* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.035. Powers and duties of the Director.
* AS 38.05.075. Leasing procedures.
* 11 AAC 58.210. Special Land Use Permit.

34. Tidelands Permit

The Director of the Division of Lands may issue permits for the improvement or use of State-owned tidelands, or for personal use of materials. The first preference in the granting of such permits will be granted to the upland owner over other nonpreference applicants for the use of tideland and contiguous submerged land seaward of the upland property.

Procedure: Applicant should contact the nearest District Office of the Department of Natural Resources.

Requirements: A $20.00 filing fee is required. Upon receipt of the application, the Director shall, within 60 days, express his approval or disapproval, and shall state his reasons. Each upland owner may protest the issuance of the permit. No permits shall be issued that will deny the upland owner reasonable access to tide waters during the course of or completion of the work.

Authority for Permit:
* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.320. Occupied tidelands and submerged lands.
* 11 AAC 62.710. Tidelands Permits.

Criteria for Issuance:
* 11 AAC 62.720. Application for Tideland Permits.

35. Tideland Right-of-Way and/or Easement Permits

Permits may be issued by the Division of Lands Director for secondary roads, trails, ditches, pipelines, telephone transmission lines, log storage, oil well drilling sites, and production facilities for the purposes of recovering minerals from adjacent lands under valid lease and other similar uses or improvements. First preference shall be granted to the upland owner.

Procedure: Applicant should contact the nearest District Office of the Department of Natural Resources.

Requirements: An applicant must furnish the name and address of the upland owner.

Authority for Permit:
* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.320. Occupied Tidelands and submerged lands.
* 11 AAC 62.810. Tidelands Right-of-Way and/or Easement Permits.

Criteria for Issuance:
* 11 AAC 62.810. Tideland Right-of-Way and/or Easement Permits.

36. Limited Personal Use Permit

Permits may be granted for a limited quantity of materials for personal use, and such materials shall not be sold. The director shall, in each permit, specify the quantity of material allowed but in no event shall the quantity exceed 100 cubic yards. The permits are for temporary use only.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:
* AS 38.05.020. Authorities and duties of the Commissioner.
* AS 38.05.320. Occupied Tidelands and submerged lands.
* 11 AAC 62.820. Limited Personal Use Permit.

37. Permit to Appropriate Water

Any person who desires to appropriate otherwise unappropriated waters of the State shall make application for a permit to appropriate water.

Procedure: Applicant should contact the nearest District Office of the Department of Natural Resources.

Requirements: An application for a permit to appropriate water shall include:

1) **location of source from which water is to be appropriated;**

2) **place where the appropriated water will be of beneficial use;**

3) **quantity of water to be appropriated;**

4) **proposed use of water to be appropriated; and**

5) **description of the proposed means of diversion.**

Authority for Permit:

* AS 46.15.040. Right to appropriate.
* AS 46.15.060. Existing rights.
* AS 46.15.070. Notices; objections.
* AS 46.15.135. Determination of existing rights.
* AS 46.15.180. Crimes.
* 11 AAC 72.050. Application for Permit to Appropriate.

38. Dam Construction

An application for a permit to appropriate water must include plans and specifications for any dam that may be built.

Procedure: Applicant must contact the nearest District Office of the Department of Natural Resources.

Requirements: Plans are required. If necessary, the Director may request that the applicant obtain an independent appraisal of the plans and specifications from a qualified engineer acceptable to the Director.

Authority for Permit:

* AS 46.15.040. Right to appropriate.
* AS 46.15.060. Existing rights.
* AS 46.15.070. Notices; objections.
* AS 46.15.135. Determination of existing rights.
* AS 46.15.180. Crimes.
* 11 AAC 72.060. Dam Construction.

39. Application for Preferred Use

The holder of a preferred use status may make an application for a permit to appropriate either unappropriated or previously unappropriated waters or both.

Procedure: Applicant should contact the nearest District Office of the Department of Natural Resources.

Requirements: A $20.00 filing fee is required. The applicant must provide the names and addresses of all holders of existing water rights, permits to appropriate or certificates of appropriation whose rights to water would be reduced, or in times of water scarcity, could be reduced by the diversion of water to the preferred use. Also required are certified copies of executed agreements between the holder of preferred use status and all other persons names as required to provide compensation for loss of previously appropriated water, or certified copies of any court orders which direct the amount and manner of compensation paid.

Authority for Permit:

* AS 46.15.040. Right to appropriate.
* AS 46.15.060. Existing rights.
* AS 46.15.070. Notices; objections.
* AS 46.15.135. Determination of existing rights.
* AS 46.15.180. Crimes.
* 11 AAC 72.160. Application for Preferred Use.

40. Use of Timber and Materials

Gravel, sand, and rock used by a purchaser in connection with a sale of timber may be acquired under a special permit issued in connection with the timber sale.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:

* AS 38.05.020. Authorities and duties of the Commissioner.
* AS 38.05.110. Sale of timber and materials.
* AS 38.05.115. Limitations and conditions of sale.
* AS 38.05.120. Disposal procedure.
* 11 AAC 76.185. Use of Timber and Materials.

41. Authorization for Transportation Facilities

Timber purchasers must obtain a permit for use of tidelands under State jurisdiction which are necessary for dumping, sorting, storage and rafting of timber cut from State sales.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Location and design of roads or access will be approved by the Director prior to construction.

Authority for Permit:

* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.110. Sale of timber and materials.
* As 38.05.115. Limitations and conditions of sale.
* AS 38.05.120. Disposal procedure.
* 11 AAC 76.205. Authorization for Transportation Facilities.

42. Special Material Use Permit

The Director may issue special material use permits for periods not to exceed one year upon such terms and conditions as he deems to be in the interest of the State.

Procedure: Applicant should contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:
* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.115. Limitations and conditions of sale.
* AS 38.05.120. Disposal procedure.
* 11 AAC 76.540. Special Material Use Permit.

43. Noncompetitive Procedures

Applications for noncompetitive leases on permits for a mineral may be filed on any noncompetitive lands opened for leasing of that mineral.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:
* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.135. Generally.
* AS 38.05.145. Leasing Procedure.

44. Coal Prospecting Permit:

A permit is required for prospecting or exploration work necessary to determine the existence of coal deposits in an unclaimed and undeveloped area. The permit is for a period of two years, and not to exceed 5,120 acres.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:
* AS 38.05.035. Powers and duties of the Director.
* AS 38.05.145. Leasing procedure.
* AS 38.05.150. Coal.
* 11 AAC 84.115. Prospecting Permits Operations.

45. Sodium Leasing Method

Prospecting permits for lands not known to contain valuable deposits of sodium are issued noncompetitively.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:
* AS 38.05.020. Authority and duties of the Commissioner.
* AS 30.05.145. Leasing procedure.
* 11 AAC 84.400. Sodium Leasing Method.

46. Potassium Leasing Method

Prospecting permits authorized for lands not known to contain valuable deposits of potassium compounds are issued noncompetitively.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:
* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.145. Leasing procedure.
* 11 AAC 84.600. Potassium Leasing Method.

47. Geothermal Resources Leasing Method

Prospecting permits authorized for lands which have not been classified as geothermal resources areas are issued noncompetitively.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:
* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.145. Leasing procedure.
* 11 AAC 84.700. Geothermal Resources Leasing Method.

48. Tide and Submerged Lands

The exclusive right to prospect for deposits of minerals in or on tide and submerged lands may be granted by the Director of the Division of Lands.

Prodecure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Applicant must meet qualifications outlined in AS 38.05.190.

Authority for Permit:

* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.250. Tide and submerged lands.
* 11 AAC 86.500; 510; 530; and 540. Permit Applications, Acceptable Permit Work, Conversion of an Offshore Prospecting Permit to a Mining Lease, and Lease Rental.

49. Surface Use Permits

A permit is required for millsite and tailings removal.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: A reasonable rate or fee schedule shall be charged for such use.

Authority for Permit:
* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.255. Surface use.
* 11 AAC 86.600. Millsites.

50. Burning Permit

A burning permit is required during the fire season for the burning of any materials in the area designated by the Department of Natural Resources.

Procedure: Applicant should contact the nearest District Office of the Department of Natural Resources.

Requirements: The applicant shall provide information as to the type, location, size and person in charge of the burning; the area and material to be burned; and the number of persons controlling the burn. Prior to the issuance of the permit, an inspection may be required of the area to be burned.

Authority for Permit:
* AS 41.15.050. Fire Season.
* 11 AAC 92.010. Permit.

51. Operations on State Land Requiring Permits

A permit is required for the following activities on State lands: 1) activity requiring; a) the use of explosives; b) the use of hydraulic prospecting or mining equipment and/or methods; c) drilling to a depth in excess of 300 feet; and (2) activity which the Director of the Division of Lands determines may result in harm to lands having special scenic, historic, archaeological, scientific, biological, recreational or special resource value.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:

* AS 38.05.020. Authority and duties of the Commissioner.
* AS 38.05.035. Powers and duties of the Director.
* 11 AAC 96.010. Operations Requiring permits.

52. Subleases of State Land

A permit is required from the Director of the Division of Lands prior to the sublease or assignment of any portion of State-leased land.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit:
* AS 38.05.095. Subleases.

53. Right-of-Way Permits

The Director of the Division of Lands may issue permits, right-of-ways or easements on State land for secondary roads, trails, ditches, transmission lines and distribution pipelines, field-gathering lines, telephone and transmission lines, log storage, oil well drilling sites, and production facilities for the purposes of recovering minerals from adjacent lands under valid lease, and other similar uses or improvements for the limited use or timber or materials.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permits
* AS 38.05.330. Permits.

54. Abandonment of or Reduction or Impairment of Service of Pipeline by Leasee Carrier.

No leasee may abandon or reduce or impair service of any portion of a pipeline that is on State land or subject to lease without first receiving a certificate from the Commissioner that the action is in accordance with the terms of the lease.

Procedure: Contact the Department of Natural Resources Minerals and Energy Division.

Requirements: Contact the Minerals and Energy Divison.

Authority for Permit:

* AS 38.35.030. Abandonment of, or reduction or impairment of, service of pipeline by leasee carrier.

55. Applications for Right-of-Way Leases and Certificates

Persons desiring to own a pipeline which is proposed to be located in whole or in part on State land shall apply for a noncompetitive right-of-way lease of this land and a certificate that the construction, operation, transportation, service, or sale is in accordance with the lease.

Procedure: Contact the nearest District Office of the Department of Natural Resources.

Requirements: Contact the District Office.

Authority for Permit

* AS 38.35.050. Applications for right-of-way leases and certificates.

56. Preservation of Archaeological Resources

If the State archaeologist determines that archaeological sites or remains will be adversely affected by public construction, the project cannot commence until the State archaeologist performs necessary investigations.

Procedure: Contact the Division of Parks and Recreation.

Requirements: Contact the Division of Parks and Recreation.

Authority for Permit:

* AS 41.35.070. Perservation of historic, prehistoric, and archaeological resources threatened by construction.

Developer's Guide - Appendix A

Department of Environmental Conservation Contacts List

Central Office
Department of Environmental
Conservation
Pouch O
Juneau, Alaska 99811

Northern Regional Office

Doug Lowery
Regional Environmental Supervisor
Department of Environmental
Conservation
P. O. Box 1601
675 Seventh Avenue
Fairbanks, Alaska 99707

Phone: 452-1714

Southcentral Regional Office

Kyle Cherry
Regional Environmental Supervisor
Department of Environmental
Conservation
Rm. 1206, MacKay Building
338 Denali Street
Anchorage, Alaska 99501

Phone: 274-5527

Prince William Sound Regional Office

Randy Bayliss
Regional Environmental Supervisor
Department of Environmental
Conservation
Pouch E
Valdez, Alaska 99686

Phone: 835-4698

Southeast Regional Office

Deena Henkins
Regional Environmental Supervisor
Department of Environmental
Conservation
Pouch OA (Mayflower Building, Dougla
Juneau, Alaska 99811

Phone: 364-2165

Developer's Guide - Appendix B

Department of Fish and Game Contacts List

Region I

Rick Reed
Regional Supervisor
Habitat Protection Section
Department of Fish and Game
210 Ferry Way
Juneau, Alaska 99801

Phone: 586-6630

Region II

Tom Trent
Habitat Protection Section
Department of Fish and Game
333 Raspberry Road
Anchorage, Alaska 99502

Phone: 344-0541

Region III

J. Scott Grundy
Regional Supervisor
Habitat Protection Section
Department of Fish and Game
1300 College Road
Fairbanks, Alaska 99701

Phone: 452-1531

AGO 667844

Developer's Guide - Appendix C

Department of Highways Contacts List

District Engineers

Southeastern - Region III

Wallace K. Williams
Southeastern District Engineer
Department of Highways
6860 Glacier Highway
P. O. Box 3-1000
Juneau, Alaska 99802

Phone: 789-0841

Central - Region I

Jack M. Spake
Central District Engineer
Department of Highways
5700 Tudor Road
P. O. Box 6750
Anchorage, Alaska 99502

Phone: 337-1511

Interior - Region II

H. Woodrow Johansen
Interior District Engineer
Department of Highways
2301 Peger Road
Fairbanks, Alaska 99701

Phone: 452-1911

Southcentral - Region V

Rowe D. Redick
Southcentral District Engineer
Department of Highways
P. O. Box 507
Valdez, Alaska 99686

Phone: 835-4322

Western - Region IV

Henry Springer
P. O. Box 1048
Nome, Alaska 99762

Phone: 443-5266

AGO 667845

Developer's Guide - Appendix D

Department of Highways Contacts List

Overweight-Oversize Permit Contacts

Central - Region I

John Bates
Department of Highways
5700 Tudor Road
Anchorage, Alaska 99502

Phone: 337-1511

Interior - Region II

Ronald Doner
Department of Highways
2301 Peger Road
Fairbanks, Alaska 99701

Phone: 452-1911

Southeastern - Region III

Dick Hamilton
Department of Highways
P. O. Box 3-1000
Juneau, Alaska 99802

Phone: 789-0841

Western - Region IV

Ron Davena
Department of Highways
P. O. Box 220
Nome, Alaska 99762

Phone: 443-5266

Southcentral - Region V

R. A. Walker
Department of Highways
P. O. Box 506
Valdez, Alaska 99686

Phone: 835-4322

Developer's Guide - Appendix E

Department of Natural Resources Contact List

Southeast Land District Office

Henry Lee Hall
Division of Lands
Department of Natural Resources
Pouch M
Juneau, Alaska 99811

Phone: 465-2415

Southcentral Land District Office

Lawrence A. Dutton
Division of Lands
Department of Natural Resources
323 East Fourth Avenue
Anchorage, Alaska 99501

Phone: 279-5577

Northcentral Land District Office

William Copeland
Department of Natural Resources
State Office Building
Room 116
Fairbanks, Alaska 99701

Phone: 479-2243

Department of Natural Resources
Minerals and Energy Division

Easy Gilbreth
Minerals and Energy Division
Department of Natural Resources
323 East Fourth Avenue
Anchorage, Alaska 99501

Phone: 274-8542

AGO 667847

POLICY STATEMENT MADE BY

The Alaska Royalty Oil and Gas
Development Advisory Board

May 5 & 6, 1977

1. The Royalty Oil and Gas Board shall recommend disposition of royalty oil and gas (through in-value taking, in-kind taking, sales, and sales conditions) in such a manner to maximize net benefits to the State. These net benefits include not only price, but also the various economic, social, and environmental ramifications, including employment, local training, Alaskan ownership, secondary effects, tax base, and many other factors.

2. The baseline price for any royalty oil or gas sale shall not be less than the price that would be received for that oil or gas if taken "in-value".

3. Preference will be given first to existing in-state facilities with no alternate sources of oil or gas, and second to those who will construct new in-state facilities or expand existing in-state facilities.

4. A portion of royalty oil will be withheld from long-term committment in order to meet anticipated future small local demands.

5. With the exception of small sales to public utilities, sales will be for specified volumes or proportions of production, constant throughout the year, rather than for flexible volume "options" to be called by the purchaser.

6. Sales of royalty oil and gas for in-state processing will attempt to insure that products for in-state use are priced at the lowest possible price, within the limits of the general net benefit policy and the pricing policy.

7. Products produced from royalty oil and exported from the State must be surplus to the State's domestic and industrial product needs.

8. In general royalty oil and gas will be disposed of in long-term contracts, rather than in "piece lots" as may be done by a private-sector trader or dealer.

GO 667848

Res: DP05, NR02

Rules:

Introduced: 3/22/77
Referred: Resources

IN THE SENATE BY HUBER

SENATE CONCURRENT RESOLUTION NO. 36

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - FIRST SESSION

Relating to the disposition of Alaska's royalty oil.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the disposition of Alaska's royalty oil and the receipt of the best market value for that oil are matters of the greatest concern to the people of Alaska; and

WHEREAS the provisions of the Emergency Petroleum Allocation Act, as amended, may place serious constraints on the State of Alaska's ability to dispose of its royalty oil at a price and under conditions that are most favorable to its citizens; and

WHEREAS the effects of the Emergency Petroleum Allocation Act, as amended, may be mitigated if the state, with proper contractual safeguards, takes its oil in kind rather than in value;

BE IT RESOLVED that the Alaska State Legislature respectfully requests the Governor to direct the commissioner of the Department of Natural Resources to notify the North Slope producers of its intention to take the state's royalty oil in kind, and further respectfully requests that the Royalty Oil and Gas Advisory Board immediately enter into negotiations for the sale of Alaska's royalty oil share under terms and conditions that will secure the most advantageous results for the people of Alaska.

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AGO 667849

Res: DP05, UR02
Fin:
Rules:

Original sponsors: Colletta, Kerttula and Huber

Offered: 4/7/77
Referred: Finance

IN THE SENATE BY THE RESOURCES COMMITTEE

CS FOR SENATE CONCURRENT RESOLUTION NO. 25

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - FIRST SESSION

Relating to the construction of oil refineries in Alaska.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the construction of additional oil refineries in Alaska would benefit the economy of the state by increasing the business and industrial base in the state; and provide additional employment for persons in the state; and

WHEREAS, if additional refineries were located in Alaska and the state's royalty oil refined here, the likelihood that Alaskans would have to suffer severe petroleum products shortages would be greatly diminished; and

WHEREAS the state can best insure that new refineries will meet our needs by participating in the planning of those plants;

BE IT RESOLVED, that the Alaska State Legislature respectfully requests the Governor to direct the Commissioner of Natural Resources to begin negotiations immediately which will commit the state's share of royalty oil to in-state refining; and be it

FURTHER RESOLVED that it is the legislature's intention that any contract negotiated by the Commissioner of Natural Resources under this resolution require that the state have a meaningful input into the planning and design of the refinery.

AGO 667850

STATE of ALASKA

MEMORANDUM

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF THE COMMISSIONER

TO: Alaska Royalty Oil and Gas
Development Advisory Board

DATE : April 4, 1977

FROM: Robert E. LeResche
Commissioner

SUBJECT: Proposed treatment of large quantity royalty oil proposals

I would like to treat these proposals at an early date, and have come to a tentative conculsion that the following would be the most equitable way to treat them: I propose to offer a sale of approximately 75 percent of Prudhoe Bay royalty oil, based upon the following two criteria. Offers for both criteria, price and in-state facility construction, will be weighed against one another, with the best balance of both criteria being the offer the Royalty Board should consider. The criteria are:

1. Price.

2. Plans for in-state processing facilities. These plans will include many factors, which will collectively determine the net value of the facility to the people of the State. These factors would include impact on govenment resources and responsibilities; employment, including training and employment of present Alaska residents; direct contribution to local and statewide economy; economic diversification factors; distributional aspects and implications of development including in-state versus out-of-state ownership of assets, opportunities for local participation, etc.; indirect or spin-off economic activities; social impacts, including impacts on local services, local labor dislocations, improvement in local community structure, etc.; compatibility with other plans and programs, including natural resources, community and regional land issues; and environmental, including safety and health, fish and wildlife, air and water quality, etc.; and finally technical considerations relating to construction feasibility and probability of meeting promised schedules.

In addition, I would like to explore with the companies a third criterion generally defined as availability and price of products made available for in-state use. It may not be possible to include contract terms specifically dealing with these things due to restraint of trade problems; however, I would like to ask each of the corporations to creatively suggest ways in which Alaskans can achieve a properly priced product mix.

AGO 667851

I would appreciate it if the Board could discuss this idea at our Wednesday, April 6 meeting. If the idea in concept is reasonable to the Board, I would like to proceed rapidly to establish details of the approach and notify prospective purchasers.

cc: Governor Hammond
Don Wold
Policy Development and Planning

BL:jl

STATUS OF PRUDHOE ROYALTY OIL

at production of 1.2 million barrels/day,
State share (12.5%) = (150,000 barrels/day)

On 4/12/77 Royalty Board approved
sale to Golden Valley Electric (Fbx non-profit utility)
Starts at (2,000 b/d) in Dec 77
escalates to (3,000 b/d) in Dec 1979
escalates to (5,000 b/d) in Dec 1982

Within a week Royalty Board will approve a (5,000 b/d) contract with Tesoro.
This contract's purpose is mostly to establish AK Pipeline Commission Jurisdiction over intra-state tariffs all the way to Valdez (because Golden Valley sale only establishes it to Fbx).
APC full-line jurisdiction means they have a better chance for influencing ICC tariff setting.

Assuming LaRoche's 4/4/77 memo suggesting 75% of royalty be held to entice a large-scale refinery, that leaves a total of 37,500 barrels/day to be used for small in-state sales. GVEA & TESORO total 10,000 b/day. So 27,500 b/day still available.

LaRoche memo of 4/4/77 supercedes Governor's letter of 3/30/77.

SB 274

passed Senate almost unanimously (Tillion against).

Roderick testified at H. Resources meeting I think H. Resources all do pass.

NOTE: LeBesche plans to invite legislators to testify before Royalty Bd on basic policy decisions concerning royalty oil.
My suggestions to LeBesche (pulled from a memo to Nader) are attached.

TO: All Commissioners

DATE: March 25, 1977

FROM: Robert LeResche, Director
Policy Development and Planning
Office of the Governor

SUBJECT: In-State Industrial Development

As part of its statutory responsibilities, the Royalty Oil and Gas Board is required to consider the potentials of in-State processing or refining of the State's royalty oil and gas. In order to develop guidelines to determine the feasibility of such in-State uses, an informal working group has been established (with representatives from DPDP, DNR, CED, C&RA, and Revenue) to:

1. Develop a consistent set of evaluation criteria for the State to determine the merits and limitations associated with such development (or for any major proposed development activity or alternative proposals within the State);

2. Define specific guidelines related to development;

3. Specify developer and State responsibilities associated with the siting, construction and operation of such industries; and

4. Evolve a formalized State process for project review, approval and development.

Attached is a preliminary draft of a State evaluation "cook book" for your review and comment. The intent is to develop, in so far as possible, a single State approach for evaluating major projects. The factors presented cover the range of "costs" and "benefits" associated with a major development, and should provide the Governor with the information necessary to determine whether a project will "pay its own way." It should be recognized that the factors presented will not necessarily require a quantitative response. Many, in fact, can only be answered qualitatively. The important point is that future evaluations consider all implications of a project. This "cook book" is an initial (and basic) step in that direction.

The next step will be to "package" these evaluation factors (and complete the Information Needs sections) into a more manageable working-type document. In order to accomplish this, we need your input. Under each major section heading

are listed certain "Areas of Concern" which will be addressed by the analysis of the listed "Evaluation Factors" which are, in turn, supported by the collected data shown as "Information Needs."

We would like your suggestions on:

1. Additions and/or modifications to the various categories relating to your agency's areas of responsibility;

2. Which Information Needs can or cannot be reasonably obtained by an applicant or by your agency;

3. Suggestions on better ways to package the criteria and implement the evaluation process; and

4. Evaluation factors which would require expertise beyond the capabilities of your staff.

Please submit your responses to this office no later than April 13, 1977. The working group will be glad to meet with you or a member of your staff to discuss the particulars. If you have any questions please contact Bill Luria (3547), Dona Lehr (3548), or Matt Conover (4754).

SUBSEQUENT STEPS

The development of a consistent set of evaluation factors represents the first phase of the effort. The next phase will delineate the particular responsibilities of the prospective developer, as well as those of the State, and provide an outline of how the State will determine whether or not a particular project will "pay its own way."

REL/BL/ljs

Attachment

cc: Dick Eakins
Ron Lind
Kevin Waring
Don Wold
Vince Wright

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE COMMISSIONER / POUCH M — JUNEAU 99811

April 14, 1977

The Honorable John Rader
President, Alaska
State Senate
Pouch V
Juneau, Alaska 99811

Dear Mr. President:

The Alaska Royalty Oil and Gas Development Advisory Board has scheduled a meeting for May 5 and 6, 1977, in Juneau. The purpose of this meeting will be to discuss basic Board policies regarding several aspects of future actions. The Board would be most grateful if you could find the time to attend and either address the Board or discuss informally with us your preferences for policies the Board should follow in the future.

Within the next few days I will forward to you a draft of the policies we would like to consider. Meanwhile, I would be most interested in having any suggestions from you regarding additional policies that the Board might wish to adopt at this time. The most important policies that I want the Board to consider include the following:

1. Pricing policy. Should the Board seek highest in-value pricing, average in-value pricing, or lowest in-value pricing for instate sales of royalty oil and gas?

2. Flexible volume policy. Under what conditions should a purchaser be allowed flexibility in volume of daily or seasonal purchase?

3. Treatment of public utilities. Should public utilities be treated differently than private firms in regard to pricing policy, flexible volume policy, or other policies?

AGO 667858

4. Should royalty oil and gas be sold to existing instate facilities, or reserved as maximum "leverage" for encouraging new facilities to be built instate.

5. Should the Board withhold a portion (say a quarter or a third) of royalty oil from any early large in-kind sale in order to anticipate small local utility demands in the future? Alternatively, should the Board assume that these latter needs will be taken care of with increased production and discoveries in the future?

6. Should the Board attempt to achieve contract clauses that provide for lower priced products for use instate?

7. Should royalty oil be sold to a prospective buyer only as a last resort? i.e., should prospective buyers be required to show that they have been refused by producers?

8. If total net benefit to the State (including employment, net secondary effects, etc.) of a sale for export exceed those of a sale for instate use, may the Royalty Board choose to take in-kind and sell for export?

I would appreciate hearing any other areas of principle/ policy you feel the Board should explicitly pin down at this time. The Board feels tht such policy guidance is essential especially preceding the next several months during which such far-reaching decisions will be made.

Thank you very much for your consideration.

Sincerely,

Robert E. LeResche
Commissioner

cc: The Hon. Jay S. Hammond
Members, Royalty Board

identical letters sent to Malone, Osterback, Poland

ALASKA ROYALTY OIL AND GAS DEVELOPMENT ADVISORY BOARD
AGENDA
Thursday, May 5, 1977, 9:00a.m.
Hilton Hotel, Juneau, Alaska

1. Call to Order

2. Roll Call

3. Commissioner's Remarks

4. Royalty Board Policy Recommendations

   (a) Address by the Governor
   The Honorable Jay S. Hammond

   (b) Address by the President of the Senate
   The Honorable John L. Rader

   (c) Address by the Speaker of the House
   The Honorable Hugh Malone

   (d) Address by the Chairman, Senate Resources Committee
   The Honorable Kay Poland

   (e) Address by the Chairman, House Resources Committee
   The Honorable Alvin Osterback

   (f) Addresses by Interested Members of the Legislature

   The Honorable Chancy Croft
   The Honorable Mike Colletta
   The Honorable Clark Gruening
   Others

   (g) Address by Consultant, Senate and House Resources Committees
   Mr. George C. Silides

   (h) Addresses by the Public

5. Royalty Board Policy Issues - Board Discussion

6. Adoption of Board Policies - Resolutions

7. Prudhoe Bay Royalty Oil
   (a) Procedures for Sale
   (b) Criteria for Buyers

8. Public Participation

9. Adjournment

AGO 667860

DRAFT POLICIES FOR DISCUSSION BY THE

ALASKA ROYALTY OIL AND GAS BOARD

1. 1. General. The Royalty Oil and Gas Board shall recommend disposition of royalty oil and gas (through in-value taking, in-kind taking, sales, and sales conditions) in such a manner to maximize net benefits to the State. These net benefits include not only price, but also the various economic, social, and environmental ramifications, including employment, local training, Alaskan ownership, secondary effect, tax base, and many other factors. These factors will be listed explicitly in a "criteria" document to be adopted by the Board in the near future. Inasmuch as state policy articulates, royalty oil & gas will be managed ① so as to further broad state goals ② will reject to mgmt of other energy resources in the state, such as coal & hydropower ③ in light of federal policies & programs.

Unan.

~~2. Relationship to other producers. Royalty oil gas should be sold to a prospective buyer only when that buyer demonstrates to the Board his inability to secure oil for his project from the seven-eighths producers of the field., under reasonable terms & pricing arrangements.~~ oil

3. 3. Existing facilities. With the exception of public utilities, royalty oil and gas will not normally be sold to existing financially viable in-state facilities, but rather should be reserved for encouragement of new facilities to be built in-state, unless those facilities are currently depended on royalty oil & gas and have fulfilled policy #2.

Change

Unan.

4. 4. Contingency reserve. ~~Approximately 25 percent~~ a portion of royalty oil ~~from Prudhoe Bay should~~ will be withheld from ~~a large in-kind sale~~ long-term commitment in order to anticipate small local utility demands in

[so recall up to 10%

AGO 667861

the future. This policy may be reassessed if and when it becomes clear that this severely limits the range of options for in-state facilities to use Prudhoe Bay royalty oil.

5. Public utilities. Present and future needs of Alaskan public utilities should be given preference in purchase of royalty oil and gas. This preference may include more lenient flexible volume provisions and a preference to purchase uncommitted royalty oil and gas, but should not include any special pricing treatment.

6. Flexible volume. With the exception of small sales to public utilities, sales should be for specified volumes or proportions of production, constant throughout the year, rather than for flexible volume "options", to be called by the purchaser.

7. In-state product pricing. Sales of royalty oil and gas for in-state processing should attempt to insure that products for in-state use are priced at the lowest possible price, within the limits of the general net benefit policy and the pricing policy.

8. In-state product use. Products produced from royalty oil exported from the State must be surplus to the State's domestic and industrial needs.

8. 9. Term of contracts. In general royalty oil and gas ~~should~~ will be disposed of in long-term contracts, rather than in "piece lots" as may be done by a private-sector trader or dealer.

AWC? [keep out of broker business.

2. 10. Price. The baseline price for any royalty oil ~~and~~ or gas sale should be the highest price received for "in-value" oil and gas.

Shall not be less than that price ~~or~~ taken in value that would be received for that oil or gas if

11. Processing agreements. The State may enter into processing agreements with purchasers in order to insure low-priced products in-state. These agreements should be considered part of the overall net costs or net beneifts calculated under the general policy.

12: A written consent for termination at contract end.

AGO 667863

a framework within which are mounted one or more sheaves on which the hoisting line is reeved in connection with the sheaves on the crown block. The traveling block travels between the derrick or mast floor and the crown block;

(55) "traveling block hook" means a hook or equivalent device suspended from the traveling block and from which the elevator links, swivel bail or other equipment is attached;

(56) "valve" means a device for regulating or controlling the flow of a liquid, gas or vapor by means of a movable part or parts which open or close a passage. A cock is considered a type of valve;

(57) "vessel" means an unfired and closed metal container used for holding or storing substances in their liquid or gaseous state at pressures above atmospheric;

(58) "walkway" means a passageway for pedestrians;

(59) "wall, diversion" means a wall of concrete, earthwork or other noncombustible material built to protect equipment and employees by diverting the flow of corrosive, flammable or poisonous liquids that may be released by tank failure, tank boilover or other causes;

(60) "wall, retaining" means a wall of concrete, earthwork or other noncombustible material, built to protect equipment and employees by confining corrosive, flammable or poisonous liquids that may be released by tank failure, tank boilover or other causes. (Eff. 7/1/63, Reg. 11)

Authority: AS 18.60.020
AS 27.05.010
AS 44.17.010–.030
AS 44.17.060
AS 44.37.010
AS 44.37.020

11. NATURAL RESOURCES

CHAPTER 26.
ALASKA ROYALTY OIL AND GAS DEVELOPMENT ADVISORY BOARD

Article
1. Meetings of the Board
2. Sale of Royalty Oil or Gas
3. General Provisions

ARTICLE 1.
MEETINGS OF THE BOARD

Section
05. Purpose of the board
10. Public meetings–Public notice
15. Executive sessions
20. Conference calls
25. Documents available to public
30. Confidentiality of documents

11 AAC 26.005. PURPOSE OF THE BOA
The board will act in ways calculated promote private economic growth consist with applicable environmental standards public fiscal stability to aid in the development of Alaska's oil and gas roy interests. The purpose of the board is to re determinations of the commissioner m regarding the sale or other disposition under 38.05.183 of state royalty oil or gas take kind, and where the board finds that t determinations by the commissioner are accordance with the purposes of AS 38.06 give its prior written approval of determination. (Eff. 8/13/75, Reg. 55)

Authority: AS 38.05.
AS 38.06.
AS 38.06.
AS 38.06.
AS 38.06.

11 AAC 26.010. PUBL MEETINGS–PUBLIC NOTICE. Subject to exceptions of this chapter and AS 44.62. the meetings of the board will be public; reasonable public notice will be given fo public meetings of the board. (Eff. 8/1 Reg. 55)

Authority: AS 38.06
AS 38.06
AS 44.62

11 AAC 26.015. EXECUTIVE SESSION
The board has authority to hold meetin

AGO 667864

executive sessions and
accordance with AS
will be necessary for the
otherwise reveal information
in its possession and
confidential business or
the protection of which
submitting them or in
majority of the board
to the best interests of the

will be conducted in
AS 44.62.310(b), and a motion
session must be made and
by a majority of the members
5/13/75, Reg. 55)

Authority: AS 38.06.040
AS 38.06.060
AS 44.62.310

CONFERENCE CALLS. The
carry out the business of
through the use of telephone
for resolution of routine
matters. (Eff. 8/13/75, Reg.

AS 38.06.035 AS 38.06.060
AS 38.06.040 AS 44.62.310

DOCUMENTS AVAILABLE
votes of board members will
made available to the public.
by the board relating to open
of the board and used by
official record of what
during those sessions are public
open to inspection by the public
rules and are available for
upon request and payment of costs of a
of the public record. (Eff.

AS 09.25.110 AS 38.06.035
AS 09.25.120 AS 38.06.040
AS 38.06.010

CONFIDENTIALITY OF
(a) All documents or records
held by the board are public
a document or record in the
control of the board will not be
nor will a discussion of such a
be open to, the public when
of the board members determines
that the document or record contains confidential business or marketing information the protection of which is essential to the person who has submitted them to the board or in the judgment of the board is essential to the best interests of the state.

(b) The confidential documents and records will be clearly marked "confidential" and will be filed separately from documents and reports held by the board which are open to the public.

(c) The confidential documents and records will be periodically reviewed by the board to insure that those documents continue to meet the standards of confidentiality established by the board, and a majority vote of the board will be adequate to declassify these documents for placement in the public file. (Eff. 8/13/75, Reg. 55)

Authority: AS 09.25.110 AS 38.06.060
AS 09.25.120 AS 44.62.310
AS 38.06.040

ARTICLE 2.
SALE OF ROYALTY OIL OR GAS

Section
100. Bid or application
105. Official communications with the board
110. Ex parte contact with prospective purchasers
115. Determination of surplus

11 AAC 26.100. BID OR APPLICATION. A bid or application for the purchase of royalty oil or gas is a written response to and complying with a specific solicitation by the commissioner under AS 38.05.183, AS 38.06 and this chapter. (Eff. 8/13/75, Reg. 55)

Authority: AS 38.05.183
AS 38.06.040
AS 38.06.050

11 AAC 26.105. OFFICIAL COMMUNICATIONS WITH THE BOARD. All proposals, bids, applications, or other official communications with the board regarding the sale or other disposal of the state's royalty oil or gas must be in writing and addressed to the commissioner as chairman of the board in order to be considered by the board, unless otherwise provided by the board. (Eff. 8/13/75, Reg. 55)

Authority: AS 38.06.040

AGO 667865

11 AAC 26.110. EX PARTE CONTACT WITH PROSPECTIVE PURCHASERS. (a) Except as authorized by a majority vote of the members of the board, an individual member of the board, other than the commissioner, may not enter into ex parte negotiations with a prospective purchaser for the sale of the state's royalty oil or gas.

(b) It is the policy of the board to discourage ex parte discussions relating to the sale of the state's royalty oil or gas between an individual member of the board, other than the commissioner, and a prospective purchaser of those royalties.

(c) Substantive ex parte communications with regard to the sale of state royalty oil or gas between an individual member of the board and a prospective purchaser of those royalties must be reported in writing to the board by the member and must become a part of the public record. (Eff. 8/13/75, Reg. 55)

Authority: AS 38.06.040

11 AAC 26.115. DETERMINATION OF SURPLUS. State royalty oil or gas taken in kind is surplus to the present and projected intrastate domestic and industrial needs if the commissioner finds and the board approves, pursuant to the requirements set out in sec. 900(d) of this chapter, that the supply of that oil or gas exceeds the demand for that oil or gas during a specific time period established by the board pursuant to the requirements set out in sec. 900(d) of this chapter. (Eff. 4/15/76, Reg. 58)

Authority: AS 38.05.183
AS 38.06.040

ARTICLE 3.
GENERAL PROVISIONS

Section
900. Definitions

11 AAC 26.900. DEFINITIONS. (a) In this chapter, unless the context otherwise requires

(1) "board" means the Alaska Royalty Oil and Gas Development Advisory Board;

(2) "commissioner" means the commissioner of the Department of Natural Resources;

(3) "demand" means that amount of gas required for Alaska residential and indu use with allowance for reasonable anticip growth during a specific time period appr by the board, pursuant to the requiremen out in (d) of this section;

(4) "supply" means that amount of oil that is reasonably anticipated to be produ and deliverable from currently known rese within a specific time period approved b board pursuant to the requirements set o (d) of this section.

(5) "industrial use" means all oil or gas for commercial or industrial fuel or feedstock for industrial processing manufacturing within Alaska whether it final consumption in Alaska or to fulfill ex commitments or contracts regardless of th point of final consumption.

(b) In AS 38.05.183(c), the term "appr and in AS 38.05.183(d), the term "appr both have the same meaning as the term written approval."

(c) In AS 38.05.182, "consent" mean same as "prior written approval."

(d) In this chapter and in AS 38.05.1 38.06.050, "prior written approval" mea the majority of the board membe attendance at a meeting of at least a quo the board members must have voted action proposed by the commissioner designee, and the final tally of votes of m of the board for and against the proposed shall be recorded at the end of a do signed by the commissioner or his d setting out the action proposed b commissioner or his designee.

(e) In this chapter and in AS 38.06.0 38.06.035, a "quorum" of the board three members of the board of which tw be public members. (Eff. 8/13/75, Reg. 4/15/76, Reg. 58; am 8/25/76, Reg. 59)

Authority: AS 38.05.182 AS 38
AS 38.05.183 AS 38
AS 38.06.025 AS 38

AGO 667866

(s) *Short title.* This section may be cited as the Geothermal Resources Act.

(am §§ 40, 41 ch 127 SLA 1974)

Effect of amendment.

The 1974 amendment substituted "AS 41.08.020" for "AS 41.07.020" near the middle of subsection (b) (1) and "AS 41.08.040" for "AS 41.07.040" at the end of subsection (b) (2) and deleted "of 1971" from the end of subsection (s).

As the rest of the section was not affected by the amendment, it is not set out.

Legislative committee report.

For report on ch. 127, SLA 1974 (SCSHB 817 am S), see 1974 House Journal, p. 657.

Sec. 38.05.182. Royalty on natural resources. Any royalty provided for in §§ 135 — 181 of this chapter may be taken in kind rather than in money if the commissioner, with the consent of the Alaska Royalty Oil and Gas Development Advisory Board, determines that the taking in kind would be in the best interest of the state. The consent of the board is required only with respect to oil and gas royalty-in-kind under § 183 of this chapter. (§ 1 ch 56 SLA 1970; am § 7 ch 71 SLA 1971; am § 1 ch 9 SSSLA 1974; am § 5 ch 218 SLA 1976)

Effect of amendments. — The 1974 amendment substituted "if the commissioner, with the consent of the board, determines" for "at the discretion of the commissioner if he determines" near the middle of the first sentence and added the second sentence.

The 1976 amendment substituted "Alaska Royalty Oil and Gas Development Advisory Board" for "board" in the first sentence.

Sec. 38.05.183. Sale of royalty. (a) The sale, exchange or other disposal of a mineral obtained by the state as a royalty under § 182 of this chapter, or the sale, exchange or other disposal in whole or in part of a right to receive future mineral production under a state lease under this chapter, shall be by competitive bid and the sale, exchange or other disposal made to the highest responsible bidder, except that competitive bidding is not required when the commissioner, with the prior written approval of the Alaska Royalty Oil and Gas Development Advisory Board where applicable, determines that the best interest of the state does not require it or that no competition exists.

(b) When competitive bids are required, the commissioner, with the prior written approval of the Alaska Royalty Oil and Gas Development Advisory Board, may reject all bids if he determines that because of the amount of the bids, the lack of responsibility on the part of the bidders, or for reasons consistent with the criteria set out in AS 38.06.070, the acceptance of the bids would not be in the best interest of the state.

(c) If the commissioner determines that a sale, exchange or other disposal of a mineral obtained by the state as a royalty under § 182 of this chapter or of a right to receive future mineral production under a state lease under this chapter shall be made otherwise than by

AGO 66786

competitive bid, and the Alaska Royalty Oil and Gas Development Advisory Board where applicable has approved that determination, the commissioner shall make public in writing the specific findings and conclusions upon which that determination is based.

(d) Oil or gas taken in kind by the state as its royalty share may not be sold or otherwise disposed of for export from the state until the commissioner with the approval of the Alaska Royalty Oil and Gas Development Advisory Board determines that the royalty-in-kind oil or gas is surplus to the present and projected intrastate domestic and industrial needs. The commissioner shall make public, in writing, the specific findings and reasons on which his determination is based and shall, within 10 days of the convening of a regular session of the legislature, submit a report showing the immediate and long-range domestic and industrial needs of the state for oil and gas and an analysis of how these needs are to be met. (§ 1 ch 56 SLA 1970; am § 3 ch 9 SSSLA 1974)

Effect of amendment. — The 1974 amendment rewrote this section.

Sec. 38.05.184. Limitation on oil and gas leases in certain areas, and reacquisition of leases. (a) The legislature finds that Kachemak Bay is an area of extraordinary abundance and diversity of marine life that has provided, and will continue to provide in the future, a basis for one of the state's most important commercial fisheries; that recent information discloses that even minute quantities of oil released into the marine environment may be harmful to the larval forms of crabs and other marine life and that the existence of gyral currents within the bay may increase the likelihood of oil coming into contact with these valuable commercial fish and shellfish species; and that therefore oil and gas development in the bay, at this time, presents an undue hazard to this valuable state renewable resource.

(b) No additional oil or gas leases may be issued by the Department of Natural Resources or any other state agency for the exploration for or the development or production of oil and gas on state-owned land and waters seaward of the mean higher high water line, beginning at Anchor Point; then around the perimeter of Kachemak Bay, to Point Pogibshi; then west to the three mile limit of state land and waters; then north to a point three miles west of Anchor Point; then east to the mean higher high water line of Anchor Point, the point of beginning.

(c) The commissioner of natural resources may enter into negotiations to reacquire by purchase in the name of the state, title to or accountable interests in oil or gas leases within the boundaries described in (b) of this section which were issued before June 4, 1976.

(d) In lieu of cash payment for a negotiated purchase of a leasehold interest, the commissioner may authorize a credit of the purchase price plus interest at the rate prescribed by AS 09.30.070 to be granted the

seller to be applied again
permit fees, royalties, or c
new production from othe
and gas development. T
reimburse in like manner
lessee to the state plus a
for expenses and other co

(e) For a period of one ye
of the First Session of the
is longer, no drilling activi
oil and gas leases in the b
suspend drilling activities t
gas leases ir the bay. The p
development is to (1) per
reasonable time to develo
resources of the bay fro
activities; and (2) permit
reasonable period to negoti
of this section. The lease p
Kachemak Bay shall be
Department of Natural Re

(f) In the event the comm
negotiate a satisfactory pri
this section, he may at th
development expires acquir
leases through the exercise

(g) In the event the comm
eminent domain, such actio
days after the moratorium p
In the event that the com
eminent domain within th
immediate right under the
produce from the lease or lea
to and from the lease sites
the lease to a shore-based
until full reacquisition of th
(§ 1 ch 113 SLA 1976)

Effective date. — Section 2, ch. 11
1976, makes this section effective
1976, in accordance with AS 01.10.0

COMMENTS TO THE

ALASKA ROYALTY OIL AND GAS ADVISORY BOARD

By

George C. Silides, P. E.

May 5, 1977

AGO 667869

George C. Silides is a Professional Civil Engineer in private practice and consultant on resource matters to the Resources Committees of the Alaska State Legislature. He was a former State Senator instrumental in the writing of the statute creating the Oil and Gas Advisory Board and stating the policy guidelines for the Commissioner and the Board in the use and disposition of the State's royalty share of oil and gas produced in the State.

I am indeed pleased to be invited to briefly address the Royalty Oil and Gas Advisory Board as it attempts to more clearly define its operational policies under the broad policy mandate given it by the Legislature in 1974 when I was a member of the State Senate.

In addition to every Alaskan's concern for the success of this Board, I have a special parental concern. In 1974 I had introduced a Bill which read, "No oil or gas taken as royalty may be exported from the state or otherwise disposed of unless it is declared surplus to the present and projected internal needs of the state." Governor Egan had introduced a Bill calling for the creation of an Oil and Gas Advisory Board. The two measures were melded, and it became my task to see the law enacted. The birthing was not without complications. A lot of people tried their hand at mid-wifery, even abortion, and some of the limbs came out a little bent. But the Bill survived, and here the Board is, like any other kid just graduated and pondering the future.

I submit to you that the future actions of this Board are yours for the shaping. However dubious the tutelage over the past three years, you should now insist that your own voice be heard and your own initiated ideas be considered on their merit instead of just doing the homework assigned to you.

AGO 667871

You have asked for continued advice and more definitive rules for the operation of the major oil and gas producing company that Alaska now is and will continue to be. You will get that advice and support. Some from me in whatever future capacity I find myself in, a lot from others who will speak to you today and tomorrow, including the Administration, the Legislature, and vested interests. In all of this I ask you to remember that, whatever criticism that may have been leveled against the statute under which you exist, by some who wish a freer land administratively, that statute has become the corner-stone of legislative and public scrutiny of governmental action which must always be open to rational question under our American system.

There is little point to Alaska being the largest oil and gas province in the United States and amassing wealth unless the people of the state can benefit directly. Therein lies the big question. How?

The basic question has already been answered for you in the statute in the export prohibition. And that, to me, means in-state processing into basic fuels and the manufacture of a myriad of consumer products. Provided, however, that such processing creates useful employment, and a product price relieved of at least a measure of the cost of shipping raw materials out and finished products in.

Even if the total net benefit to the state, in absolute dollars, appear greater via the export route, in kind processing and use is preferable. I view it as detrimental to our way of life for the state to amass dollars only to pay them back out in the form of unemployment compensation.

One of the more vexing problems is that of pricing policy. Should you sell for instate use at the highest, average, or lowest price we can get? At least you recognize that the statute gives you that latitude. My answer is, "depends on who you sell to and why."

As I said earlier, this Board can be a vehicle for the passing on of benefits in ways other than have been suggested to date. The handing out of money directly to the public has been a bad show ever since the days of the Roman Circus. However well intentioned, it is subject to the charge of political expediency. Moreover, it is counter-productive since the market price always rises to meet the availability of money. Provided the net effect on the treasury is the same, might it not be better to offer crude oil at a lower price to a manufacturer of heating oil, or other products, again providing that the saving be passed on to the consumer? Actually, the savings in transportation costs may eliminate the need for either action.

The difficulty with giving public utilities a preferential price treatment is that, while the savings could be passed on to the consumer by regulation of the APUC, such preferential treatment encourages the construction of oil and gas fired plants. This burns up a resource having an otherwise greater value, and discourages the enlargement of a viable, job creating, income providing, coal mining industry. In summary, while special pricing should be considered for existing plants, in the interest of consumer savings, future public utilities ought not to be encouraged in this way.

Let me go quickly to some of the other policy questions before the Board. Except, for minor variations in quantity by local utilities, a purchaser should not be allowed flexibility in volume, because of uncertainties thus created in storage and shipping. As a practical matter, no large purchaser/refiner would consent to large volumetric changes. Neither would the pipeline carrier.

My interpretation of the law, and certainly the intent at the time of its passage, is that the state must sell to instate users willing to pay the asking price. To reserve a portion of the oil or gas for "leverage" would mean exporting, in contravention of the intent. In my opinion, anyone who has put his money on the line and built a plant has first call on the resources. All early large in-kind sales contracts should contain, in pertinent part, proviso

that a plant be constructed or the contract terminated after a given period of time, at the option of the state. A termination and take-back provision should also take effect if, in the meantime, another instate use presents itself.

We should not make the sale of our oil or gas contigent on the availability to the purchaser of the resource from another producer. We should gauge our sales on competitive pricing mitigated by any social benefits derived.

All of this addresses your problems only in a fundamental way, but, I think directly as well. The basic message has been that, while details of negotiations must be handled by the Commissioner of Natural Resources, you should consider the preliminaries are over and order those real negotiations begun. Further, you should begin enunciating your own policies to the Administration, rather than continue to only react to policies given you.

AGO 667875

Alaska State Legislature

Senate

JUNEAU, ALASKA

5/6/77

TO: Don Wold
FR: Connie Barlow
RE: picky suggestions on adopted Royalty Board policies

The following suggestions are made to the policies by number:

1. General

Suggestion: Add to the end, "To the extent that overal state policy has been articulated, royalty oil & gas will be managed (1) so as to further state goals, (2) with respect to the management of other state energy resources (such as coal, geothermal, and hydro power), and (3) in light of federal policies and programs."

Explanation: This is designed to take care of 2 concerns:
(1) both Triplehorn & Silides suggested that the royalty board make decisions, realizing how this effects the development of the coal industry in-state

(2) Silides and others mentioned that the highest use of gas is certainly not burning as electricity. This is also explicitly expressed in Carter's energy program. Especially since federal law may soon make it illegal to burn gas beyond a certain date, the royalty board should make sure they are not creating any new utility dependencies without this in mind. Thus, board actions must keep sight of federal policies.

2. Price & 3. Existing Facilities

The change the board adopted does an excellent job of clarifying the language and, hence, satisfying Rader's problem.

4. Contingency Reserve

Language changes are good. However, the discussion which set the "intent" on the record (ability to recall up to 10%, tends to argue against putting advance written consent into all contracts, which the board seems to want). I would instead, assume that the intent refers not to long-term contracts & take-back provisions, but rather to the specific need in Prudhoe not to commit all to a major refinery if no other small users have surfaced at the moment. Despite all that, the policy seems good, on balance.

AGO 667876

5. Flexible volume

Good. (Only picky suggestion is that the world "small" is unnecessary. All utility sales are "small" and inserting "small" only opens you up to being negligent in defining that qualifier.)

6. In-State product pricing

Good. However, Rader made a suggestion which you have chosen not to incorporate. He suggested that not only should contract provisions be used to ensure low- product price, but that the board should look at the overall sale decisions as a means to use the free market system to do the same -- by making sales with one goal being to promote in-state competition. (You might wish to tack that on to this policy at the next meeting.)

7. In-State product use

Picky suggestion: Tack on to the beginning, "Disposal contracts shall be designed so as to ensure that ...."

8. Term of contracts

As Rader mentioned, he heartily agrees with this. (Long-term contracts also is consistent with Policy # 3). As a personal bias, I believe the less the state tries to rely on a means to be able to terminate sales (thru advance written consent or otherwise),

Alaska State Legislature

Senate

JUNEAU, ALASKA

February 2, 1976

The Gas Pipeline Impact Committee is attempting to help define possible use of North Slope natural gas in Alaska.

The Committee will be holding hearings in Juneau on February 17,18,19, and solicits your testimony regarding natural gas consumption. The hearings will be held in Supreme Courtroom A, New Court Building, Juneau.

1) Does your corporation currently use, or have any plans for use of natural gas?
   a) How much is presently being used?
   b) For what purpose, industrial or home use?

2) Have you made any plans for use of North Slope gas if it becomes available?
   a) How much gas could you use?
   b) What form of natural gas?
   c) By what date could you utilize North Slope gas?

3) Industrial options:
   a) Have you considered industrial use of gas?
   b) Do you have any feasibility studies?

The Committee is attempting to assess possible and probable uses of Alaska's royalty gas. Any information you could provide to the Committee relative to natural gas use in Alaska would be appreciated.

For scheduling purposes, please inform the Committee if you plan to testify no later than February 9, and submit an outline of your testimony prior to the hearings.

Thank you for your efforts to assist the Committee. If you have any questions, please contact my staff assistant, Eric Eckholm, at my office -- 465/3770, Pouch V, Juneau.

Sincerely,

Senator John Rader, Chairman
Gas Pipeline Impact Committee

S 10 JLR/EE/kb

AGO 667877B

Royalty Board
does have power
to promulgate regulations.
Attached is what they've
done so far.

JS

AGO 667878

a framework within which are mounted one or more sheaves on which the hoisting line is reeved in connection with the sheaves on the crown block. The traveling block travels between the derrick or mast floor and the crown block;

(55) "traveling block hook" means a hook or equivalent device suspended from the traveling block and from which the elevator links, swivel bail or other equipment is attached;

(56) "valve" means a device for regulating or controlling the flow of a liquid, gas or vapor by means of a movable part or parts which open or close a passage. A cock is considered a type of valve;

(57) "vessel" means an unfired and closed metal container used for holding or storing substances in their liquid or gaseous state at pressures above atmospheric;

(58) "walkway" means a passageway for pedestrians;

(59) "wall, diversion" means a wall of concrete, earthwork or other noncombustible material built to protect equipment and employees by diverting the flow of corrosive, flammable or poisonous liquids that may be released by tank failure, tank boilover or other causes;

(60) "wall, retaining" means a wall of concrete, earthwork or other noncombustible material, built to protect equipment and employees by confining corrosive, flammable or poisonous liquids that may be released by tank failure, tank boilover or other causes. (Eff. 7/1/63, Reg. 11)

Authority: AS 18.60.020
AS 27.05.010
AS 44.17.010--.030
AS 44.17.060
AS 44.37.010
AS 44.37.020

11. NATURAL RESOURCES

CHAPTER 26.
ALASKA ROYALTY OIL AND GAS DEVELOPMENT ADVISORY BOARD

Article
1. Meetings of the Board
2. Sale of Royalty Oil or Gas
3. General Provisions

ARTICLE 1.
MEETINGS OF THE BOARD

Section
05. Purpose of the board
10. Public meetings—Public notice
15. Executive sessions
20. Conference calls
25. Documents available to public
30. Confidentiality of documents

11 AAC 26.005. PURPOSE OF THE BOAR The board will act in ways calculated promote private economic growth consist with applicable environmental standards public fiscal stability to aid in the development of Alaska's oil and gas roy interests. The purpose of the board is to rev determinations of the commissioner m regarding the sale or other disposition under 38.05.183 of state royalty oil or gas taken kind, and where the board finds that th determinations by the commissioner are accordance with the purposes of AS 38.06 give its prior written approval of determination. (Eff. 8/13/75, Reg. 55)

Authority: AS 38.05.
AS 38.06.
AS 38.06.
AS 38.06.
AS 38.06.

11 AAC 26.010. PUBL MEETINGS—PUBLIC NOTICE. Subject to exceptions of this chapter and AS 44.62. the meetings of the board will be public; reasonable public notice will be given fo public meetings of the board. (Eff. 8/13 Reg. 55)

Authority: AS 38.06
AS 38.06
AS 44.62

11 AAC 26.015. EXECUTIVE SESSIONS The board has authority to hold meetin

AGO 667879

...of which are executive sessions and ... to the public in accordance with AS ... where it will be necessary for the ... disclose or otherwise reveal information ... records in its possession and ... contain confidential business or ... information the protection of which ... by the person submitting them or in ... judgment of a majority of the board ... essential to the best interests of the ...

... sessions will be conducted in ... with AS 44.62.310(b), and a motion ... executive session must be made and ... approved by a majority of the members ... (Eff. 8/13/75, Reg. 55)

Authority: AS 38.06.040
AS 38.06.060
AS 44.62.310

11 AAC 26.020 CONFERENCE CALLS. The ... may hold and carry out the business of ... through the use of telephone ... calls for resolution of routine ... formalities. (Eff. 8/13/75, Reg. ...

... AS 38.06.035 AS 38.06.060
... AS 38.06.040 AS 44.62.310

11 AAC 26.025 DOCUMENTS AVAILABLE ... (a) The votes of board members will be recorded and made available to the public. ... compiled by the board relating to open ... meetings of the board and used by ... as an official record of what ... during those sessions are public ... and open to inspection by the public ... reasonable rules and are available for ... upon request and payment of costs of a ... copy of the public record. (Eff. ... Reg. 55)

... AS 09.25.110 AS 38.06.035
... AS 09.25.120 AS 38.06.040
... AS 38.06.010

11 AAC 26.030 CONFIDENTIALITY OF ... (a) All documents or records ... to be held by the board are public ... that a document or record in the ... or control of the board will not be ... nor will a discussion of such a ... record be open to, the public when ... of the board members determines that the document or record contains confidential business or marketing information the protection of which is essential to the person who has submitted them to the board or in the judgment of the board is essential to the best interests of the state.

(b) The confidential documents and records will be clearly marked "confidential" and will be filed separately from documents and reports held by the board which are open to the public.

(c) The confidential documents and records will be periodically reviewed by the board to insure that those documents continue to meet the standards of confidentiality established by the board, and a majority vote of the board will be adequate to declassify these documents for placement in the public file. (Eff. 8/13/75, Reg. 55)

Authority: AS 09.25.110 AS 38.06.060
AS 09.25.120 AS 44.62.310
AS 38.06.040

ARTICLE 2.
SALE OF ROYALTY OIL OR GAS

Section
100. Bid or application
105. Official communications with the board
110. Ex parte contact with prospective purchasers
115. Determination of surplus

11 AAC 26.100. BID OR APPLICATION. A bid or application for the purchase of royalty oil or gas is a written response to and complying with a specific solicitation by the commissioner under AS 38.05.183, AS 38.06 and this chapter. (Eff. 8/13/75, Reg. 55)

Authority: AS 38.05.183
AS 38.06.040
AS 38.06.050

11 AAC 26.105. OFFICIAL COMMUNICATIONS WITH THE BOARD. All proposals, bids, applications, or other official communications with the board regarding the sale or other disposal of the state's royalty oil or gas must be in writing and addressed to the commissioner as chairman of the board in order to be considered by the board, unless otherwise provided by the board. (Eff. 8/13/75, Reg. 55)

Authority: AS 38.06.040

AGO 667880

11 AAC 26.110. EX PARTE CONTACT WITH PROSPECTIVE PURCHASERS. (a) Except as authorized by a majority vote of the members of the board, an individual member of the board, other than the commissioner, may not enter into ex parte negotiations with a prospective purchaser for the sale of the state's royalty oil or gas.

(b) It is the policy of the board to discourage ex parte discussions relating to the sale of the state's royalty oil or gas between an individual member of the board, other than the commissioner, and a prospective purchaser of those royalties.

(c) Substantive ex parte communications with regard to the sale of state royalty oil or gas between an individual member of the board and a prospective purchaser of those royalties must be reported in writing to the board by the member and must become a part of the public record. (Eff. 8/13/75, Reg. 55)

Authority: AS 38.06.040

11 AAC 26.115. DETERMINATION OF SURPLUS. State royalty oil or gas taken in kind is surplus to the present and projected intrastate domestic and industrial needs if the commissioner finds and the board approves, pursuant to the requirements set out in sec. 900(d) of this chapter, that the supply of that oil or gas exceeds the demand for that oil or gas during a specific time period established by the board pursuant to the requirements set out in sec. 900(d) of this chapter. (Eff. 4/15/76, Reg. 58)

Authority: AS 38.05.183
AS 38.06.040

ARTICLE 3.
GENERAL PROVISIONS

Section
900. Definitions

11 AAC 26.900. DEFINITIONS. (a) In this chapter, unless the context otherwise requires

(1) "board" means the Alaska Royalty Oil and Gas Development Advisory Board;

(2) "commissioner" means the commissioner of the Department of Natural Resources;

(3) "demand" means that amount of gas required for Alaska residential and indu use with allowance for reasonable antici growth during a specific time period app by the board, pursuant to the requiremen out in (d) of this section;

(4) "supply" means that amount of oil that is reasonably anticipated to be prod and deliverable from currently known res within a specific time period approved b board pursuant to the requirements set (d) of this section.

(5) "industrial use" means all oil or ga for commercial or industrial fuel or feedstock for industrial processin manufacturing within Alaska whether it final consumption in Alaska or to fulfill e commitments or contracts regardless of t point of final consumption.

(b) In AS 38.05.183(c), the term "app and in AS 38.05.183(d), the term "app both have the same meaning as the term written approval."

(c) In AS 38.05.182, "consent" mea same as "prior written approval."

(d) In this chapter and in AS 38.05.1 38.06.050, "prior written approval" mea the majority of the board memb attendance at a meeting of at least a quo the board members must have voted action proposed by the commissioner designee, and the final tally of votes of m of the board for and against the propose shall be recorded at the end of a do signed by the commissioner or his setting out the action proposed commissioner or his designee.

(e) In this chapter and in AS 38.06.0 38.06.035, a "quorum" of the board three members of the board of which t be public members. (Eff. 8/13/75, Reg. 4/15/76, Reg. 58; am 8/25/76, Reg. 59)

Authority: AS 38.05.182 AS 38
AS 38.05.183 AS 38
AS 38.06.025 AS 38

AGO 667881

Effect of amendment. — The 1975 amendment, effective July 1, 1975, substituted "commissioner of revenue" for "commissioner of economic development" in the first sentence.

Sec. 38.06.030. Compensation; per diem, travel expenses. Members of the board are in the exempt service under AS 39.25.110 and shall receive per diem and travel allowances as provided by law for other boards and commissions. (§ 2 ch 9 SSSLA 1974)

Sec. 38.06.035. Meetings, rules, quorum, votes required; conflict of interest. (a) The board shall prescribe its own rules of procedure. It shall meet at a time and place determined by the chairman, and at other times and places as the chairman, or a majority of the board members, considers necessary. A quorum is a majority of the members of the board. The votes of the board members shall be recorded. Effective action to carry out the powers granted under this chapter requires the affirmative vote of a majority of the board members. No board member may, with respect to a matter before the board, vote for or on behalf of another member of the board.

(b) No member of the board may act upon a matter in which his relationship with any person creates a conflict of interest. No board member may have an official connection with or hold stock or securities in, or have a pecuniary interest in, a corporation, company or association engaged in the production or transportation of oil or gas. (§ 2 ch 9 SSSLA 1974)

Sec. 38.06.040. Powers. The board has the power to

(1) direct the commissioner of natural resources to solicit inquiries, development plans or bids from persons for the sale, exchange or other disposal of oil or gas or both obtained by the state as a royalty under AS 38.05.182, or for the sale, exchange or other disposal in whole or part of rights to receive future oil or gas production or both under a state lease, subject to terms and conditions established by the board;

(2) examine proposed sales, exchanges or other disposals of oil or gas or both obtained by the state as a royalty under AS 38.05.182, or of rights to receive future oil or gas production or both under a state lease for the purpose of approving or disapproving the proposed sale, exchange or other disposal;

(3) hire an executive director, consultants expert in technical, economic or other relevant professions and other persons as necessary to assist the board in the exercise of its powers;

(4) promulgate regulations under the Administrative Procedure Act (AS 44.62) that are necessary or appropriate in the exercise of its powers; and

(5) take whatever other actions are reasonably necessary in the furtherance of the purposes of this chapter. (§ 2 ch 9 SSSLA 1974)

AGO 667882

Introduced: 3/22/77
Referred: Resources

IN THE SENATE BY HUBER

SENATE CONCURRENT RESOLUTION NO. 36

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - FIRST SESSION

Relating to the disposition of Alaska's royalty oil.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the disposition of Alaska's royalty oil and the receipt of the best market value for that oil are matters of the greatest concern to the people of Alaska; and

WHEREAS the provisions of the Emergency Petroleum Allocation Act, as amended, may place serious constraints on the State of Alaska's ability to dispose of its royalty oil at a price and under conditions that are most favorable to its citizens; and

WHEREAS the effects of the Emergency Petroleum Allocation Act, as amended, may be mitigated if the state, with proper contractual safeguards, takes its oil in kind rather than in value;

BE IT RESOLVED that the Alaska State Legislature respectfully requests the Governor to direct the commissioner of the Department of Natural Resources to notify the North Slope producers of its intention to take the state's royalty oil in kind, and further respectfully requests that the Royalty Oil and Gas Advisory Board immediately enter into negotiations for the sale of Alaska's royalty oil share under terms and conditions that will secure the most advantageous results for the people of Alaska.

AGO 667883

Original sponsors: Colletta, Kerttula and Huber

Offered: 4/7/77
Referred: Finance

IN THE SENATE BY THE RESOURCES COMMITTEE

CS FOR SENATE CONCURRENT RESOLUTION NO. 25

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - FIRST SESSION

Relating to the construction of oil refineries in Alaska.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the construction of additional oil refineries in Alaska would benefit the economy of the state by increasing the business and industrial base in the state; and provide additional employment for persons in the state; and

WHEREAS, if additional refineries were located in Alaska and the state's royalty oil refined here, the likelihood that Alaskans would have to suffer severe petroleum products shortages would be greatly diminished; and

WHEREAS the state can best insure that new refineries will meet our needs by participating in the planning of those plants;

BE IT RESOLVED, that the Alaska State Legislature respectfully requests the Governor to direct the Commissioner of Natural Resources to begin negotiations immediately which will commit the state's share of royalty oil to in-state refining; and be it

FURTHER RESOLVED that it is the legislature's intention that any contract negotiated by the Commissioner of Natural Resources under this resolution require that the state have a meaningful input into the planning and design of the refinery.

AGO 667884

Sec. 38.06.070. Criteria. (a) In the exercise of its powers under § 40(1) — (2) and § 50 of this chapter the board shall consider

(1) the revenue needs and projected fiscal condition of the state;

(2) the existence and extent of present and projected local and regional needs for oil and gas products and by-products, the effect of state or federal commodity allocation requirements which might be applicable to those products and by-products, and the priorities among competing needs;

(3) the desirability of localized capital investment, increased payroll, secondary development and other possible effects of the sale, exchange or other disposition of oil and gas or both;

(4) the projected social impacts of the transaction;

(5) the projected additional costs and responsibilities which could be imposed upon the state and affected political subdivisions by development related to the transaction;

(6) the existence of specific local or regional labor or consumption markets or both which should be met by the transaction;

(7) the projected positive and negative environmental effects related to the transaction; and

(8) the projected effects of the proposed transaction upon existing private commercial enterprise and patterns of investments.

(b) When it is economically feasible, the board may require, as a condition of the sale of oil or gas obtained by the state as royalty, that the oil or gas be refined or processed in the state and may, when it is feasible and in the best interests of the state to do so, provide for processing or refining of the oil or gas under a contract entered into by competitive bidding before the sale of the oil or gas. (§ 2 ch 9 SSSLA 1974)

Applied in Arco Pipeline Co. v. Acres, More or Less, Sup. Ct. Op. No. (File No. 2419), 539 P.2d 64 (1975).

Sec. 38.35.010. Legislative resources of this state in crud transportation of these resourc markets both in and out of the contribution to the general wel policy of this state that the de transportation system be direct the development of the human standard of living for all of its and potential sectors of its competition in its private enter of its incomparable natural en

(b) The State of Alaska re privileges and immunities not p

THIS [ ] BILL [X] RESOLUTION

has been prepared by the staff of the Legislative Affairs Agency in response to the request and at the direction of the sponsoring member or committee. The staff has attempted to place the document in proper legal and clerical form, subject to any special limitations or instructions of the requestor.

Any staff questions or comments as to legality, constitutionality, and form have been included in the memorandum addressed to the requestor and kept in the work file. If we may be of further assistance in this matter, please contact the Director of Legal Services or the Director of Research Services, as appropriate.

Delivered to requestor 3-18-77

LA-L 40



AGO 667886

IN THE SENATE

SENATE RESOLUTION NO.

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - FIRST SESSION

Relating to the disposition of Alaska's royalty oil.

BE IT RESOLVED BY THE SENATE:

WHEREAS the disposition of Alaska's royalty oil and the receipt of the best market value for that oil are matters of the greatest concern to the people of Alaska; and

WHEREAS the provisions of the Emergency Petroleum Allocation Act, as amended, may place serious constraints on the State of Alaska's ability to dispose of its royalty oil at a price and under conditions that are most favorable to its citizens; and

WHEREAS the effects of the Emergency Petroleum Allocation Act, as amended, may be mitigated if the state, with proper contractual safeguards, takes its oil in kind rather than in value;

BE IT RESOLVED that the Alaska State Senate respectfully requests the Governor to direct the commissioner of the Department of Natural Resources to notify the North Slope producers of its intention to take the state's royalty oil in kind, and further respectfully requests that the Royalty Oil and Gas Advisory Board immediately enter into negotiations for the sale of Alaska's royalty oil share under terms and conditions that will secure the most advantageous results for the people of Alaska.

AGO 667887

38.05.140 / 182 Royalty

38.05.140 (d)
Commission can waive or reduce royalty to promote development on existing lease.

38.05.182 - Commissioner, with consent of Board can take in-kind if determines "is in best interest of state"
↑ define -

38.05.183 - how sell in-kind royalty
(b) competitive bids
(d) export sale only for surplus

38.06 Royalty Board
"to promote private economic growth consistent with applicable environmental standards & public fiscal stability.

See regs

AGO 667888

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE COMMISSIONER / POUCH M — JUNEAU 99811

April 14, 1977

The Honorable John Rader
President, Alaska
State Senate
Pouch V
Juneau, Alaska 99811

Dear Mr. President:

The Alaska Royalty Oil and Gas Development Advisory Board has scheduled a meeting for May 5 and 6, 1977, in Juneau. The purpose of this meeting will be to discuss basic Board policies regarding several aspects of future actions. The Board would be most grateful if you could find the time to attend and either address the Board or discuss informally with us your preferences for policies the Board should follow in the future.

Within the next few days I will forward to you a draft of the policies we would like to consider. Meanwhile, I would be most interested in having any suggestions from you regarding additional policies that the Board might wish to adopt at this time. The most important policies that I want the Board to consider include the following:

1. Pricing policy. Should the Board seek highest in-value pricing, average in-value pricing, or lowest in-value pricing for instate sales of royalty oil and gas?

2. Flexible volume policy. Under what conditions should a purchaser be allowed flexibility in volume of daily or seasonal purchase?

3. Treatment of public utilities. Should public utilities be treated differently than private firms in regard to pricing policy, flexible volume policy, or other policies?

AGO 667889

4. Should royalty oil and gas be sold to existing instate facilities, or reserved as maximum "leverage" for encouraging new facilities to be built instate.

5. Should the Board withhold a portion (say a quarter or a third) of royalty oil from any early large in-kind sale in order to anticipate small local utility demands in the future? Alternatively, should the Board assume that these latter needs will be taken care of with increased production and discoveries in the future?

6. Should the Board attempt to achieve contract clauses that provide for lower priced products for use instate?

7. Should royalty oil be sold to a prospective buyer only as a last resort? i.e., should prospective buyers be required to show that they have been refused by producers?

8. If total net benefit to the State (including employment, net secondary effects, etc.) of a sale for export exceed those of a sale for instate use, may the Royalty Board choose to take in-kind and sell for export?

I would appreciate hearing any other areas of principle/ policy you feel the Board should explicitly pin down at this time. The Board feels tht such policy guidance is essential especially preceding the next several months during which such far-reaching decisions will be made.

Thank you very much for your consideration.

Sincerely,

Robert E. LeResche
Commissioner

cc: The Hon. Jay S. Hammond
Members, Royalty Board

FEDERAL ENERGY ADMINISTRATION
WASHINGTON, D.C. 20461

MAR 31 1977

DEPUTY ADMINISTRATOR

Mr. Frank Wood, Jr.
President, Pride Refining, Inc.
P. O. Box 3237
Abilene, Texas 79604

Dear Mr. Wood:

This letter confirms our telephone conversation of March 28 in which I stated that if the Federal Energy Administration (FEA) determines at some future date that allowing the State of Alaska to change the treatment of its royalty oil from north slope production would be consistent with the objectives of the Emergency Petroleum Allocation Act (EPAA), the mere existence of the current rule with respect to supplier/purchaser relationships would not be permitted to preclude such a change.

You understand, of course, that FEA cannot at this time commit to any specific action with respect to any proposed project. Rather, this is to assure you that the mere existence of the currently effective supplier/purchaser rule for crude oil will not by itself be permitted to frustrate a project otherwise deemed consistent with the objectives of the EPAA.

Sincerely,

Gorman C. Smith
Actg Deputy Administrator

AGO 667891

SCOMM

#21:19

FEDERAL POWER COMMISSION

28

NEWS RELEASE

WASHINGTON, D.C. 20426

IMMEDIATE RELEASE
FEBRUARY 1, 1977 No. 22868
Docket Nos. CP75-96, et al.
Alaskan Arctic Pipeline Company, et al.

FPC JUDGE RECOMMENDS APPROVAL OF ARCTIC GAS' $8.5 BILLION ALASKAN GAS PROJECT

Federal Power Commission Administrative Law Judge Nahum Litt today recommended approval of an $8.5 billion trans-Canada pipeline system proposed by an Arctic Gas Study Group to bring large volumes of Alaskan natural gas to lower 48 U.S. markets.

Judge Litt in his 430-page decision found the proposal superior in almost every respect to two competing applications, by El Paso Alaska Company and Alcan Pipeline Company (see fact sheet, FPC release No. 22869, for details of all three proposals).

Arctic's project, the largest private undertaking in the country's history, will make more gas available sooner, result in less impact on the environment, at less cost to the consumer than either of the competing proposals, Judge Litt concluded. It would be built during the winter seasons, employing 2,400 at its peak, and initially carrying from 2 to 2.5 billion cubic feet of gas daily beginning in 1982 or 1983.

This initial decision is the first step in FPC consideration of the matter. The full Commission will now review the action of the Administrative Law Judge under the special procedures established under the Alaska Natural Gas Transportation Act of 1976. An FPC recommendation regarding the transportation system will be submitted to the President by May 1, 1977.

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In a separate order issued concurrently with Judge Litt's decision, the Commission noticed suspension of the Natural Gas Act proceedings, established further procedures for Commission review and responded to earlier procedural petitions by Arctic Gas and El Paso. The Commission said that the procedures adopted will give parties adequate opportunity to rebut factual matters while enabling it to discharge expeditiously its duties under that Act.

Hearings on the proposals began May 5, 1975, and continued almost uninterrupted until November 1976. An official inspection was made in August 1976 of the sites of the proposed major facilities and pipeline routes of all three applicants. The record consists of 253 volumes of transcripts and about 1,000 exhibits. The second-stage proceeding is not likely to begin before early 1978, and construction would not begin before late 1978 or '79. The second-stage proceeding would address producer sales contracts and again review rates, marketability, financeability and other matters.

The transportation cost per million btu's for the Alaskan Arctic gas in the fifth year of operation, based upon unescalated 1975 data, will be about $1.60, compared to $2.15 for El Paso's proposal and $1.91 for Alcan.

Judge Litt recommended rolled-in pricing, where all the pipelines' customers help pay for the project gas, but cited one witness' conclusion that gas marketed through the Alaskan Arctic project will be competitive whether priced incrementally or rolled in.

Making a number of assumptions, the average rolled-in price at the city gate would be $1.50 per thousand cubic feet, based on a field price of $1 per thousand cubic feet. On an incremental basis, meaning only those consumers who actually receive the gas pay for it, the average price will be $2.41. These prices are substantially lower than the price of fuel oil and electricity for all metropolitan areas except California and New York, where there is parity with fuel oil, Judge Litt said.

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Even with a 20 percent construction cost overrun, which is not improbable, Judge Litt said, the Arctic Gas deliveries are still economically competitive, while the El Paso project gas would be only marginally so.

Alaska's North Slope encompasses an 80,000-square-mile area extending about 600 miles from the Canadian border up to the Arctic Ocean. Exploration there has only begun, but Judge Litt said all parties agree that proved saleable reserves are around 22 trillion cubic feet.

Most of the proved reserves on the North Slope are in the Prudhoe Bay field, discovered in 1968. Those reserves are the largest yet discovered on the North American continent, representing about 10 percent of proven 1975 U.S. natural gas reserves and more than a year's supply for all U.S. consumers.

The applications were filed prematurely from any rational regulatory point of view, Judge Litt said, and the Commission's determination to try the cases without an essential ingredient represents a regulatory boldness normally not seen. The important missing ingredient was sales contracts by any of the 13 producers who hold interest in Prudhoe Bay reserves. Their failure to sign sales contracts was a chief impediment throughout the hearings, Judge Litt said, since many things depend on the amount of gas available, such as the size of the pipeline, financing, and marketability.

The Commission, with some misgivings, set the applications for hearing without the sales agreements because the national interest demanded expedited consideration, Judge Litt said. The only conclusion possible, he stated, is that for the producers the national interest "lies somewhere below their own economic interest. The producers, like G.B. Shaw's dinner-time companion, have a price at which they would sell their 'service,' and all their protestations to the contrary cannot hide that they are mainly dickering over price," Judge Litt said.

However, he continued, the lack of sales contracts was not fatal to the case since there is little dispute over the

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recoverable reserves at Prudhoe Bay. There is no such agreement on the size of the Mackenzie Delta reserves though, which are critical since the Arctic Gas proposal is directly dependent on delivery of at least 1 billion cubic feet a day the first year of operation. The Mackenzie Delta, located in Canada's Northwest Territories, is 15,000 square miles in size. There are benefits of building one project to transport both Canadian and U.S. gas rather than two separate transportation systems, he said, not the least of which is fewer environmental effects.

Judge Litt rejected Alaska's claim that the FPC does not have jurisdiction over the Alaska gas because the State is performing those activities within the state which Congress wanted regulated. The Commission clearly has full jurisdiction over producer wellhead sales in interstate commerce, transport of the gas within Alaska, and transport and sale within the lower 48 states, Judge Litt said.

The Arctic Gas proposal calls for over 4,000 miles of pipeline extending from Prudhoe Bay through Alaska and Canada to termination points in the lower 48. The 48-inch line to be built between Prudhoe Bay and Caroline Junction in Alberta will be the largest ever used to transport gas, and the operating pressure used to force the gas through the pipeline will exceed the thrust of any line now in existence in North America. The projects would all be built using known technology, with adaptation or "scale-up" as necessary to improve that which is known, such as construction of chilled gas pipelines in permafrost (ground that is frozen year-round), or fabricating a ditching or snow-making machine larger than any built before.

Arctic Gas' heavy reliance on winter construction, it was argued, subjects it to billion-dollar risks if construction is delayed. Arctic has made clear its willingness to incur additional costs to avoid delay, Judge Litt pointed out, but maintains it will not be necessary. All in all, he continued, there is little reason to believe Arctic Gas will not be able to meet its logistic build-up schedule prefatory to each winter construction season. It plans to barge most of its equipment and supplies to stockpile sites before the construction begins, with air support as needed. Although Arctic contemplates six years between certification and

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commencement of flow, actual construction would not begin until the winter of the fourth year.

Judge Litt said that, as to the environmental effect of the proposed projects, seldom has a decision-making body been favored with so substantial a body of salient information on which to draw in reaching a decision. The staffs of the FPC and the Department of Interior each wrote detailed environmental impact statements assessing the "worst case" risks of all three proposals and numerous alternatives. In addition, reports were filed by the parties and voluminous evidence submitted by numerous expert witnesses.

The most significant environmental concern as expressed through testimony was Arctic's crossing of the 14,000-square-mile Alaskan Wildlife Range. The line would cross the entire Range in an east-west direction, with about 2,650 acres permanently dedicated to it. Most of that acreage is right-of-way, however, which would be revegetated.

The Range is part of a large ecosystem, Judge Litt said some of which has not been substantially despoiled by man. Its protection from significant degradation is therefore important and has been so considered by all parties, he said. He accepted, however, Arctic's belief that the impact will be small, of limited duration and not disruptive of even a small area. Judge Litt pointed out that the Range, while remote, is not unimpacted by man, who will continue to use the area regardless of whether a pipeline is approved or not. In addition, he noted, the Range is not legally designated as a "wilderness area" and there is therefore no legal impediment to authorizing a pipeline across it.

It is clearly in the public interest to exploit hydrocarbon reserves in the Range, Judge Litt said, and unless prohibited by Congress, incursion into the Range for this purpose must be considered a virtual certainty. The Arctic Gas project then becomes a benefit because it lessens the environmental cost of attaching the reserves, he said.

A primary environmental concern of the cross-Mackenzie Delta route in Canada was effect on migratory snow geese. Mitigative construction measures can greatly reduce the impact, Judge Litt said. Aircraft overflights, the most

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serious hazard, will be kept well below the least acceptable rate of one every two hours. Judge Litt said, however, that while the FPC can consider the impacts of the pipeline on the MacKenzie Delta, two Canadian tribunals must also rule on the issue, with ultimate authority to deny, license or condition as they see fit.

Judge Litt rejected the argument that Arctic's knowledge of the environmental effects along its proposed route is woefully deficient. The research effort Arctic has made is impressive, he said, and its specific knowledge of the fauna and flora exceeds that held by its competitors.

Another key environmental criticism of Arctic's proposal is its alleged inability to build snow roads when needed in an environmentally acceptable manner or to build a pipeline from them in winter conditions of extreme cold and long periods of darkness. Judge Litt found that the snow road plan is both feasible and effective and can be accomplished with a minimum of environmental harm.

The 915 miles of snow road and work pad will be built in sensitive permafrost using snow collected by snow fencing, harvesting from frozen lakes, or manufactured snow using standard ski-slope technology. Timing is the critical element, he noted. Snow fences would be erected in October, and construction would begin in late October or early November as soon as five to ten miles of snow road is completed.

The State of Alaska's position on environmental matters clearly has been influenced by economic considerations, Judge Litt stated. The simple fact is, he continued, that the State wants to encourage industrial development in central Alaska and supported the El Paso proposal on economic grounds, bargaining with pipeline purchasers of its royalty gas to release portions of that interstate supply for future intrastate industrial use.

The State embarked early on upon a course designed to maximize the economic benefits it would derive, Judge Litt stated. "This laudable goal for Alaskans, unfortunately, is not always consistent with the public interest of all the people of the U.S.," he said. Besides the fact that the state's

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use of Alaskan gas is speculative at best, Judge Litt stated, there is also a serious question of whether industrial gas use would be compatible with federal natural gas end use policy or environmental sensitivities.

Judge Litt acknowledged that Alaska's views are entitled to substantial weight even where the evidentiary showing may be ambiguous. However, he said, the great bulk, if not all, the Prudhoe Bay gas will be marketed in the contiguous U.S., and those consumers will be paying the costs. The economic ills of a particular state are not a valid consideration in determining pipeline rates or route selection, he said, and this policy has been upheld by the Commission and the courts.

Arctic Gas' pipeline, because it is large-diameter and uses extra-high compression, will use less fuel than the other two proposals--6.87 percent for Arctic gas compared to 11.96 for El Paso. Since gas consumers must pay for the gas consumed as fuel, their unit costs will be lower, Judge Litt said. The annual fuel saving by using the Arctic system exceeds residential consumption in each of a large number of states, he noted.

The Arctic Gas system also has more flexibility and expansibility should volumes exceed those expected. It can handle up to 4.5 billion cubic feet daily with additional compression, and if even more capacity is necessary, looping (new lines paralleling existing ones), would "be a work of joy," Judge Litt said.

The FPC staff contended the west leg of the Arctic Gas system is not the most economic way of moving the gas to those market areas. That leg, as proposed by Arctic Gas, would deliver 659 million cubic feet daily, or roughly 30 percent of total initial flow, to a point on the Idaho-British Columbia border, for delivery to west coast markets. The FPC staff proposed that delivery could be accomplished by using idle western pipeline capacity it expected to result from future declining Canadian gas imports, or by displacement of gas westward using existing pipeline systems.

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Judge Litt said the staff's alternative must be rejected because he does not believe its pessimistic outlook for Canadian gas imports will be fulfilled. Without this occurring, he said, there would be no true saving to consumers. Recent reports issued by the Canadian government contain a considerably more favorable appraisal of its ability to continue exports at present levels. Any curtailments which might occur in the late 1970's or early 1980's should prove temporary, he said, in light of frontier gas which may become available then.

The existence of a nationwide gas shortage is uncontested, Judge Litt said, with the nine interstate pipelines comprising the Arctic Gas group projecting their total supplies will fall short of requirements by 26 percent in 1985. These companies, which marketed about a third of total gas production in the lower 48 in 1975, sell in a substantial majority of the lower 48 states but principally California, Ohio, Michigan, Illinois, Minnesota, New York and Pennsylvania. Without both Alaskan gas and other gas supplies, their 1985 requirements in priorities 1 and 2 cannot be met, Judge Litt said.

While Canada's National Energy Board is considering the proposals, Judge Litt said there is much dispute on political issues such as whether the NEB will act impartially in a timely fashion for U.S interests, and whether it will allow U.S. and Canadian Mackenzie Delta gas to be transported through the same system.

These political considerations are principally the prerogative of the President, Judge Litt emphasized; the FPC does not make foreign policy for the U.S. However, he said he must assume that the decision to be made by the Canadian government will be made by rational men viewing the pros and cons of the proposals on a wide range of criteria, just as it is assumed rational men here will make the decision.

Given the present state of world energy resources, he stated, it can be assumed that more rapid development of known and substantial resources is as important to Canada

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as to the U.S., and that a time frame for delivering known supplies late into the 1980's is not likely to be a winning position.

Judge Litt agreed with Arctic Gas' contention that a joint project through Canada is not dependent on a U.S.-Canadian treaty. The normal and long-standing relationship of almost 200 years between the two countries is more than a sufficient basis for assuming stability and rational treatment of a mutually beneficial business enterprise. "Even if it is assumed that a Canadian government would come to power predisposed to act unreasonably, such imprudence could be countered with equally unsavory activities on the part of the U.S.," Judge Litt said.

The overwhelming benefit to Alaska will be royalty gas payments and severance taxes. Any of the proposals would net the state a minimum $135.5 million a year, totalling several billion dollars over the next several decades. The bottom line for the state's development is how it spends those billions, Judge Litt said. Those policies will determine the ultimate socio-economic effect of the project.

There was consensus by the Commission staff, the most populous consuming states which took an active interest, and an array of pipelines and distributors serving huge sections of the country that Arctic Gas' proposal would serve their best interests. However, El Paso's proposal is viable and, if Arctic Gas is unable to accept a certificate, El Paso's proposal, with modifications, would also meet the public convenience and necessity, Judge Litt said. The chief problem with the El Paso project is its lack of flexibility and credibility as presented, he continued. It would need at least 9 cryogenic ships, rather than 8, to provide reliable transportation; five rather than four liquefied natural gas storage tanks, and seven, not six, liquefaction trains at Gravina Point in Alaska. While El Paso proposed locating its California terminal at Point Conception, Judge Litt said all the evidence points to Oxnard as the preferred location.

El Paso, primarily through its lawyers, "has made a silk purse out of a sow's ear," Judge Litt said. It has done

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little intermediate design work and its design, while impressive on paper, has no particular backup by core samples or even general site-specific work anywhere along its actual route.

As to Alcan, Judge Litt said the record does not support even the possibility that a certificate could be granted it. Its design is clearly neither efficient nor economic since the pipeline is undersized. Its 3-year phased-in construction schedule is not credible, he said, and judging from the FPC staff's evaluation, the proposed summer construction cannot be accomplished without unacceptable environmental impact, primarily degradation of ice-rich permafrost.

All the major participants in this mammoth undertaking, "in the vernacular, 'have their hand out,'" Judge Litt said. They all want top dollar, creating serious questions of marketability and in turn, financeability. Alaska may again seek to increase its severance tax on hydrocarbons from 4 to 10 percent; the pipelines want consumer guarantees to repay their equity investment but still seek a rate of return of from 15 to 17 percent; the producers' failure to sign sales contracts indicates where their concern lies.

Only a limitation on the field price of the gas to reflect its intrinsic market value and a reduction on investment returns to reflect limitations on risk can bring these projects "in from the cold," Judge Litt concluded. A field price of $1.00 per thousand cubic feet is about the upper limit, he said: a field price established by contract or otherwise at a level much higher will sink the project, because the delivered cost of the gas would be so high the high-priority consumers which constitute the market would turn to other energy supplies.

The financial plan prepared by Arctic Gas does not outstrip the capacity of any of these markets and is generally feasible, Judge Litt found. He concluded, however, that the magnitude of the capital investment is such that the gas transmission company sponsors cannot provide the institutional lenders with the security necessary to warrant financing. There must be reliance upon both the consumer and the taxpayer to guarantee that the project will be

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completed and that debt service will be secure during any sustained outages.

Legislation to perfect tracking of rates to the consumer level and to approve U.S. Treasury participation is necessary if the project is to be built, Judge Litt concluded. He made the following recommendations: consumer participation in guarantees on capital costs, but only for the debt service; the equity holder should accept the usual risk of equity investment; and the federal government should entertain an insurance or completion guarantee arrangement to facilitate raising project debt capital at a more reasonable cost.

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SUMMARY OF INITIAL DECISION IN EL PASO ALASKA PROCEEDING RECOMMENDING SELECTION OF ARCTIC GAS PROJECT

The following is a summary of the initial decision issued on 2/1/77 by Administrative Law Judge Nahum Litt in the El Paso Alaska proceeding (CP75-96 et al.) involving competing projects sponsored by the Arctic Gas consortium, El Paso Alaska and Alcan Pipeline-Northwest Pipeline to transport gas from the Prudhoe Bay Field of Alaska to markets in the Lower 48 States.

Judge Litt concluded that the Arctic Gas project is superior in nearly every significant aspect to the El Paso Alaska proposal and should be certificated, including its Western Leg. However, El Paso Alaska also has a "viable plan" which technically can be built in an environmentally sound manner and could be certificated if not for the "clearly superior" Arctic Gas application. Thus, if Arctic Gas is unable to accept a certificate, El Paso's proposal -- subject to certain modifications -- can be found to meet the present and future public convenience and necessity.

On the other hand, Judge Litt declared, the record does not support even the "possibility" of a grant of authority to Alcan. In no event, he said, could the Alcan project be approved with the inclusion of Westcoast Transmission, one of the two Canadian company participants, because of the arbitrary assignment of volumes for transportation through the Westcoast system and higher costs of transportation which would result for U.S. consumers. Specifically, he said, it would appear that the 30%-70% split of volumes in Canada (for transportation to the Canadian-Lower 48 border by Westcoast and Alberta Gas Trunk Line, respectively) was adopted, in the first instance, to secure Westcoast's participation in the Alcan project by assuring that the Westcoast line below Fort Nelson, British Columbia "would be allocated a sufficient volume of gas to fill existing excess capacity, thereby warranting construction of additional loop facilities which would inure to the ultimate benefit of Canadian customers." Moreover, the pro forma tariffs of the two Canadian companies disclose an "overt Canadian bias" and contain cost allocation provisions which are "totally unacceptable" to U.S. consumers. Although allocation procedures supported by Alberta Gas Trunk Line are now alleged to be inoperative, the result is to prevent any meaningful costing of facilities.

Further, Judge Litt asserted, two critical elements of Alcan's proposal -- construction in a three-year period (with completion in 1981) and financing in a separate time frame from the Maple Leaf project (sponsored by the same Canadian companies which are participants in Alcan) -- are totally unsupported. Completion of the Alcan project in three years by 1981 simply "cannot occur," and the financing arrangements proposed for Alcan and Maple Leaf require "intricate timing" which lacks any evidentiary support. Accordingly, "as presently proposed, even with Alcan's willingness to build anything anyone wants (as long as it does not oust Westcoast and AGTL from their Maple Leaf project), there is not enough left of its original proposal to serve as a basis for granting its application."

Overview of Projects

The Arctic Gas project includes a number of interrelated applications involving construction of some 4,512 miles of pipeline from the North Slope of Alaska through Canada to markets on the West Coast and in midwestern and eastern states. Specifically, Alaskan Arctic Gas Pipeline would construct a 195-mile, 48-inch line from the Prudhoe Bay to the Alaska-Canada border. From that point, Canadian Arctic Gas Pipeline would construct over 2,300 miles of mostly 48-inch line across the Mackenzie Delta and then south to Caroline Junction, Alberta where the line would divide -- with a Western Leg extending south to Kingsgate on the British Columbia-Idaho border and the Eastern Leg extending south to Monchy, Saskatchewan. From Kingsgate, Pacific Gas Transmission proposes to loop its existing line to deliver gas to markets in Pacific Northwest states and in Northern and Southern California. From Monchy, Northern Border Pipeline (a partnership of six U.S. pipelines) would build a 1,138-mile, 24-inch line to Dwight, Illinois (near Chicago). Deliveries of Alaskan gas to the Lower 48 States are projected at 2.25 Bcf/d by the fifth year of operations, with approximately 30% to be received by PGT for West Coast markets and the remaining 70% by Northern Border for midwestern and eastern markets.

El Paso Alaska proposes to transport gas from Prudhoe Bay via a new 809-mile pipeline (largely paralleling the Alyeska oil pipeline route) to Gravina Point on the southern coast of Alaska where the gas would be liquefied and shipped by tanker to terminal, storage and regasification facilities proposed by Western LNG Terminal Co. at Point Conception, California (approximately 120 miles north of Los Angeles). From Point Conception, Western LNG proposes to construct new pipelines to connect with existing transmission facilities of Pacific Gas & Electric Co. and Southern California Gas Co. Delivery of Prudhoe Bay gas to other markets in the Lower 48 States would be accomplished through a combination of displacement, reversal of flow in existing lines of California utilities and in certain existing lines of El Paso Natural Gas Co. and Transwestern Pipeline Co. (between the California-Arizona border and the Permian Basin), construction of new lines by El Paso Natural from the Permian Basin to the Anadarko Basin or the Texas Gulf Coast area (or both) to interconnect with other interstate pipeline companies in those areas, and use of projected idle capacity in those pipelines to effect delivery of gas to markets in midwestern, southeastern and eastern states.

Alternative showings of El Paso Alaska contemplated deliveries of 2.4 Bcf/d or 3.2 Bcf/d from the Prudhoe Bay Field.

Finally, the Alcan Pipeline project -- sponsored by Northwest Pipeline Co. and two Canadian companies -- involves the construction of a 730-mile, 42-inch pipeline from Prudhoe Bay to Delta Junction (south of Fairbanks) along the Alyeska oil pipeline route and then extending to the Alaska-Yukon border along the Alcan Highway and an abandoned oil pipeline route. The pipeline would be designed to carry 2.4 Bcf/d of Alaskan gas. At the Alaska-Yukon border, the gas would be delivered to Foothills Pipe Line (or an affiliate) which would construct a new 42-inch line continuing along the Alcan Highway to Fort Nelson, British Columbia where approximately 30% of the gas would be delivered to Westcoast Transmission Co. Ltd. for ultimate transportation through expanded facilities to the Lower 48 border at Sumas, Washington. The remaining 70% would be transported from Fort Nelson to Zama Lake, Alberta (a distance of 144 miles) by a new pipeline -- to be owned in British Columbia by Westcoast and in Alberta by Alberta Gas Trunk Line (AGTL) -- for delivery into existing facilities of AGTL and further transportation to Empress, Alberta and possibly also to Kingsgate, British Columbia. From Empress, gas destined for midwestern or eastern markets in the Lower 48 would be delivered to the Northern Border system at Monchy, Saskatchewan. Gas delivered to Sumas, and possibly to Kingsgate, would be

transported to western markets through existing or expanded pipeline facilities of Northwest and Pacific Gas Transmission.

Initial Decision

The summary below is organized under the following headings (conforming for the most part to those in the initial decision): Lack of Producer Sales Contracts, Jurisdictional Questions and Proposed Legislation, "Western Leg" Issue, Gas Supply, Construction and Geotechnical Problems, Operational Factors, Environmental Considerations, Socio-Economic Factors, Marketability of North Slope Gas, Economics, Net National Economic Benefits, Financing and Tariffs and Canadian Issues.

Lack of Producer Sales Contracts

At the outset of his initial decision, Judge Litt stressed the significant problems caused throughout the hearing by the failure of those owning the Prudhoe Bay reserves -- principally, the State of Alaska, Atlantic Richfield Co., Exxon Corp. and Sohio Petroleum Co. -- to enter into gas sales contracts. This refusal, he said, has prevented the expeditious and orderly examination of pipeline sizing, financing, marketability, and a host of related matters, including disputes as to which companies ultimately would buy the gas. While the State of Alaska announced sales of its royalty gas to El Paso, Southern Natural and Tenneco on the last day of the hearing (11/12/76), even these contracts for royalty gas are not effective until ratification by the state legislature, which is not in session.

All efforts to induce producers to enter into sales contracts, Judge Litt continued, were "singularly unsuccessful." As recently as 9/30/76, while indicating an intent to act reasonably and professing a concern for the national interest, the producers refused to state categorically that they would enter into contracts to sell gas upon certification of a prime pipeline route. "Their position is that they are in business to sell hydrocarbons and the only question is timing. . . . The only conclusion possible from their actions is that the national interest to ARCO, Exxon, Sohio, etc. lies somewhere below their own economic interest, or at least, the national interest of the U.S. appears . . . negotiable in their bid to obtain certain concessions from the Commission or the Congress in return for their cooperation in bringing this gas to market." In short, "the producers, like G. B. Shaw's dinnertime companion, have a price at which they would sell their 'service,' and all of their protestations to the contrary cannot hide that they are mainly dickering over price."

Similarly, the State of Alaska has pursued a course designed to maximize economic benefits flowing to Alaska from its hydrocarbon resources. "This laudable goal for Alaskans, unfortunately, is not always consistent with the general public interest of all the people of the United States."

The Law Judge also noted the absence of an approved production agreement for oil or gas from the Prudhoe Bay Field. While a draft agreement became available in August 1976, it will be several more months until state approval will be given.

Because of the lack of gas sales contracts and the lack of an approved field production agreement, Judge Litt stated, the record has been closed without a gas deliverability schedule, without knowing the purchasers of the gas, without knowing more than the alleged general cost of field gathering and gas conditioning facilities or who would bear such cost, and without specific estimates of reserves on the Lisburne and Kaparuk formations which are part of the Prudhoe Bay Field. In the usual case, these deficiencies would require that the proceeding be held in abeyance pending their resolution. Here, however, "an overwhelming consensus on the part of the

Commission, the Congress and the Executive Branch has been to go forward anyway and to pick a pipeline. It is not the best way to make rational decisions."

Given the above considerations, the Law Judge added, "it is amazing in fact that this proceeding progressed so far so fast. The applications were filed prematurely from any rational regulatory point of view, and the Commission's determination to try the cases without an essential ingredient represents a regulatory boldness normally not seen."

Jurisdictional Questions and Proposed Legislation

Judge Litt dismissed the State of Alaska's claim that the FPC lacks jurisdiction over its interstate sales. This claim, he said, rests solely on the contention that a State is not a "person" within the meaning of Section 2 of the Act. No such gap exists in the law, the Law Judge replied, and one should not be created. Otherwise, producing and energy-rich states of the nation, by virtue of their royalty interest in production from state lands and their "increasing propensity to reserve the right to take that interest in-kind," will expand such gap to permit larger and larger volumes to escape regulatory control. Also, Judge Litt noted, Alaska's essential premise is undercut by the Supreme Court's holding in FPC v. Corporation Commission of Oklahoma that a state agency is a "person" within the meaning of Section 2 the Natural Gas Act for purposes of jurisdiction by U.S. District Courts to enjoin actions violative of the Act.

The FPC Judge also referred to problems created by the State of Alaska's gas sales contracts with El Paso, Southern Natural and Tenneco reserving the right to reduce daily deliveries by up to 25% at any time during the first five years, 50% during the next five years, 75% during the third five-year period, and 100% after 15 years, for in-state use. While there is little doubt that the Commission would refu to certificate long-term sales under such terms, the Law Judge stated, Section 13(b) of the 1976 Alaska Natural Gas Transportation Act unfortunately permits Alaska to withdraw its royalty gas from the interstate market in the manner contemplated by its contracts. Such withdrawal could result in the future idling of downstream facilities and produce adverse cost impacts. Additionally, "the mere prospect of withdrawal imperils the financeability of an Alaskan gas project."

Accordingly, Judge Litt urged the Commission, in its report to the President, to recommend deletion of Section 13(b) of the Alaska Natural Gas Transportation Act of 1976, as well as deletion of Section 13(a) which bars the Commission from denying access to the Alaskan gas transportation system to shippers not participating in equity financing. Absent deletion of these two provisions, "direct and total U.S. Government guarantees would appear to be the only feasible method of financing."

Another serious regulatory gap, Judge Litt continued, is the absence of direct plenary jurisdiction by any government agency over the operations and charges of the El Paso tanker fleet. Therefore, if the El Paso project were to be approved, this gap should be closed, either indirectly through certificate conditions or directly through suitable federal legislation. Any certificate conditions should require, at a minimum, that El Paso Alaska bind the shipping companies to all contract pricing provisions and to continued dedication of the ships over the project life; seek prior Commission authorization for any subsequent amendments materially affecting the terms of the approved contracts; cause all books and records of the shipping companies to be made available for Commission audit; and seek prior Commission approval for any effort to divest effective corporate control (if any) over the shipping companies. Since such conditions would be likely to be tested in the courts, "the Commission may wish to recommend appropriate federal legislation to confer jurisdiction in order to avoid uncertainty."

Finally, the Law Judge said, federal legislation is required to enable full and timely recovery from ultimate consumers of all appropriate costs in connection with an Alaskan transportation project. While the Commission should not have the power to suspend flow through of costs, it should have the right to review all such costs at all times, with retention of the power to order refunds where appropriate. Similarly, the Treasury Department should be granted appropriate statutory authority to accomplish whatever federal participation in the Alaskan gas project financing is ultimately determined to be required in the public interest.

"Western Leg" Issue

Judge Litt rejected Staff's recommendation for elimination of the "Western Leg" portion of the Arctic Gas project, currently designed to deliver initial volumes of 659,000 Mcf/d or roughly 30% of the total initial Alaskan gas flow of 2.25 Bcf/d, and for delivery of these volumes instead to the West Coast through combined use of Pacific Gas Transmission facilities and Northern Border facilities. Specifically, Staff proposed two alternatives: (1) use of an expected 601,000 Mcf/d of idle capacity expected on the PGT system by 1981 following expiration of gas export licenses, with the balance of 36,000 Mcf/d to be delivered by displacement through the proposed Northern Border system; and (2) use of 204,000 Mcf/d of idle capacity on PGT's system if curtailments of Canadian export gas are less than predicted, with displacement of 433,000 Mcf/d via Northern Border.

Arctic Gas conceded the technical feasibility of the Staff's displacement proposal, the Law Judge noted, and also admitted that elimination of the Western Leg facilities would result in a net reduction in project capital costs of $512 million and a reduction in average annual project transportation cost of service of roughly $50 million. Staff viewed the estimated $50 million savings in annual cost of service as a minimum.

Staff's proposal, Judge Litt stated, is keyed to very substantial and permanent reductions in Canadian deliveries to PGT, commencing either prior to or contemporaneously with the expiration of applicable export licenses. However, he declared, absent such developments, long-term displacement of full Western entitlements over a fully loaded 42-inch Eastern Leg (Northern Border) would not result in a true saving to the nation's consumers. This is because the $50 million "saving" cited by Staff would be achieved at the expense of additional fuel requirements amounting to some 70 billion Btu/d, thus resulting in significantly lower volumes of natural gas available to the nation's markets. On this basis, considering Staff's estimated one-time energy requirement of 48 trillion Btu to construct the Western Leg, a net energy loss would be experienced in less than two years. And, over the 20-year life of the project, the cost of replacing the net energy loss would more than wipe out the suggested $50 million annual saving in transportation costs, since the replacement energy in California markets would mainly take the form of high-cost electricity.

Further, Judge Litt continued, even if true overall savings were to result from the displacement proposal, there does not appear to be any satisfactory way for apportioning such savings among the specific eastern and western markets to be served. Among other things, the problem is complicated by the necessity either to maximize the capacity of Northern Border's presently proposed 42-inch diameter pipeline or to build a larger diameter Northern Border pipeline. Any such plan would entail substantial capital costs, and the Western Leg purchaers would have to pay for the expansion. However, assuming growth in PGT's excess capacity as predicted by Staff, Northern Border capacity installed now to permit displacement could quickly become excess to Northern Border's needs. On the other hand, absolving Western Leg customers of these costs would result in higher costs to Eastern Leg customers. In short, "there is no

way on this record to compare the cost of cheap and easy expansibility to Eastern Leg customers if the Western Leg is built, as against the delays and unknown costs in unknown future years if it is found necessary to fully load Northern Border's 42-inch line now and deny cheap expansibility in the future."

Additionally, the Law Judge observed, Staff's projection of a substantial long-term reduction in Canadian deliveries was based on an NEB report issued in April 1975 which did not consider the impact of new frontier gas supplies in assessing Canada's supply and demand position in future years. However, a subsequent report issued by Canada's Minister of Energy, Mines and Resources in early 1976 suggested that, with the advent of gas supplies from frontier areas after 1982 (assuming an energy price structure adjusted to current levels of international oil prices), Canadian gas supply would substantially exceed demand -- including export demand -- for a number of years. Accordingly, although circumstances may change and the Canadian Government may reappraise its energy goals, "the present outlook for Canadian gas exports at current levels after 1982 appears optimistic."

Thus, Judge Litt concluded, since Staff's displacement alternative is predicated on an "unduly pessimistic view" respecting Canadian curtailments and defended on the basis of transportation cost savings which may be "largely illusory," it cannot be considered a preferable alternative.

Moreover, he added, the specific design recommended by Staff would produce a system operating at or near full capacity from the outset, leaving no room for cheap expansion to take advantage of future Alaskan supply. By contrast, the Eastern and Western delivery legs now proposed by Arctic Gas, although substantially reduced and modified from the designs originally proposed in order to improve the economy and efficiency of gas delivery, are capable of transporting Alaskan volumes above 2.25 Bcf/d solely by increasing compression, thereby affording a reasonable measure of cheap expansibility customarily considered desirable in attaching new transmission facilities to new, promising supply areas.

Judge Litt also reviewed El Paso Alaska's basic scheme for delivering Alaskan gas throughout the Lower 48 States by a combination of direct transportation and displacement using existing pipeline systems. He concluded that the overall proposal is "clearly feasible."

Gas Supply

Judge Litt noted agreement by all parties that in-place gas reserves in the Prudhoe Oil Pool on the North Slope exceed 35 Tcf, but disagreement regarding (1) gas deliverability from the Prudhoe Bay Pool (because of the effect of the rate of gas production on ultimate oil recovery); and (2) the extent and location of undiscovered recoverable reserves in other areas of North Alaska.

With respect to gas deliverability from the Prudhoe Bay Pool, the Law Judge called attention to a study commissioned by the State of Alaska indicating that highest oil recoveries were obtained under conditions of water injection and no gas sales, but that these higher ranges of oil recovery could also be approached with gas sales of 2.0 Bcf/d and water injection, as well as with gas sales above 2.0 Bcf/d assuming further water injection. He also noted a statement by the principal producers that gas deliveries of at least 2 Bcf/d will commence once the necessary pipeline and gas conditioning facilities are in place, and that initial gas deliveries of up to 2.5 Bcf/d may be possible without affecting ultimate oil recovery. Thus, he concluded, while there is still some uncertainty concerning the amount of gas that can and will be sold without adversely affecting oil recovery, "the vast weight of the evidence is that between 2.0 Bcf/d - 2.5 Bcf/d of gas will be available initially from the Prudhoe Bay Field." Moreover, he observed, if estimated additional volumes of 11.7 Tcf in the Sadlerochit, Lisburne and Kuparuk formations by 1985 are included, "it is obvious that the 2.0 Bcf/d - 2.5 Bcf/d estimate is indeed conservative."

In regard to other North Slope reserves, Judge Litt said several specific regions could logistically support additional deliveries into the systems of one or more of the three pipeline applicants. While potential reserve estimates vary considerably, nevertheless, "Arctic Gas, because of its larger potential capacity and cheaper expansibility, would be best able to transport additional volumes from any North Slope source."

Turning to the Mackenzie Delta area, Judge Litt found a "reasonable likelihood" of deliveries not less than 1 Bcf/d in the first year of operations and 1.5 Bcf/d in the fifth year. (Arctic Gas, by contrast, assumed initial deliverability of 1.25 Bcf/d in the first year, rising to 2.25 Bcf/d by the fifth year.)

In arriving at this determination, the FPC Judge first looked to total salable gas reserves of 6.21 Tcf from eight Mackenzie Delta fields established by DeGolyer & MacNaughton as of 7/31/75 -- including 3.83 Tcf of proved reserves, 1.02 Tcf of probable reserves and 1.36 Tcf of possible reserves. If the probable reserves are discounted by 30% and the possible reserves by 70%, the Law Judge stated, the DeGolyer & MacNaughton total is reduced to about 5 Tcf which, assuming a rate-of-take of 1:7300, would support an initial gas deliverability of about 0.7 Bcf/d. However, he continued, "it would be totally short-sighted and unrealistic, in view of the potential of the area and the long lead times involved in this project, to rest the case, as only El Paso urges, on the proposition that no additional reserves from new fields or areas can be relied upon to be forthcoming by the time operations commence, say 1982, or within a reasonable time thereafter. The record simply will not permit the conclusion that exploratory drilling activity in the Mackenzie Delta area is either on the verge of coming to a grinding halt or, if continued, will be totally fruitless."

Further, Judge Litt noted, although the Commission in the past has generally not looked beyond the level of proved reserves in making findings as to gas supply in certificate cases, there is "no inflexible policy" which requires disregard of facts favoring consideration of gas supplies not yet proven. More specifically, in this

case, there is no challenge on the record to the assessment that the Mackenzie Delta, onshore and offshore, "constitutes a major gas-bearing province with very substantial potential reserves in the early stages of exploration." Even when estimates of potential undiscovered gas reserves (ranging from 39 Tcf to 250 Tcf) are discounted severely, "the inescapable conclusion remains that a large resource base exists and that substantial additional gas reserves can be discovered over the next several years." Moreover, although the rate of discovery of such reserves is uncertain, it hardly seems likely that the Canadian Government — should it approve the construction of a gas transportation system into the Mackenzie Delta on the basis of pending applications -- "will fail to provide and maintain the regulatory climate conducive to optimum exploitation of that system." The Law Judge added in this regard that recent natural gas price increases in Canada have resulted in a significant increase in exploratory activity in the traditional western producing provinces. "While a similar impact has not yet been perceived in the Mackenzie Delta area, the allocation of financial resources first to the traditional areas with marketing facilities in place is merely good business practice, especially in light of the long lead times involved in any Mackenzie Delta project."

Assuming discovery of proved reserves at an average annual rate of only 0.6 Tcf over the seven-year period 1975-1982 (or roughly two-thirds of the annual discovery rate from 1971 to the mid-1975 date of the DeGolyer & MacNaughton estimate), the Law Judge said the proved reserve total would amount to approximately 8 Tcf in 1982, or sufficient to support a deliverability of about 1 Bcf/d on the basis of a 1:7300 rate-of-take. Moreover, continuation of this "conservative" findings rate during the following five years would result in discoveries of about 11 Tcf and support deliverability of about 1.5 Bcf/d by 1987, the fifth operational year.

Construction and Geotechnical Problems

Judge Litt assessed the technical feasibility of the Arctic Gas and El Paso Alaska projects in detail, concluding that the pipelines proposed by each could be built in the manner and time frame contemplated. In regard to El Paso Alaska, however, he determined that one additional liquefaction train at the Gravina Point LNG plant and one additional LNG tanker would be required in order to assure reliability of its 2.4 Bcf/d case. Finally, the Law Judge held that Alcan had failed to support its engineering or geotechnical designs, nor its plan for construction in three years.

Arctic Gas, the Law Judge noted, contemplates a construction schedule of six years from the time of initial governmental authorization to the commencement of gas flow. The Alaskan and Canadian portions of this construction would be carried out by nine "spreads," with the North Slope portion of the pipeline to be constructed entirely in the final winter by six "spreads" working simultaneously (three in Alaska and three in Canada), each with a seasonal goal of 65 miles of pipeline. This schedule for Arctic construction was challenged by an El Paso-sponsored study which contended that Arctic Gas had overestimated the number of available working days and underestimated productivity rates, thus making completion within the projected time frame unlikely. The FPC Judge accepted Arctic Gas' estimate of a mid-October "opening date" for snow road construction (a critical timing element in its overall construction schedule) and its estimate of access to the tundra for a period of 145-175 days in the final winter. He also considered it likely that each of the Arctic spreads would attain its assigned productivity rate (0.71 miles per working day). "The ability of a spread to achieve its productivity rate depends upon Arctic Gas' ability to move supplies and equipment to the construction sites and the ability of the construction spreads to expeditiously dig and fill the pipeline ditch, lay and weld the pipe, and move the overall operation from one point to the next along the route. The record contains substantial evidence to show that Arctic Gas will be able to carry out each of these phases in timely fashion and so complete its project on schedule."

Risk analyses indicating a high probability of noncompletion of the Arctic Gas project according to schedule, the FPC Judge added, rested on assumptions which were largely disproven on the record. Also, these analyses failed to take account of Arctic Gas rebuttal evidence, introduced in October 1976, which revised its construction costs upward by $210 million for facilities and activities to enable it to meet construction deadlines in Alaska and Canada. In addition, Arctic Gas indicated willingness to commit another $119 million on two additional construction spreads in the third year, if necessary, in order to stay on schedule.

Judge Litt particularly discussed Arctic Gas' plans for construction using snow roads and snow pads in sensitive permafrost areas. This reliance on snow roads was attacked by competing applicants, the State of Alaska and Conservation Interveners on several grounds, including optimistic opening dates for snow road construction, snow fence use, snowfall patterns, snow manufacturing, water availability and surface degradation caused by vegetative mat compaction. In general, these parties argued that, given the history of past "snow road" failures on the North Slope and the huge scale of Arctic Gas project, Arctic Gas had neither proved it can efficiently and safely construct snow roads, nor that these roads will be effective in use. The Law Judge dismissed these argument as unconvincing. "Not only has Arctic Gas committed itself to considerable testing and planning of its proposal, but it has done so by actually building a test road and testing that road under wintertime conditions similar to those it expects to experience in permafrost areas." In short, the "vast weight of evidence demonstrates that Arctic Gas' snow road plan "is both feasible and effective and can be accomplished with a minimum of environmental harm."

The Law Judge additionally endorsed Canadian Arctic's so-called "Cross-Delta" amendment proposed in February 1976, i.e., construction across the Mackenzie Delta instead of its originally proposed route skirting the western edge of the Mackenzie Delta. A major problem respecting the Cross-Delta route, Judge Litt stated, is inaccessibility of the pipeline for repairs during certain periods of the year in the event of an outage. He concluded, however, that the risk of outage is remote. Moreover, twin pipelines are planned for 36.5 miles of the route to reduce problems of inaccessibility. Further, he noted, the Cross-Delta route is 138 miles shorter and $190 million less costly than the originial prime route, and is also considered preferable from certain environmental standpoints.

Turning to the technical feasibility of the El Paso Alaska proposal, Judge Litt declared that special design precautions employed by El Paso for pipeline crossings of active faults are appropriate and should prevent substantial damage and service interruption from a design seismic event (an earthquake registering 8.5 on the Richter scale with ground movement up to 20 or 30 feet horizontally and 5 feet vertically); that El Paso has scheduled a full year for additional seismic analysis which can likely be performed and incorporated in the final pipeline design in that time -- "at a cost"; that design of the Gravina Point LNG facilities for an 8.5 magnitude earthquake -- equivalent to the magnitude of the 1964 Alaska earthquake (the most severe earthquake reading ever recorded) -- and 0.6g ground acceleration is adequate, although El Paso must consider additional seismic factors and undertake further analysis before arriving at a final design; and that El Paso's marine terminal design appears adequate to withstand seismic sea waves (tsunamis) generated by earthquakes.

The Law Judge recommended against El Paso Alaska's so-called "realignment" case -- reflecting realignment of its proposed trans-Alaska pipeline route (basically parallel to the Alyeska pipeline and haul road and within 3,000 feet of these facilities for 85% of the 766-mile distance) in response to suggestion by the State of Alaska urging greater use of the existing Alyeska haul road and facilities. The realignment was not supported by El Paso Alaska (which, however, attested to its feasibility assuming proper precautions) and was opposed by Staff and others because

of the chance of rupture of the Alyeska line due to blasting, collisions of heavy equipment and other construction activities, and because of an estimated $200 million of additional costs which would be required for thicker walled pipeline and more gravel. Judge Litt held that, although geotechnical redesign could most probably eliminate thermal interference between the heated Alyeska oil line and the chilled El Paso gas pipeline, "a combination of the additional costs of realignment and the serious threat of damage to the Alyeska line" dictates consideration of only El Paso's base case alignment.

In regard to the sites of proposed LNG facilities, FPC Judge Litt recommended that if the El Paso Alaska project is certificated, the liquefaction plant in Alaska should be located at Gravina Point in Prince William Sound as filed -- rather than at Cape Starichkof in the Cook Inlet as suggested by Staff -- but that the LNG receiving terminal and regasification plant in California should be shifted from Point Conception to Oxnard. Staff, he said, failed to provide essential technical evidence to support the Cape Starichkof alternative, which accordingly must be denied. On the other hand, El Paso's selection of Gravina Point as its preferred site for an Alaska LNG plant resulted from a comprehensive site selection study.

As to the proposed LNG facilities in California, the Law Judge concluded that both the Point Conception and Oxnard sites were technically acceptable and feasible, but that the Oxnard site (an industrialized port area with low population and risk levels) was preferable from the standpoint of a lesser amount of pipeline construction (and consequently less capital investment) required to move North Slope gas to the California-Arizona border, greater consistency with present and future land uses, certain environmental considerations, and lesser possibility of seismic occurrences. Accordingly, if the El Paso project is certificated, the Law Judge recommended that authorization to Western LNG Terminal be conditioned upon amendment of its application so as to construct an LNG regasification plant capable of handling 2.4 Bcf/d of North Slope gas at Oxnard.

Finally, with respect to El Paso's cryogenic tanker fleet, Judge Litt determined that one additional LNG vessel -- i.e., a total of nine rather than eight ships as proposed -- would be required to transport 2.4 Bcf/d to California even without a change in terminal location. El Paso, he noted, projected an 11.5-day actual round trip for each tanker, including 10.72 days for the round trip and 0.8 days (19.2 hours) for contingencies. This projection, the Judge asserted, is based on "best-case" assumptions and fails to take account of possible additional delays due to restrictions on nighttime operations at either Gravina Point or Oxnard, reductions in service speed because of bad weather or Coast Guard navigational safeguards in Prince William Sound, and additional port closures because of weather. Also, a shift of the California terminal from Point Conception to Oxnard (70 nautical miles south of Point Conception) would add 140 miles to each round trip. Based on analysis of these factors, he concluded that an additional ship was required to assure reliability.

Similarly, the Law Judge concluded that the proposed six-train design at the Gravina Point liquefaction plant -- assuming El Paso Alaska's 2.4 Bcf/d case -- does not contain sufficient flexibility to assure the necessary reliability of service. He therefore recommended the addition of a seventh liquefaction train.

In regard to the Alcan project, the Law Judge said the lack of necessary preliminary studies in support of geotechnical and seismic design precludes a finding either as to technical feasibility or the reasonableness of Alcan's cost estimates. Also, there is serious question concerning Alcan's three-year construction schedule and proposed summertime construction in permafrost areas. Staff's geotechnic evaluation of Alcan indicates that "summer construction in Alaska cannot be accomplished

without unacceptable environmental impact." Additionally, Alcan's proposed alignment, which would literally be "cheek-to-cheek" with Alyeska for hundreds of miles, raises critical questions regarding potential construction damage to Alyeska.

At the same time, Judge Litt added, Alcan is composed of experienced and knowledgeable companies, at least two of which have extensive experience in building pipelines in both difficult terrain and extreme climates. "The result is that while it has not proved its design or costs, Arctic Gas and El Paso have proven Alcan's general design feasibility and placed outside limits on Alcan's expected costs. At one point or another, a portion of both Arctic Gas and El Paso would go through similar terrain or would be built under similar conditions. . . . In other words, while Alcan did not adduce the evidence to make its case, its piggybacking on those that did gives at least an approximation of what it might cost for comparison purposes."

Operational Factors

Comparing the three projects in terms of fuel usage, heating potential or Btu content, and cheap expansibility, Judge Litt concluded that (1) Arctic Gas, because of its large-diameter, high-compression pipeline, will require less fuel than El Paso or Alcan to transport the same system inlet volume; (2) both Arctic Gas and El Paso, because of the ability of higher-pressure lines to carry a higher proportion of heavier hydrocarbons contained in the wet gas stream, can transport a richer gas stream (i.e., gas with a higher Btu content per cubic foot) than Alcan; and (3) Arctic Gas could expand to carry up to 3.5 Bcf/d of Alaskan gas (assuming maximum volumes of 1 Bcf/d from the Mackenzie Delta) at comparatively low incremental capital cost, thereby providing earlier and cheaper expansibility than El Paso, to expand deliveries beyond 2.4 Bcf/d, which would be required to invest in additional compressors, LNG trains and ships at relatively higher cost. Alcan's claim of cheap expansibility, the Law Judge added, is "nothing but a claim."

With respect to fuel usage, the Law Judge noted estimated fuel requirements of 6.87% for the Arctic Gas project and 13.13% for El Paso Alaska, both assuming a 2.25 Bcf/d case for comparative purposes. The El Paso Alaska estimate, he said, includes fuel usage of 3.17% for transportation-displacement in the Lower 48 States. This fuel usage was estimated by Arctic Gas and is disputed by El Paso. While the record does not permit a determination of the exact fuel requirements for El Paso's proposed Lower 48 transportation-displacement scheme, the Law Judge noted, nevertheless, assuming such usage at only 2% on a 2.25 Bcf/d basis, El Paso's total fuel usage would still be 11.96% compared to 6.87% for Arctic Gas. "This represents a substantial annual saving, exceeding residential consumption in each of a large number of states."

Environmental Considerations

Some 50 pages of Judge Litt's initial decision were devoted to a discussion of environmental objections raised by El Paso, Alcan, the State of Alaska and the Conservation Interveners to routing of the Arctic Gas Project across the Arctic National Wildlife Range. This crossing, it was argued, would destroy "unique" wildlife, wilderness and recreational values of the Wildlife Range and would only lead to a further intrusion of this area in the future.

Judge Litt declared that the Arctic National Wildlife Range must be protected to the extent consistent with its purpose and that any construction through this area should be subject to stringent conditions designed to minimize both short-term and long-term impact. He concluded, however, that pipeline construction by Arctic Gas in the manner proposed -- and subject to appropriate mitigative conditions -- is compatible with the purposes of the reservation as a wildlife range with wilderness values.

Among other things, Judge Litt noted, attitudes toward the Arctic National Wildlife Range depend on subjective evaluations of the terms "unique" and "wilderness." A principal element of "uniqueness" advanced by those opposing a pipeline across the Range, he continued, is one of aesthetics, i.e., the visual aspect from the shoreline to the mountains 20-30 miles distant and the visual unspoiled nature of the Range. However, the FPC Judge observed, a buried pipeline will not interfere with the vista from the coast to the mountains, and it is unlikely that three proposed compressor stations, if built, would bring about any significant visual impairment. Furthermore, he added, smack in the middle of the coastal section of the Wildlife Range is an active Dew Line site (at Barter Island), an airfield, the Village of Kaktovik, and the remains of a long-abandoned Dew Line station at Demarcation Bay. Thus, "the wilderness aspect of the Wildlife Range is maintained by defining Barter Island and Kaktovik out. Similarly dismissed are Demarcation Bay with its beached wrecked ship, temporary native hunting and fishing villages and the Dew Line sites. Arctic Gas cites Lewis Carroll's Humpty Dumpty who said 'When I use the word, it means just what I choose it to mean -- neither more nor less.' Humpty Dumpty would be right at home in a number of briefs filed in this case."

Additionally, Judge Litt stressed that the Arctic National Wildlife Range is not legally a "wilderness" area under the Wilderness Act (which precludes any construction), but rather was created by a Public Land Order in 1960 which expressly provided for issuance of permits under the Mineral Leasing Act -- "a totally useless verbiage if a pipeline right-of-way is excluded." What those opposing Arctic Gas seek, the Law Judge said, is a "bootstrapping from the protection of wildlife in a range to the status of wilderness as if Congress had acted and put the range within the National Wilderness Preservation System." While Congress can effect this change, "the Commission cannot do so as a matter of law."

The Law Judge conceded the argument that construction of a gas pipeline may bring further development within the Wildlife Range, but said this in no way lessens the need for a decision on whether to permit hydrocarbon exploration or to grant such permits as may be in the public interest. In this connection, Judge Litt observed that, considering the present natural gas shortage, exploitation of hydrocarbon reserves is clearly in the public interest, and ultimate incursion into the Wildlife Range for this purpose must be considered a "virtual certainty" unless expressly prohibited by Congress. Therefore, to the extent that such exploitation is likely to occur, "it makes less significant the fact that Arctic Gas is the first major construction project on the eastern reaches of the North Slope since the construction of the Dew Line stations."

Turning to specific impacts of construction across the Arctic National Wildlife Range, the Law Judge found no significant evidence of any serious disturbance to caribou, short-term or long-term, along the Arctic Gas route. Furthermore, he emphasized, the major factor affecting caribou viability in Alaska is not the construction, operation and maintenance of pipelines but rather the state game laws. "Man has been systematically destroying these animals for overhunting, whether by subsistence hunting or sport, to the point where the herds may not be able to maintain population levels necessary for survival. The Forty-Mile Alaska herd, for example, has been reduced in a short period of time from literally hundreds of thousands of animals to a size where it may be exterminated if hunting pressure is not removed. The same could happen to the Porcupine herd, if the same hunting laws are enforced. Therefore, for state and federal officials to sanctimoniously enter into discourses as to whether a pregnant caribou will or will not cross a one- or two-foot high berm, while still permitting almost indiscriminate shooting of these animals by any Alaskan along the migratory route (or any rich hunter wanting a 'double shovel' set of antlers) is illogical."

Further, he concluded, the evidence indicates that the Arctic Gas construction schedule will have neglible impact on polar bears, that sufficient water is available on the North Slope which may be withdrawn for snow road construction without causing significant environmental harm to fish spawning and overwintering areas, that certain fish populations inadvertently damaged by water withdrawal during construction could probably be restocked, and that bird populations on the North Slope will not suffer any serious or long-term effects assuming implementation of satisfactory mitigative measures.

In contrast to the Arctic Gas project which is supported by exhaustive research studies and evidence relating to specific environmental impacts, the FPC Judge said the environmental information pertaining to the El Paso Alaska and Alcan proposals is mostly general in nature and not site-specific. Nevertheless, he noted, a basic environmental advantage stressed by both El Paso and Alcan is the common utility corridor concept (since both proposals would essentially parallel the Alyeska line and, in the case of Alcan, various other pipelines as well as the Alcan Highway). The argument in favor of construction in a common corridor, the Law Judge continued, is that impact will be merely incremental to that already imposed by previous development. However, he declared, this argument appears to rely on a priori expectation rather than actual field research. "El Paso and Alcan have the burden of proving that their respective projects are environmentally acceptable by site-specific evidence, not merely by the fact that they are in a 'corridor.' Each has partially failed to meet this burden, much less show superiority over Arctic Gas."

The Law Judge also discussed potential environmental impacts of pipeline construction by El Paso through the Chugach Forest and its proposed installation of a "once-through sea water cooling system" at the Gravina Point LNG plant. Routing of the pipeline through the Chugach Forest, he concluded, would have significant long-term effects but within acceptable limits if the public interest otherwise requires certification of the El Paso Alaska project. He recommended, however, that El Paso's LNG plant design must include air cooling towers as an alternative, absent a clear showing that its once-through seawater cooling design will not in fact adversely affect the marine biota in Prince William Sound.

In regard to Alcan, the Law Judge said its only advantage on the basis of the record is that it crosses neither the Wildlife Range nor the Chugach Forest. However, he observed, the Alcan project is promoted in part by the same companies which are sponsoring the all-Canadian Maple Leaf project to attach gas in the Mackenzie Delta. Therefore, the Alcan proposal would involve building two pipelines to market the same U.S. and Canadian gas which Arctic Gas proposes to do in one pipeline. "The combined adverse impact of Alcan's facilities far outweighs any environmental savings to the U.S. from building these separate facilities." Morover, Judge Litt added, the same consideration pertains to the El Paso Alaska project. "The overall environmental advantages to the U.S. and Canada in building a single line far exceed an LNG-ship-LNG project at the end of an 800-mile pipeline and an additional 1,000 miles of pipeline for Maple Leaf."

Judge Litt recommended deferral of determination of specific environmental conditions until the second phase of this proceeding when they can be directed to the specific project certificated by the Commission.

Socio-Economic Factors

Judge Litt asserted that the State of Alaska will reap enormous socio-economic benefits from gas pipeline construction, regardless of which project is certificated. The most substantial economic benefit to Alaska, he stated, will come from hydrocarbon severance taxes and royalty payments -- estimated at $135.5 million annually assuming a Prudhoe Bay production of 2.25 Bcf/d and a wellhead price of $1.00/Mcf. This amount will be approximately the same for all projects.

Other socio-economic impacts -- on population, employment, gross state product, personal income, and government revenues and expenditures -- are more difficult to quantify and remain uncertain, the Law Judge continued. For example, while El Paso Alaska and Alcan will create more construction employment in Alaska than Arctic Gas, the number of direct jobs created is not substantial, long-term employment opportunities are few, and a greater population increase will create greater employment disturbances and other inmigration problems. Also, Judge Litt observed, there are many uncertainties connected with intrastate use of royalty gas to promote industrial development in Alaska. While the State supports El Paso Alaska as the project best able to encourage industrial development, the present economic realities are not favorable for such development. Moreover, there is a serious question whether the State's anticipated use of gas in Alaska would be compatible with the Federal Government's natural gas end-use policy.

While the views of the State of Alaska -- which supports the El Paso Alaska project on the grounds of greatest net benefits to the State -- are entitled to substantial weight, the FPC Judge concluded, the Natural Gas Act does not permit certification of projects which will benefit one area of the country to the detriment of another. In this case, the great bulk (or all) of the Prudhoe Bay gas will be mark- in the Lower 48 States. While Congress has power to direct that certain actions be taken solely to benefit the economic condition of a particular state or region at the expense of others, no intention was expressed that the FPC create such preferences in performing its duties under the Natural Gas Act. Nor does anything in the Alaska Natural Gas Transportation Act of 1976 require a change in that policy. Thus, "if there exists an alternative system which better meets the overall public interest, it would be contrary to the Commission's accepted regulatory role under the Natural Gas Act to select a particular transportation system at the behest of the State of Alaska in order to accord substantial economic benefits to the State."

Marketability of North Slope Gas

Judge Litt reviewed an Arctic Gas-sponsored study which estimated incremental and rolled-in costs of North Slope gas delivered to eight metropolitan areas in the Lower 48 States (representing the anticipated major markets to be served by the Arctic Gas Group), assuming alternative wellhead prices of 55¢/MMBtu and $1/MMBtu for Alaskan gas (and for new gas supplies developed in the Lower 48). These costs were then compared with competitive energy prices at the citygate of distillate fuel oil, residual fuel oil and electricity. On a rolled-in basis, the estimated cost of Alaskan gas was substantially lower than the price of fuel oil and electricity for all metropolitan areas except in California where parity with fuel oil was shown. On an incremental basis, the price of Alaskan gas was estimated to be lower than fuel oil and electricity except in New York City where gas prices would be equivalent to distillate fuel oil and higher than residual fuel oil. According to the study, however, this price differential in New York would be more than offset by nonprice premiums in excess of 50¢.

The FPC Judge concluded that the above study confirms the marketability of Alaskan gas, on either a rolled-in or incremental basis, "given the assumptions made by its sponsor." 1/

Economics

The Law Judge compared overall unit costs estimated for each project on the basis of 7/1/75 cost levels (with no adjustments for inflation). For this purpose, he looked primarily to costs submitted by each applicant and made certain adjustments (or accepted certain adjustments proposed by others) to achieve greater comparability or to reflect certain modifications or conclusions discussed elsewhere in his decision. The comparison related to proposals to transport initial volumes in the order of 2.0-2.5 Bcf/d from Alaska. The Alcan project was included in the comparison even though, in Judge Litt's view, it cannot be constructed in the time frame proposed (three years) and is incapable of proper cost analysis.

The comparison showed an average cost of $1.60/MMBtu in the fifth year for Arctic Gas, a five-year average cost of $2.15/MMBtu for El Paso Alaska, and a five-year average cost of $1.91/MMBtu for Alcan. Arctic Gas is "clearly superior" under this comparison, Judge Litt asserted. 2/

In arriving at the above figures, the Law Judge adjusted Arctic Gas' estimated fifth year cost of $1.39 for a system transporting 2.25 Bcf/d of Prudhoe Bay gas and 2.25 Bcf/d of Mackenzie Delta gas to reflect the lower volumes expected to be available from the Mackenzie Delta (in the range of 1.0 to 1.5 Bcf/d). The effect of lower volumes of Canadian gas, he noted, is to raise the transportation cost for U.S. gas. Specifically, the cost of service for U.S. deliveries via Arctic Gas was estimated to rise from $1.39 to $1.54 assuming transportation of 1.5 Bcf/d of Canadian gas and to $1.66 assuming transportation of only 1.0 Bcf/d. The midpoint of the two was adopted for comparative purposes. The Law Judge declined to accept El Paso Alaska's proposed adjustments to Arctic Gas' estimates to include construction costs over an additional winter because of various factors alleged to render completion by the scheduled date improbable. Judge Litt noted that Arctic Gas, toward the close of hearings, increased its estimated construction costs in the North Slope region by $330 million -- including $120 million for two more spreads in the final construction winter and $210 million for contingencies -- so as to provide additional resources for completion of construction on schedule.

El Paso Alaska's average cost of $1.88 over the first five years was adjusted by Judge Litt to include an additional financing charge (0.16¢) to achieve financing comparability with Arctic Gas, as well as the estimated incremental cost (0.11¢) of a seventh liquefaction train and ninth LNG tanker determined by the Judge to be necessary to assure reliability of El Paso's 2.4 Bcf/d project.

1/ In another section of his initial decision (relating to financing and tariffs), however, Judge Litt said there were serious questions regarding marketability, primarily because all the prospective beneficiaries are looking for the "top dollar." He also suggested that a $1/MMBtu field price in Alaska might be the maximum if marketability is to be achieved.

2/ In another section of his initial decision, Judge Litt assumed a 20% cost overrun on all of the projects for illustrative purposes. If a 20% cost overrun has a 20% effect on unit costs, he said, the average unit costs for the three projects would become $1.92 (Arctic Gas), $2.58 (El Paso Alaska) and $2.29 (Alcan). "Even at this transmission cost and assuming a rational field price, Arctic Gas is clearly marketable on both an incremental and rolled-in basis. El Paso is marginally so."

With respect to Alcan, the Law Judge adopted a five-year average calculated by Arctic Gas based on certain adjustments to Alcan's estimates. Among other things, the Arctic Gas calculation reflected a deferral (or phasing) of a portion of costs in the first two years of operations to later years, consistent with the approach followed by both Arctic Gas and El Paso Alaska.

The Law Judge made clear that the above comparison was confined to average nationwide costs over a limited period. "Specific costs, including distribution costs, cannot be made on a nationwide basis at this time from this record." Moreover, he declared, the record does not enable estimates of project costs over a 20-year period, either on a nationwide basis or for different regions of the country, as required by the Alaska Natural Gas Transportation Act of 1976. Additionally, the FPC Judge noted, there are presently no tools available to the Commission for performing meaningful and expeditious analyses of the effect of any variations in the applicants' construction or financing assumptions. 1/

Net National Economic Benefits

The Law Judge reviewed net national economic benefit (NNEB) studies submitted by the Department of Interior, Staff, Arctic Gas and El Paso Alaska. As tools for predicting behavior into the future, he said, NNEB studies are still in an embryonic stage of development. Moreover, "to argue that the costs and benefits of these projects standing alone can have a measurable (positive or negative) long-term impact on an economy whose annual GNP measures in the trillions, borders on the fanciful. Comparisons of the small difference in impact of the $2 to $3 billion in any year are totally impossible, given existing tools."

All of the NNEB studies, the Law Judge continued, indicate that each of the three projects here involved will provide a net national economic benefit to the United States. Thus, the only remaining task is to determine, if possible, a relative ranking of the three from an NNEB standpoint. Judge Litt concluded that the Department of Interior model could be used for this limited purpose so long as reliable input data are used. "Precise dollar determinations are not necessary if it can be reliably deduced that one margin favors one applicant over the others." At the same time, the Law Judge added, the Department of Interior model is not necessarily the one best-suited to the task at hand, and it incorporates several variables which are beyond the

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1/ The Law Judge noted that efforts toward the end of the hearings to collect computer software developed by the applicants, for use by the Commission in analyzing the various programs, were only partially successful, not necessarily because of any unwillingness on the part of the applicants to supply material, but because of the limited time available to the Presiding Judge to fully comprehend the logic of all the existing programs as well as to develop additional software to replace the numerous hand calculations performed by each applicant. However, he declared, this computer technology would be of great benefit for the Commission. Accordingly, the FPC Judge directed the parties to supply detailed technical aspects of their computer technology to the Commission, including (1) explanations and workpapers of all manual calculations and all computer software; (2) engineering studies and computer programs used to develop all facility designs and construction estimates; (3) all computer data files used to develop the testimony in this record, and any additional files that may be requested for further analysis by the Commission; and (4) all automated or manual calculations utilized to develop allocated delivered costs to Lower 48 markets, along with current design specifications and contractual arrangements with regard to delivery volumes at specified delivery points.

control of science or diplomacy. Hence, caution should be used in drawing any conclusions from the results derived through application of such model. 1/

On the basis of the evidence, the FPC Judge found that the Arctic Gas project, with a Western Leg, stands to generate a greater net national economic benefit for the United States than either the El Paso or Alcan projects. However, he stated, this finding rests on certain assumptions which, although justified, cannot be considered as "inviolate." Therefore, no more than a "modicum" of weight should be attached to findings based upon the NNEB studies. Judge Litt further made clear that any rearrangement of the three projects on the NNEB ladder would in no way affect his ultimate decision.

Financing and Tariffs

Judge Litt declared that the magnitude of capital investment required for any of the projects here involved is such that the gas transmission company sponsors cannot provide institutional lenders with the degree of security necessary to warrant financing the project. Accordingly, absent credit-worthy private parties, the projects are arguably not financeable without reliance upon either consumers or taxpayers to guarantee project completion and protection of debt service during prolonged service interruptions or premature abandonment. Thus, a significant issue is whether a shifting of traditional risks taken by sellers and transporters to the consumer or taxpayer is in the public interest.

The all-events cost of service tariff proposed by the applicants as well as various tariff modifications proposed by pipeline shippers, the Law Judge noted, are all premised on direct flow through of transportation charges to distributors and then consumers. The sponsoring parties, except El Paso, also suggested the need for federal financial guarantees of some sort. 2/ Staff, New York and California, on the other hand, opposed a shifting of project risks to consumers, while the Treasury Department opposed any steps to involve taxpayers as a guarantor of the project and instead urges that consumers bear at least a portion of financial risks.

1/ The Department of Interior model developed net national economic benefits for hypothetical projects similar to those proposed by Arctic Gas and El Paso Alaska, and for a Fairbanks-Alcan alternative close to the route subsequently proposed by Alcan-Northwest. The study determined an NNEB of $8.7 billion for the hypothetical project similar to Arctic Gas, compared with $7.8 billion for the El Paso alternative. The advantage in favor of the Arctic Gas hypothetical was attributed to relatively lower fuel usage, a lower U.S. share of the cost of the transportation system, and a lower cost of facilities required to carry out a displacement plan. (See REPORT NOS. 1031, pp11-18; 1077, App. pp1-10.)

2/ Judge Litt dismissed El Paso's view that an Alaskan gas transportation system can be financed without federal guarantees provided that (1) the Commission authorizes an all-events cost of service transportation tariff and preoperational surcharge provisions in shippers' tariffs, and amends tariffs of FPC-regulated pipeline purchasers to require that all costs be shifted by state-regulated distributors directly to ultimate consumers, and (2) pipeline purchasers accept the legal theory that future Commissions cannot substantially modify the consumer guarantees under the all-events cost of service tariffs, and that state utility commissions will be unable to prevent timely flowthrough of costs to consumers. While this theory has "substantial merit," the Law Judge said, it can be given "no practical credence" because of its unacceptability to prospective pipeline purchasers.

The FPC Judge concluded that the final financing arrangement should involve assumption of risks by both consumers and taxpayers, and that the Commission and the Treasury Department should cooperate in working out such an arrangement to permit proper financing at reasonable rates. Based on the premise that there is a need for Alaskan gas and that any unusually high price demands for either unattractively located gas supply or relatively low-risk money are not met, the Law Judge declared that "shifting a portion of risk for securing this gas supply to the consumer is in the public interest." However, if the risk is shifted, "Treasury should be prepared either to sell noncompletion or sustained outage insurance or enter into some other type of arrangement to remove the remote risk" of noncompletion or sustained outage. "Coming behind a consumer guarantee of debt service and the sponsors' risk of equity capital, this limited contribution would sustantially reduce the costs of debt capital and might help attract equity."

More specifically, with respect to the shifting or sharing of risks, Judge Litt found as follows: (1) consumers -- as one of the principal beneficiaries of attaching North Slope gas supplies -- should participate in guaranteeing project risks, but only to the extent of debt service; (2) equity holders should accept the usual risk of equity investment, with no guarantee of return of or return on equity investment in the event of prolonged outage; (3) the Federal Government should entertain an insurance or completion guarantee arrangement to facilitate raising project debt capital at a more reasonable cost, thereby reducing the cost of gas to consumers; and (4) legislation to perfect tracking of debt service costs to the consumer level and to approve Treasury participation is necessary.

Judge Litt emphasized that two other creditworthy parties -- namely, the Prudhoe Bay producers and the State of Alaska, both direct financial beneficiaries of Alaskan gas sales -- have declined to offer any financial assistance, either through debt or equity participation, or any form of cost overrun guarantees. Rather, the producers have raised constitutional objections to any arrangements linking sales or sale prices to financing participation, indicated a reluctance to expand energy-oriented activities while faced with divestiture proposals, and cited the desirability of investing discretionary capital in nonregulated business ventures. Moreover, the Law Judge noted, "several of the producers also pleaded poverty, since other investments, including nonenergy-oriented ones like Mobil's recent purchase of Marcor or Arco's purchase of Anaconda Co., have reduced both their available cash and their ability to undertake the level of guarantees which would assure lenders repayment of debt and equity."

The FPC Judge continued as follows:

> "Realistically, in the time frame necessary to expeditiously finance these projects, the Commission is incapable of more than strongly suggesting to the producers that their financial assistance to these projects is both fair and proper and in their best interests. However, if the President and Congress deem it appropriate that the producers, as chief beneficiaries of the sale of Alaskan hydrocarbons, should participate in financing construction of a transportation system to market their product -- a position pressed obliquely by the Department of Treasury representatives on the record and on brief -- legislative methods may be pursued, as Treasury hinted, to secure such participation. If that should occur, many of the problems . . . will become less significant."

As for the State of Alaska, Judge Litt said there is no evidence that other states have participated in financing this type of gas pipeline project. However, in

view of Alaska's avowed intentions to invest its revenues and the high rate of return suggested here for both equity and debt, "the State may see this as a better investment than it can receive elsewhere." Moreover, if the tariffs require the ultimate consumers to shoulder full debt service responsibility and the bonds achieve debt ratings satisfactory to the New York State Insurance Commission, "they would probably also satisfy the State of Alaska's investment trust fiduciary. Nevertheless, such investments are voluntary, and the State of Alaska has not volunteered."

The FPC Judge also raised questions concerning the marketability of Alaskan gas from the standpoint of financing. Unlike most past pipeline certificate cases where large residential, commercial and industrial markets could be assumed, he explained, "here we have a constantly shrinking industrial load which will have cost consequences because lower-priority supply shortages will cause a significant shift in load factor consideration. The higher priority market remaining could well prove sensitive to price, and the unspoken message from the financial community is that the time has come to assess the risk of nonsaleability. It is now apparent that the financial community has raised a warning flag; to ignore this sub silentio questioning would be foolhardy."

One of the prime reasons for the high projected prices of delivered Alaskan gas, Judge Litt continued, is the makeup of the project.

> "Rather than the usual business compromises arranged both to make a marketable product and to split the benefits among those who will gain the financial advantages from a successful venture, all of the prospective beneficiaries are looking for the top dollar. The producers and State of Alaska want a high wellhead gas price even though (1) their overall profit from their North Slope investment is already assured by the sale of the Prudhoe Bay oil under FEA regulations, (2) the product is at the end of an expensive transportation system, and (3) the market is no longer assured. Governor Jay S. Hammond of Alaska, for example, sought and will probably seek again Alaskan legislative approval to raise the severance tax on hydrocarbons from 4% to 10%. Access without equity contribution, withdrawal, underlifting and a host of other proposals put Alaska in the forefront of seeking special treatment at the consumer's expense. . . . [T]he pipeline shippers want consumer guarantees to repay their equity investment but still seek 15% to 17% after tax returns in what could be a low-risk situation. The financial community in general also wants a high rate of return regardless of how the risk might be reduced by consumer or taxpayer guarantees. In the common vernacular, 'everyone has his hand out.' It is in large measure the combination of these elements which creates the serious questions of marketability and, in turn, financeability. Only a limitation on the field price of gas to reflect its value and a reduction on investment returns to reflect limitations on risk can bring these projects 'in from the cold.'"

In short, the Law Judge said, the marketability of Alaskan gas is questionable, with no final determination possible until gas sales contracts are signed. Thus, the matter must be considered again as part of the overall presentation of producer sales contracts and financing at the next phase of these proceedings. Nevertheless, he added, the energy involved here is needed and should be secured. For this reason, project financing will require either consumer or government backstopping, or both, to guarantee project completion.

Further, Judge Litt declared, a crucial element of marketability is the field price of Prudhoe Bay gas, as yet unknown. Such price, he noted, will include not only the purchase of gas but also the cost of gas gathering and conditioning facilities which, on the basis of some untested producer calculations, may total about one-half of the unit cost of transportation system. Hence, the unit cost will be high. At the same time, the FPC Judge observed, the Prudhoe Bay Field is more remote from market than any other domestic supply previously attached, the cost of transporting this gas to market far exceeds that of the most expensive gas transmission line previously built, and gas will be produced as an adjunct to the production of oil. Therefore, the unit value of gas in the field "cannot be favorably compared with production from fields in West Virginia, Michigan or California, located close to market where existing facilities can be used for transportation -- or, for that matter, from fields in the Lower 48 States generally."

These considerations, Judge Litt declared, strongly suggest that a field price for Prudhoe Bay gas should be determined by backing off transportation costs from alternative energy prices in the market. A field price established at a level higher than such value "will sink this project." If the delivered cost of Prudhoe Bay gas "is such that the high-priority consumers which constitute the market are prompt to turn to other energy supplies, the project is uneconomic." Further, the Law Judge stated, "no one should be misled into the belief that this Commission must fix, on an allocated cost-plus basis, a field price for Alaskan gas in excess of its intrinsic market value."

In the above connection, the FPC Judge called attention to Arctic Gas' estimate of $2.41/MMBtu (including a $1/MMBtu field price) as the average citygate cost of Alaskan gas delivered to various Lower 48 markets (in 1975 dollars), as compared with costs of $2.61 for distillate fuel oil, $2.59 for residual fuel oil and $6.89 for electricity. Assuming continuation of these price relationships between competing energy supplies in the future, a premium value of $0.65/MMBtu for natural gas, and an actual transportation cost of $2.00/MMBtu in 1975 dollars, "Alaskan gas with a field price of $1.00/MMBtu would prove to be marketable on an incremental basis." But, the Law Judge declared, a price of $1.00/MMBtu at the inlet of the transmission system (i.e., after gathering and conditioning) "is, in all likelihood, close to the maximum that this gas could command in the field and still be marketable under present market conditions. . . . However, depending upon the ultimate costs of the gathering system and conditioning plant, as well as the allocation of those costs between pipeline gas and the large volume of removable liquids, there would nevertheless appear to be a substantial return to the producers from a total field price at or below $1.00/MMBtu."

Turning to rate of return, the Law Judge said neither the cost of debt capital nor a definite rate of return on equity can be fixed at this juncture. Therefore, determination of a specific rate of return must await the next phase of this proceeding. Nevertheless, Judge Litt observed, the range of equity returns (15% to 17%) sought by the applicants here -- on investments which, under proposed tariff mechanisms, would be virtually insulated from risk through the ability to write off charges in the event of project abandonment or prolonged outages -- is roughly two to three percentage points higher than the highest rate of return previously approved by the Commission for pipeline companies. Specifically, the highest rates of return on common equity allowed by the Commission in recent years for interstate gas pipelines are 13.5% and 13.75%. While these pipelines were not faced with the risks inherent in constructing and operating an Alaskan gas transportation system, "neither did they have the degree of insulation from risk sought by equity investors in the Alaskan project."

Nevertheless, Judge Litt added, in view of the finding that neither return of nor return on equity should be allowed in the event of project noncompletion or sustained or permanent outage, some increment above the previous high pipeline rates of return may be warranted. He suggested 14% to 15% as an "upper limit" -- or, alternatively, 12% to 13% if a partial return of equity were to be allowed in the event of noncompletion or premature abandonment.

Still another issue bearing on financing, the Law Judge said, concerns incremental versus rolled-in pricing. He concluded that, "when, as here, the new gas supply will simply replenish the diminishing existing supply in high-priority markets, incremental pricing to the burner tip would merely introduce unnecessary and avoidable administrative problems which this Commission should not encourage." Deferral of this issue to a subsequent phase of this case -- as urged by Staff, Judge Litt added, would only "further imperil, if not frustrate, the timely financeability of an Alaskan gas transportation system."

The Law Judge also reviewed the feasibility of the different financing plans proposed by the three applicants. (A detailed analysis of these plans was included in a 22-page appendix to the initial decision.) Based on this review, he concluded that financing of the El Paso project appears to be the most feasible, even though certain provisions must be altered. The Arctic Gas project can also be financed, but capital cost premiums and financial restrictions, inherent in its binational makeup, produce less flexibility and higher capital costs. However, there is serious doubt regarding the feasibility of financing Alcan because of the possibility of simultaneous financing of the Maple Leaf project. On the other hand, if Maple Leaf is not in the picture, "there appears to be adequate market capacity in the U.S. and Canada for Alcan to obtain financing."

Next, Judge Litt discussed various proposals designed to permit pre-operations charges to consumers, generally equivalent to prepayment of return on equity, in order to generate cash flow for regulated shippers prior to commencement of deliveries. A number of tariff provisions advanced toward this end, the Law Judge noted, are essentially variations on the basic concept of including construction work in progress (CWIP) in rate base during construction (as opposed to capitalizing AFUDC during construction and putting it in the rate base once operations have begun). The FPC Judge supported the need for consumer prepayment of carrying costs to assist the financing of equity investment. Each pipeline shipper, he noted, must raise its share of an enormous amount of equity capital on the basis of its own credit standing. However, just as the financial wherewithal of these shippers to guarantee project debt is nonexistent, "it also appears that they do not have the ability to raise equity funds absent the generation of cash flow during the construction stage."

None of the reasons advanced by the Commission in Order No. 555 (issued 11/8/76) for excluding interstate gas pipelines from the limited scope of its new policy to allow inclusion of CWIP in the rate base, the FPC Judge noted, is applicable to the Alaskan gas transportation proposals. Moreover, the problem of "intergenerational transfer," which apparently caused the Commission to limit Order No. 555 to certain types of electric utility construction (pollution control facilities and conversions of generating plants to alternate fuels), "is small in the instant case because Alaskan gas should flow within four years of the first surcharge payments." Also, a properly designed pre-operations consumer surcharge is not inequitable to present ratepayers since "benefits flowing from a surcharge for equity returns inure not only to future ratepayers but also to present ratepayers, the most obvious benefit being assurance of continued gas supplies." Another benefit, Judge Litt added, is a lower rate of return on project equity which should flow from the reduction in burdens on the utilities' overall capital structures.

The Law Judge made no attempt to choose a method from among the several proposed to establish a pre-operations surcharge. However, the so-called Method 4 sponsored by Arctic Gas "may well constitute the basic guide for crafting an appropriate provision." 1/

Finally, in regard to specific tariff provisions, Judge Litt (1) recommended a 90% level of performance as the cutoff below which penalties (in the form of a pro rata reduction of return on equity) would apply if a transporter were unable to accept deliveries (the applicants all proposed an 80% cutoff, while Staff urged 100% performance); (2) endorsed El Paso Alaska's suggestion that carrying costs on construction expenditures, after passing Commission audit, should be permitted to be flowed through immediately by pipeline shippers to consumers; (3) recommended that project cost of service tariffs be conditioned to prevent the commencement of billing until such time as contract service can be rendered (the tariffs of companies involved in the Arctic Gas and Alcan groups provided for commencement of billing by each company as soon as facilities are in place, regardless of whether service is actually rendered); (4) found no reason to reject the monthly billing procedure proposed by Arctic Gas and Northern Border on the basis of estimated costs over a six-month period, with adjustments in subseequent billing periods to reflect any deviations from actual costs (this method was opposed by Staff which advocated monthly billing on the basis of actual costs); and (5) supported Staff's proposal for a fixed interim rate, rather than the cost "phasing" procedure recommended by Arctic Gas.

Canadian Issues

The Law Judge said the principal dispute regarding Canadian matters at this time relates to political issues -- including how Canada will act and when it will act.

As to timing, the FPC Judge noted that a decision by the NEB is anticipated in the spring or early summer of 1977 and that a report by Mr. Justice Berger on native claims in the Yukon and Northwest Territories (including the Mackenzie Valley) is expected in the early spring of 1977. As to the latter, Judge Litt considered unlikely that native claims will significantly modify the Canadian Government's energy decision.

El Paso contends, Judge Litt continued, that Canada will act in the "best interests" of Canadians, which are not necessarily the "best interests" of the U.S. Moreover, despite the hydrocarbon transit treaty negotiated by the U.S. and Canada, 2/

1/ Method 4 would permit each sponsoring pipeline subject to FPC jurisdiction to annually charge its customers a percentage of its accumulated equity investment in the project companies (Alaskan Arctic, Canadian Arctic and Northern Border), the charge generating enough cash flow to cover the carrying costs of each sponsor's equity investment. A figure of 15% is suggested. The charge would commence upon the first equity investment, would be collected throughout the construction period, and would continue to be collected for up to the first 10 years of project operations, although the equity investment to which this percentage is applied would be reduced by at least 10% for each of these first 10 years of operations. The sponsors could accelerate this 10% reduction of equity investment so as to stop customer charges before the end of 10 operating years. Once the project commenced operations, the sponsoring pipelines (shippers) would start refunding to their customers the full amount of the Method 4 charges collected with compound interest (at the Commission-prescribed rate). The refund period would be set by the Commission, though 20 years is recommended.

2/ This treaty was signed by the Canadian Ambassador to the United States and the Assistant Secretary of State on 1/28/77. The treaty is still subject to ratification by both countries.

El Paso suggests that the Canadian Government could remain within the law but still take actions unreasonable from a U.S. point of view in allocating costs of future capacity, granting applications for line expansion, taxes, and other areas within the ambit of Canadian policy.

> "The El Paso Canadian Reply Brief is as well crafted a chamber of horrors as this writer has ever seen and would do justice to the standards set by the Marquis de Sade if he had been interested in economics and politics. But that is also its undoing, for the questions so piously raised for the most part are no more than unrealistic speculations which, if valid, might be as applicable to El Paso's Alaskan and Algerian endeavors as to the Arctic Gas and Alcan proposals here to cross Canada. If El Paso can argue to the American consumer that the gas supply from Algeria will remain constant for the next 20 years or that tax treatment by Alaska will remain constant for a similar period, reliance factors which impact most heavily on El Paso, it cannot at the same time expect its arguments against the reliability of Canada to be given much weight."

Judge Litt acknowledged that there was little justification, from the U.S. consumer standpoint, for actions of the British Columbia Government in requiring the entire burden of curtailments by Westcoast Transmission in the past few years (due to production failures) to be imposed entirely on U.S. customers and none on Canadian customers. On the other hand, he saw nothing untoward in Canadian Government actions raising the export price of gas -- most recently to $1.94 as of 1/1/77 -- in order to achieve a pricing scheme consistent with the commodity value of gas in relation to other fuels.

Also, the Law Judge noted, charges regarding Canadian unreliability ignore "historical facts," namely, a constancy in relationships extending back almost 200 years. If the future Canadian Government were predisposed to act unreasonably, "such imprudence could be countered with equally unsavory activities on the part of the U.S." Still another factor, Judge Litt added, is that, whatever the Canadian Government's decision regarding the continuation or expansion of gas exports to the U.S. in the future, the attachment of Canadian frontier gas reserves can only help U.S. prospects.

currently shut down because of curtailments in Columbia's service area manufacture materials necessary for the production of defense-related goods, and that the requirement to restore Columbia's severely depleted reserves will result in continued industrial load curtailments through the summer storage season. Therefore, FEA urged the requested waiver in order that the nation "may fully meet its defense requirements." Similarly, Secretary Blumenthal added, the Department of Defense advised of the adverse effects of the current shortage of LNG and the potential resultant shortages of petroleum fuels for production facilities engaged in the manufacture of items for DOD and at defense installations.

Finally, Secretary Blumenthal noted that, according to the Department of Commerce, no LNG carrier built in a U.S. shipyard is available to transport this LNG from Alaska to Massachusetts and that the severity of the natural gas shortage which threatens to shut down all types of facilities, including military facilities, justifies a limited non-precedent setting waiver of the Jones Act.

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According to the Wall Street Journal dated 2/4/77, Secretary Blumenthal has granted another waiver of the Jones Act to permit Tropigas International Corp. to ship liquefied propane gas from Houston, Texas to Chesapeake, Virginia on a Panamanian ship. The waiver expires 4/30/77 and will permit five trips, each carrying 34,700 barrels of LPG.

FPC Judge Litt Recommends Certification of Arctic Gas Project to Transport North Slope Gas to Lower 48 States; FPC Suspends El Paso Alaska Proceeding

On 2/1/77 Administrative Law Judge Nahum Litt issued an initial decision in the El Paso Alaska proceeding (CP75-96 et al.) recommending selection of the Arctic Gas Project over competing proposals of El Paso Alaska and Alcan Pipeline-Northwest Pipeline to transport gas from the Prudhoe Bay Field of Alaska to markets in the Lower 48 States.

Judge Litt concluded that the Arctic Gas project is superior in nearly every significant aspect to the El Paso Alaska proposal and should be certificated, including its Western Leg. However, El Paso Alaska also has a "viable plan" which technically can be built in an environmentally sound manner and could be certificated if not for the "clearly superior" Arctic Gas application. Thus, if Arctic Gas is unable to accept a certificate, El Paso's proposal -- subject to certain modifications -- can be found to meet the present and future public convenience and necessity.

On the other hand, Judge Litt declared, the record does not support even the "possibility" of a grant of authority to Alcan. In no event, he said, could the Alcan project be approved with the inclusion of Westcoast Transmission, one of the Canadian company participants, because of the arbitrary assignment of volumes for transportation through the Westcoast system and higher costs of transportation which would result for U.S. consumers. Specifically, he said, it would appear that the 30%-70% split of volumes in Canada (for transportation to the Canadian-Lower 48 border by Westcoast and Alberta Gas Trunk Line, respectively) was adopted, in the first instance, to secure Westcoast's participation in the Alcan project by assuring that the Westcoast line below Fort Nelson, British Columbia "would be allocated a sufficient volume of gas to fill existing excess capacity, thereby warranting construction of additional loop facilities which would inure to the ultimate benefit of Canadian customers." Moreover, the pro forma tariffs of the two Canadian companies disclose an "overt Canadian bias" and contain cost allocation provisions which are "totally unacceptable" to U.S. consumers. Although

allocation procedures supported by Alberta Gas Trunk Line are now alleged to be inoperative, the result is to prevent any meaningful costing of facilities.

Further, Judge Litt asserted, two critical elements of Alcan's proposal -- construction in a three-year period (with completion in 1981) and financing in a separate time frame from the Maple Leaf project (sponsored by the same Canadian companies which are participants in Alcan) -- are totally unsupported. Completion of the Alcan project by 1981 simply "cannot occur," and the financing arrangements proposed for Alcan and Maple Leaf require "intricate timing" which lacks any evidentiary support. Accordingly, "as presently proposed, even with Alcan's willingness to build anything anyone wants (as long as it does not oust Westcoast and AGTL from their Maple Leaf project), there is not enough left of its original proposal to serve as a basis for granting its application."

The FPC Judge was highly critical of the Prudhoe Bay producers -- both for their refusal thus far to enter into gas sales contracts, and for their refusal to offer any assistance to financing of an Alaskan gas transportation project.

The absence of producer contracts was identified by Judge Litt as a major impediment to this proceeding. All efforts to induce producers to enter into sales contracts were "singularly unsuccessful." Rather, the producers appear to consider the national interest as "negotiable" in their attempt to obtain concessions from the Commission or the Congress in return for cooperation in marketing the Prudhoe Bay gas. Nor, the FPC Judge noted, does there exist an approved field production agreement. As a result, the record has been closed without a gas deliverability schedule, without knowing the purchasers of the gas, without knowing more than the alleged general cost of field gathering and gas conditioning facilities or who would bear such cost, and without specific estimates of reserves on the Lisburne and Kaparuk formations which are part of the Prudhoe Bay Field. In the usual case, these deficiencies would require that the proceeding be held in abeyance pending their resolution. Here, however, "an overwhelming consensus on the part of the Commission, the Congress and the Executive Branch has been to go forward anyway and to pick a pipeline. It is not the best way to make rational decisions."

In regard to financing, Judge Litt noted various objections raised by the producers to financial participation -- including the desirability of investing capital in nonregulated business ventures and "poverty" as a result of such investments. Realistically, he continued, the Commission can do more than strongly suggest that financial assistance by the producers is both fair and in their best interests. "However, if the President and Congress deem it appropriate that the producers, as chief beneficiaries of the sale of Alaskan hydrocarbons, should participate in financing construction of a transportation system to market their product -- a position pressed obliquely by the Department of Treasury representatives on the record and on brief -- legislative methods may be pursued, as Treasury hinted, to secure such participation."

Since the gas transmission company sponsors of the various projects are not sufficiently creditworthy in the aggregate to provide institutional lenders with the degree of security necessary to warrant financing and since other obvious creditworthy parties (producers and the State of Alaska) have shown no interest in participation, Judge Litt said a critical question is the degree to which financial risks should be shifted to consumers and/or taxpayers, if at all. The FPC Judge concluded that the final financing arrangement should involve assumption of risks by both consumers and taxpayers, and that the Commission and the Treasury Department should cooperate in working out such an arrangement to permit proper financing at reasonable rates. Specifically, he declared, (1) consumers -- as one

of the principal beneficiaries of attaching North Slope gas supplies -- should participate in guaranteeing project risks, but only to the extent of debt service; (2) equity holders should accept the usual risk of equity investment, with no guarantee of return of or return on equity investment in the event of prolonged outage; (3) the Federal Government should entertain an insurance or completion guarantee arrangement to facilitate raising project debt capital at a more reasonable cost, thereby reducing the cost of gas to consumers; and (4) legislation to perfect tracking of debt service costs to the consumer level and to approve Treasury participation is necessary.

Other findings by Judge Litt included the following, among others: (1) a $1.00 per MMBtu field price for North Slope gas (including costs of gathering and conditioning) is close to the maximum level at which the supply could remain marketable under present conditions; (2) an equity rate of return in the range of 14% to 15% represents an "upper limit"; (3) the North Slope gas should be priced on a rolled-in basis in view of the fact that it "will simply replenish a diminishing existing supply in high priority markets"; and (4) in the event the El Paso Alaska project is ultimately selected, the proposed LNG terminal facility in California should be moved from Point Conception to Oxnard.

A more detailed summary of Judge Litt's initial decision appears in an Appendix to this REPORT.

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Another provision of the Act directed the FPC to "suspend" all proceedings relating to the transportation of Alaskan gas pending on the date of enactment "as soon as the Commission determines to be practicable after such date," to review all applications to transport Alaskan gas pending on the enactment date, and to discuss in its report to the President some 13 specified factors with respect to each transportation system considered. Such report shall recommend either a particular transportation system or no decision at this time. Any recommendation for an all-land pipeline transportation system, or a transportation system involving water transportation, must "include provision for new facilities to the extent necessary to assure direct pipeline delivery of Alaskan natural gas contemporaneously to points both east and west of the Rocky Mountains in the lower continental United States."

In addition, for purposes of reaching a recommendation, the Act authorizes the FPC to provide, by rule, for the "presentation of data, views, and arguments" pursuant to such procedures as the Commission determines to be appropriate, with such rule to apply "notwithstanding any provision of law that would otherwise have applied to the presentation of data, views, and arguments." (See REPORT NO. 1076, pp9-11.)

NO. 1090 . . . for week ended February 3, 1977

File Oil-Gas

CONTENTS

HIGHLIGHTS Page

President Signs Emergency Legislation to Allocate Interstate Gas Supplies and Deregulate Onshore Prices for Six Months..... 1
FPC Chairman Dunham Establishes Procedures to Implement Emergency Gas Bill; Directs Intrastate Pipeline to Transport Gas Acquired by Transco from California..... 4
FPC Allocates 25 Percent of Emergency Gas Imports from Canada to Southern Natural..... 6
Treasury Secretary Grants Limited Waiver of Jones Act to Permit Delivery of LNG and Propane to U.S. Ports in Foreign Ships..... 8
FPC Judge Litt Recommends Certification of Arctic Gas Project to Transport North Slope Gas to Lower 48 States; FPC Suspends El Paso Alaska Proceeding..... 9
Senate Confirms John F. O'Leary as Administrator of Federal Energy Administration..... 13
S. David Freeman Named Aide to Energy Adviser Schlesinger..... 13
FPC Sets March 24 Hearing on Remand of Order Requiring Annual Reporting by Jurisdictional Companies of Intrastate and Interstate Gas Reserves..... 14
Senator Randolph Introduces Bill to Authorize ERDA to Make Annual Appropriations Requests to Cover Loan Guarantees for Synthetic Fuel Production..... 16
FPC Holds that Additional Sales by Equitable Gas and Kentucky West Virginia Gas Directed by State Commissions Are Jurisdictional..... 18
FPC Approves Continued Service by Texas Gas to Customers Previously Regarded as Intrastate After State Commission Asserts Jurisdiction..... 19
FPC Seeks Data from United to Determine Jurisdictional Status of Certain Sales..... 20
FPC Partially Accepts Texas Eastern Settlement Proposal as Interim Curtailment Plan..... 21

SUMMARY OF INITIAL DECISION IN EL PASO ALASKA PROCEEDING RECOMMENDING SELECTION OF ARCTIC GAS PROJECT..... App. pp1-23

CURRENT I. P. CERTIFICATE APPLICATIONS..... App. p24



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currently shut down because of curtailments in Columbia's service area manufacture materials necessary for the production of defense-related goods, and that the requirement to restore Columbia's severely depleted reserves will result in continued industrial load curtailments through the summer storage season. Therefore, FEA urged the requested waiver in order that the nation "may fully meet its defense requirements." Similarly, Secretary Blumenthal added, the Department of Defense advised of the adverse effects of the current shortage of LNG and the potential resultant shortages of petroleum fuels for production facilities engaged in the manufacture of items for DOD and at defense installations.

Finally, Secretary Blumenthal noted that, according to the Department of Commerce, no LNG carrier built in a U.S. shipyard is available to transport this LNG from Alaska to Massachusetts and that the severity of the natural gas shortage which threatens to shut down all types of facilities, including military facilities, justifies a limited non-precedent setting waiver of the Jones Act.

* * * * *

According to the Wall Street Journal dated 2/4/77, Secretary Blumenthal has granted another waiver of the Jones Act to permit Tropigas International Corp. to ship liquefied propane gas from Houston, Texas to Chesapeake, Virginia on a Panamanian ship. The waiver expires 4/30/77 and will permit five trips, each carrying 34,700 barrels of LPG.

FPC Judge Litt Recommends Certification of Arctic Gas Project to Transport North Slope Gas to Lower 48 States; FPC Suspends El Paso Alaska Proceeding

On 2/1/77 Administrative Law Judge Nahum Litt issued an initial decision in the El Paso Alaska proceeding (CP75-96 et al.) recommending selection of the Arctic Gas Project over competing proposals of El Paso Alaska and Alcan Pipeline-Northwest Pipeline to transport gas from the Prudhoe Bay Field of Alaska to markets in the Lower 48 States.

Judge Litt concluded that the Arctic Gas project is superior in nearly every significant aspect to the El Paso Alaska proposal and should be certificated, including its Western Leg. However, El Paso Alaska also has a "viable plan" which technically can be built in an environmentally sound manner and could be certificated if not for the "clearly superior" Arctic Gas application. Thus, if Arctic Gas is unable to accept a certificate, El Paso's proposal -- subject to certain modifications -- can be found to meet the present and future public convenience and necessity.

On the other hand, Judge Litt declared, the record does not support even the "possibility" of a grant of authority to Alcan. In no event, he said, could the Alcan project be approved with the inclusion of Westcoast Transmission, one of the Canadian company participants, because of the arbitrary assignment of volumes for transportation through the Westcoast system and higher costs of transportation which would result for U.S. consumers. Specifically, he said, it would appear that the 30%-70% split of volumes in Canada (for transportation to the Canadian-Lower 48 border by Westcoast and Alberta Gas Trunk Line, respectively) was adopted, in the first instance, to secure Westcoast's participation in the Alcan project by assuring that the Westcoast line below Fort Nelson, British Columbia "would be allocated a sufficient volume of gas to fill existing excess capacity, thereby warranting construction of additional loop facilities which would inure to the ultimate benefit of Canadian customers." Moreover, the pro forma tariffs of the two Canadian companies disclose an "overt Canadian bias" and contain cost allocation provisions which are "totally unacceptable" to U.S. consumers. Although

allocation procedures supported by Alberta Gas Trunk Line are now alleged to be inoperative, the result is to prevent any meaningful costing of facilities.

Further, Judge Litt asserted, two critical elements of Alcan's proposal -- construction in a three-year period (with completion in 1981) and financing in a separate time frame from the Maple Leaf project (sponsored by the same Canadian companies which are participants in Alcan) -- are totally unsupported. Completion of the Alcan project by 1981 simply "cannot occur," and the financing arrangements proposed for Alcan and Maple Leaf require "intricate timing" which lacks any evidentiary support. Accordingly, "as presently proposed, even with Alcan's willingness to build anything anyone wants (as long as it does not oust Westcoast and AGTL from their Maple Leaf project), there is not enough left of its original proposal to serve as a basis for granting its application."

The FPC Judge was highly critical of the Prudhoe Bay producers -- both for their refusal thus far to enter into gas sales contracts, and for their refusal to offer any assistance to financing of an Alaskan gas transportation project.

The absence of producer contracts was identified by Judge Litt as a major impediment to this proceeding. All efforts to induce producers to enter into sales contracts were "singularly unsuccessful." Rather, the producers appear to consider the national interest as "negotiable" in their attempt to obtain concessions from the Commission or the Congress in return for cooperation in marketing the Prudhoe Bay gas. Nor, the FPC Judge noted, does there exist an approved field production agreement. As a result, the record has been closed without a gas deliverability schedule, without knowing the purchasers of the gas, without knowing more than the alleged general cost of field gathering and gas conditioning facilities or who would bear such cost, and without specific estimates of reserves on the Lisburne and Kaparuk formations which are part of the Prudhoe Bay Field. In the usual case, these deficiencies would require that the proceeding be held in abeyance pending their resolution. Here, however, "an overwhelming consensus on the part of the Commission, the Congress and the Executive Branch has been to go forward anyway and to pick a pipeline. It is not the best way to make rational decisions."

In regard to financing, Judge Litt noted various objections raised by the producers to financial participation -- including the desirability of investing capital in nonregulated business ventures and "poverty" as a result of such investments. Realistically, he continued, the Commission can do more than strongly suggest that financial assistance by the producers is both fair and in their best interests. "However, if the President and Congress deem it appropriate that the producers, as chief beneficiaries of the sale of Alaskan hydrocarbons, should participate in financing construction of a transportation system to market their product -- a position pressed obliquely by the Department of Treasury representatives on the record and on brief -- legislative methods may be pursued, as Treasury hinted, to secure such participation."

Since the gas transmission company sponsors of the various projects are not sufficiently creditworthy in the aggregate to provide institutional lenders with the degree of security necessary to warrant financing and since other obvious creditworthy parties (producers and the State of Alaska) have shown no interest in participation, Judge Litt said a critical question is the degree to which financial risks should be shifted to consumers and/or taxpayers, if at all. The FPC Judge concluded that the final financing arrangement should involve assumption of risks by both consumers and taxpayers, and that the Commission and the Treasury Department should cooperate in working out such an arrangement to permit proper financing at reasonable rates. Specifically, he declared, (1) consumers -- as one

of the principal beneficiaries of attaching North Slope gas supplies -- should participate in guaranteeing project risks, but only to the extent of debt service; (2) equity holders should accept the usual risk of equity investment, with no guarantee of return of or return on equity investment in the event of prolonged outage; (3) the Federal Government should entertain an insurance or completion guarantee arrangement to facilitate raising project debt capital at a more reasonable cost, thereby reducing the cost of gas to consumers; and (4) legislation to perfect tracking of debt service costs to the consumer level and to approve Treasury participation is necessary.

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In addition, Order No. 558-B ruled on certain requests for clarification of Order No. 558-A (issued 12/16/76) which provided for the appointment of a delegate (or delegates) to request data, views and arguments from other federal agencies and from persons or groups in the private sector (excluding the applicants in the El Paso Alaska proceeding) in order to enable the Commission to analyze in its report to the President on 5/1/77 certain factors specified in the Alaska Gas Transportation Act for discussion but not covered by the record in the El Paso Alaska proceeding. 1/ Such factors include, for example, annual volumes of Alaskan gas expected to be available to each region of the U.S. over the next 20 years, together with transportation costs and delivered prices. (See REPORT NO. 1083, pp23-24.)

In regard to the procedures established in Order No. 558-A, Arctic Gas asked that (1) the delegate be permitted to request information from applicant parties, if such requests are to be made of any nonfederal person or group; (2) all requests for information and assistance by the delegate, and all responses thereto, be made public; and (3) any person be allowed to respond to such requests.

The Commission replied that it will only consider information requested by it or a delegate, and will not consider unsolicited communications. Since the applicants in the El Paso Alaska case have had more than adequate opportunity to advance their positions regarding the competing projects and to submit "data, views and arguments" in support of their positions, "the quality of information available to the Commission would not be enhanced through mere repetition of that discourse." Therefore, "the Commission or delegates should not communicate in relation to substantive matters with the applicants or affiliates thereof or parties, counsel, or witnesses (including Commission Staff witnesses) that have advocated on the record the approval or rejection of any of the competing projects."

An exception to this ruling, the FPC noted, is any necessary communication regarding the computer programs or models of the applicants which Judge Litt seeks to obtain for the Commission's use. Any such communication, however, should be limited to information required to enable comprehension of the program or models and should not extend to the merits of any proposal.

The Commission further stated that there was no need to place all communications in the public files. However, prior to submission of the FPC's recommendation to the President, a summary of extra-record data which has been obtained and may be relied upon by the Commission will be noticed, and interested parties will be given an opportunity to comment. Finally, all records and documents compiled during this phase of the proceeding will be available for appropriate Congressional or Executive review after submission of the Commission's recommendation. These procedures, the Commission concluded, will insure "impartiality in the process," give parties adequate opportunity to rebut factual matters, and enable the Commission to discharge its duties under the Alaska Natural Gas Transportation Act of 1976.

1/ Jerome Hass and Richard Smith were subsequently designated as delegates for this purpose. (See REPORT NO. 1084, pp7-8.)

SUMMARY OF INITIAL DECISION IN EL PASO ALASKA PROCEEDING RECOMMENDING SELECTION OF ARCTIC GAS PROJECT

The following is a summary of the initial decision issued on 2/1/77 by Administrative Law Judge Nahum Litt in the El Paso Alaska proceeding (CP75-96 et al.) involving competing projects sponsored by the Arctic Gas consortium, El Paso Alaska and Alcan Pipeline-Northwest Pipeline to transport gas from the Prudhoe Bay Field of Alaska to markets in the Lower 48 States.

Judge Litt concluded that the Arctic Gas project is superior in nearly every significant aspect to the El Paso Alaska proposal and should be certificated, including its Western Leg. However, El Paso Alaska also has a "viable plan" which technically can be built in an environmentally sound manner and could be certificated if not for the "clearly superior" Arctic Gas application. Thus, if Arctic Gas is unable to accept a certificate, El Paso's proposal -- subject to certain modifications -- can be found to meet the present and future public convenience and necessity.

On the other hand, Judge Litt declared, the record does not support even the "possibility" of a grant of authority to Alcan. In no event, he said, could the Alcan project be approved with the inclusion of Westcoast Transmission, one of the two Canadian company participants, because of the arbitrary assignment of volumes for transportation through the Westcoast system and higher costs of transportation which would result for U.S. consumers. Specifically, he said, it would appear that the 30%-70% split of volumes in Canada (for transportation to the Canadian-Lower 48 border by Westcoast and Alberta Gas Trunk Line, respectively) was adopted, in the first instance, to secure Westcoast's participation in the Alcan project by assuring that the Westcoast line below Fort Nelson, British Columbia "would be allocated a sufficient volume of gas to fill existing excess capacity, thereby warranting construction of additional loop facilities which would inure to the ultimate benefit of Canadian customers." Moreover, the pro forma tariffs of the two Canadian companies disclose an "overt Canadian bias" and contain cost allocation provisions which are "totally unacceptable" to U.S. consumers. Although allocation procedures supported by Alberta Gas Trunk Line are now alleged to be inoperative, the result is to prevent any meaningful costing of facilities.

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Overview of Projects

The Arctic Gas project includes a number of interrelated applications involving construction of some 4,512 miles of pipeline from the North Slope of Alaska through Canada to markets on the West Coast and in midwestern and eastern states. Specifically, Alaskan Arctic Gas Pipeline would construct a 195-mile, 48-inch line from the Prudhoe Bay to the Alaska-Canada border. From that point, Canadian Arctic Gas Pipeline would construct over 2,300 miles of mostly 48-inch line across the Mackenzie Delta and then south to Caroline Junction, Alberta where the line would divide -- with a Western Leg extending south to Kingsgate on the British Columbia-Idaho border and the Eastern Leg extending south to Monchy, Saskatchewan. From Kingsgate, Pacific Gas Transmission proposes to loop its existing line to deliver gas to markets in Pacific Northwest states and in Northern and Southern California. From Monchy, Northern Border Pipeline (a partnership of six U.S. pipelines) would build a 1,138-mile, 24-inch line to Dwight, Illinois (near Chicago). Deliveries of Alaskan gas to the Lower 48 States are projected at 2.25 Bcf/d by the fifth year of operations, with approximately 30% to be received by PGT for West Coast markets and the remaining 70% by Northern Border for midwestern and eastern markets.

El Paso Alaska proposes to transport gas from Prudhoe Bay via a new 809-mile pipeline (largely paralleling the Alyeska oil pipeline route) to Gravina Point on the southern coast of Alaska where the gas would be liquefied and shipped by tanker to terminal, storage and regasification facilities proposed by Western LNG Terminal Co. at Point Conception, California (approximately 120 miles north of Los Angeles). From Point Conception, Western LNG proposes to construct new pipelines to connect with existing transmission facilities of Pacific Gas & Electric Co. and Southern California Gas Co. Delivery of Prudhoe Bay gas to other markets in the Lower 48 States would be accomplished through a combination of displacement, reversal of flow in existing lines of California utilities and in certain existing lines of El Paso Natural Gas Co. and Transwestern Pipeline Co. (between the California-Arizona border and the Permian Basin), construction of new lines by El Paso Natural from the Permian Basin to the Anadarko Basin or the Texas Gulf Coast area (or both) to interconnect with other interstate pipeline companies in those areas, and use of projected idle capacity in those pipelines to effect delivery of gas to markets in midwestern, southeastern and eastern states.

Alternative showings of El Paso Alaska contemplated deliveries of 2.4 Bcf/d or 3.2 Bcf/d from the Prudhoe Bay Field.

Finally, the Alcan Pipeline project -- sponsored by Northwest Pipeline Co. and two Canadian companies -- involves the construction of a 730-mile, 42-inch pipeline from Prudhoe Bay to Delta Junction (south of Fairbanks) along the Alyeska oil pipeline route and then extending to the Alaska-Yukon border along the Alcan Highway and an abandoned oil pipeline route. The pipeline would be designed to carry 2.4 Bcf/d of Alaskan gas. At the Alaska-Yukon border, the gas would be delivered to Foothills Pipe Line (or an affiliate) which would construct a new 42-inch line continuing along the Alcan Highway to Fort Nelson, British Columbia where approximately 30% of the gas would be delivered to Westcoast Transmission Co. Ltd. for ultimate transportation through expanded facilities to the Lower 48 border at Sumas, Washington. The remaining 70% would be transported from Fort Nelson to Zama Lake, Alberta (a distance of 144 miles) by a new pipeline -- to be owned in British Columbia by Westcoast and in Alberta by Alberta Gas Trunk Line (AGTL) -- for delivery into existing facilities of AGTL and further transportation to Empress, Alberta and possibly also to Kingsgate, British Columbia. From Empress, gas destined for midwestern or eastern markets in the Lower 48 would be delivered to the Northern Border system at Monchy, Saskatchewan. Gas delivered to Sumas, and possibly to Kingsgate, would be

transported to western markets through existing or expanded pipeline facilities of Northwest and Pacific Gas Transmission.

Initial Decision

The summary below is organized under the following headings (conforming for the most part to those in the initial decision): Lack of Producer Sales Contracts, Jurisdictional Questions and Proposed Legislation, "Western Leg" Issue, Gas Supply, Construction and Geotechnical Problems, Operational Factors, Environmental Considerations, Socio-Economic Factors, Marketability of North Slope Gas, Economics, Net National Economic Benefits, Financing and Tariffs and Canadian Issues.

Lack of Producer Sales Contracts

At the outset of his initial decision, Judge Litt stressed the significant problems caused throughout the hearing by the failure of those owning the Prudhoe Bay reserves -- principally, the State of Alaska, Atlantic Richfield Co., Exxon Corp. and Sohio Petroleum Co. -- to enter into gas sales contracts. This refusal, he said, has prevented the expeditious and orderly examination of pipeline sizing, financing, marketability, and a host of related matters, including disputes as to which companies ultimately would buy the gas. While the State of Alaska announced sales of its royalty gas to El Paso, Southern Natural and Tenneco on the last day of the hearing (11/12/76), even these contracts for royalty gas are not effective until ratification by the state legislature, which is not in session.

All efforts to induce producers to enter into sales contracts, Judge Litt continued, were "singularly unsuccessful." As recently as 9/30/76, while indicating an intent to act reasonably and professing a concern for the national interest, the producers refused to state categorically that they would enter into contracts to sell gas upon certification of a prime pipeline route. "Their position is that they are in business to sell hydrocarbons and the only question is timing. . . . The only conclusion possible from their actions is that the national interest to ARCO, Exxon, Sohio, etc. lies somewhere below their own economic interest, or at least, the national interest of the U.S. appears . . . negotiable in their bid to obtain certain concessions from the Commission or the Congress in return for their cooperation in bringing this gas to market." In short, "the producers, like G. B. Shaw's dinnertime companion, have a price at which they would sell their 'service,' and all of their protestations to the contrary cannot hide that they are mainly dickering over price."

Similarly, the State of Alaska has pursued a course designed to maximize economic benefits flowing to Alaska from its hydrocarbon resources. "This laudable goal for Alaskans, unfortunately, is not always consistent with the general public interest of all the people of the United States."

The Law Judge also noted the absence of an approved production agreement for oil or gas from the Prudhoe Bay Field. While a draft agreement became available in August 1976, it will be several more months until state approval will be given.

Because of the lack of gas sales contracts and the lack of an approved field production agreement, Judge Litt stated, the record has been closed without a gas deliverability schedule, without knowing the purchasers of the gas, without knowing more than the alleged general cost of field gathering and gas conditioning facilities or who would bear such cost, and without specific estimates of reserves on the Lisburne and Kaparuk formations which are part of the Prudhoe Bay Field. In the usual case, these deficiencies would require that the proceeding be held in abeyance pending their resolution. Here, however, "an overwhelming consensus on the part of the

Commission, the Congress and the Executive Branch has been to go forward anyway and to pick a pipeline. It is not the best way to make rational decisions."

Given the above considerations, the Law Judge added, "it is amazing in fact that this proceeding progressed so far so fast. The applications were filed prematurely from any rational regulatory point of view, and the Commission's determination to try the cases without an essential ingredient represents a regulatory boldness normally not seen."

Jurisdictional Questions and Proposed Legislation

Judge Litt dismissed the State of Alaska's claim that the FPC lacks jurisdiction over its interstate sales. This claim, he said, rests solely on the contention that a State is not a "person" within the meaning of Section 2 of the Act. No such gap exists in the law, the Law Judge replied, and one should not be created. Otherwise, producing and energy-rich states of the nation, by virtue of their royalty interest in production from state lands and their "increasing propensity to reserve the right to take that interest in-kind," will expand such gap to permit larger and larger volumes to escape regulatory control. Also, Judge Litt noted, Alaska's essential premise is undercut by the Supreme Court's holding in FPC v. Corporation Commission of Oklahoma that a state agency is a "person" within the meaning of Section 2 of the Natural Gas Act for purposes of jurisdiction by U.S. District Courts to enjoin actions violative of the Act.

The FPC Judge also referred to problems created by the State of Alaska's gas sales contracts with El Paso, Southern Natural and Tenneco reserving the right to reduce daily deliveries by up to 25% at any time during the first five years, 50% during the next five years, 75% during the third five-year period, and 100% after 15 years, for in-state use. While there is little doubt that the Commission would refuse to certificate long-term sales under such terms, the Law Judge stated, Section 13(b) of the 1976 Alaska Natural Gas Transportation Act unfortunately permits Alaska to withdraw its royalty gas from the interstate market in the manner contemplated by its contracts. Such withdrawal could result in the future idling of downstream facilities and produce adverse cost impacts. Additionally, "the mere prospect of withdrawal imperils the financeability of an Alaskan gas project."

Accordingly, Judge Litt urged the Commission, in its report to the President, to recommend deletion of Section 13(b) of the Alaska Natural Gas Transportation Act of 1976, as well as deletion of Section 13(a) which bars the Commission from denying access to the Alaskan gas transportation system to shippers not participating in equity financing. Absent deletion of these two provisions, "direct and total U.S. Government guarantees would appear to be the only feasible method of financing."

Another serious regulatory gap, Judge Litt continued, is the absence of direct plenary jurisdiction by any government agency over the operations and charges of the El Paso tanker fleet. Therefore, if the El Paso project were to be approved, this gap should be closed, either indirectly through certificate conditions or directly through suitable federal legislation. Any certificate conditions should require, at a minimum, that El Paso Alaska bind the shipping companies to all contract pricing provisions and to continued dedication of the ships over the project life; seek prior Commission authorization for any subsequent amendments materially affecting the terms of the approved contracts; cause all books and records of the shipping companies to be made available for Commission audit; and seek prior Commission approval for any effort to divest effective corporate control (if any) over the shipping companies. Since such conditions would be likely to be tested in the courts, "the Commission may wish to recommend appropriate federal legislation to confer jurisdiction in order to avoid uncertainty."

Finally, the Law Judge said, federal legislation is required to enable full and timely recovery from ultimate consumers of all appropriate costs in connection with an Alaskan transportation project. While the Commission should not have the power to suspend flow through of costs, it should have the right to review all such costs at all times, with retention of the power to order refunds where appropriate. Similarly, the Treasury Department should be granted appropriate statutory authority to accomplish whatever federal participation in the Alaskan gas project financing is ultimately determined to be required in the public interest.

"Western Leg" Issue

Judge Litt rejected Staff's recommendation for elimination of the "Western Leg" portion of the Arctic Gas project, currently designed to deliver initial volumes of 659,000 Mcf/d or roughly 30% of the total initial Alaskan gas flow of 2.25 Bcf/d, and for delivery of these volumes instead to the West Coast through combined use of Pacific Gas Transmission facilities and Northern Border facilities. Specifically, Staff proposed two alternatives: (1) use of an expected 601,000 Mcf/d of idle capacity expected on the PGT system by 1981 following expiration of gas export licenses, with the balance of 36,000 Mcf/d to be delivered by displacement through the proposed Northern Border system; and (2) use of 204,000 Mcf/d of idle capacity on PGT's system if curtailments of Canadian export gas are less than predicted, with displacement of 433,000 Mcf/d via Northern Border.

Arctic Gas conceded the technical feasibility of the Staff's displacement proposal, the Law Judge noted, and also admitted that elimination of the Western Leg facilities would result in a net reduction in project capital costs of $512 million and a reduction in average annual project transportation cost of service of roughly $50 million. Staff viewed the estimated $50 million savings in annual cost of service as a minimum.

Staff's proposal, Judge Litt stated, is keyed to very substantial and permanent reductions in Canadian deliveries to PGT, commencing either prior to or contemporaneously with the expiration of applicable export licenses. However, he declared, absent such developments, long-term displacement of full Western entitlements over a fully loaded 42-inch Eastern Leg (Northern Border) would not result in a true saving to the nation's consumers. This is because the $50 million "saving" cited by Staff would be achieved at the expense of additional fuel requirements amounting to some 70 billion Btu/d, thus resulting in significantly lower volumes of natural gas available to the nation's markets. On this basis, considering Staff's estimated one-time energy requirement of 48 trillion Btu to construct the Western Leg, a net energy loss would be experienced in less than two years. And, over the 20-year life of the project, the cost of replacing the net energy loss would more than wipe out the suggested $50 million annual saving in transportation costs, since the replacement energy in California markets would mainly take the form of high-cost electricity.

Further, Judge Litt continued, even if true overall savings were to result from the displacement proposal, there does not appear to be any satisfactory way for apportioning such savings among the specific eastern and western markets to be served. Among other things, the problem is complicated by the necessity either to maximize the capacity of Northern Border's presently proposed 42-inch diameter pipeline or to build a larger diameter Northern Border pipeline. Any such plan would entail substantial capital costs, and the Western Leg purchaers would have to pay for the expansion. However, assuming growth in PGT's excess capacity as predicted by Staff, Northern Border capacity installed now to permit displacement could quickly become excess to Northern Border's needs. On the other hand, absolving Western Leg customers of these costs would result in higher costs to Eastern Leg customers. In short, "there is no

way on this record to compare the cost of cheap and easy expansibility to Eastern Leg customers if the Western Leg is built, as against the delays and unknown costs in unknown future years if it is found necessary to fully load Northern Border's 42-inch line now and deny cheap expansibility in the future."

Additionally, the Law Judge observed, Staff's projection of a substantial long-term reduction in Canadian deliveries was based on an NEB report issued in April 1975 which did not consider the impact of new frontier gas supplies in assessing Canada's supply and demand position in future years. However, a subsequent report issued by Canada's Minister of Energy, Mines and Resources in early 1976 suggested that, with the advent of gas supplies from frontier areas after 1982 (assuming an energy price structure adjusted to current levels of international oil prices), Canadian gas supply would substantially exceed demand -- including export demand -- for a number of years. Accordingly, although circumstances may change and the Canadian Government may reappraise its energy goals, "the present outlook for Canadian gas exports at current levels after 1982 appears optimistic."

Thus, Judge Litt concluded, since Staff's displacement alternative is predicated on an "unduly pessimistic view" respecting Canadian curtailments and defended on the basis of transportation cost savings which may be "largely illusory," it cannot be considered a preferable alternative.

Moreover, he added, the specific design recommended by Staff would produce a system operating at or near full capacity from the outset, leaving no room for cheap expansion to take advantage of future Alaskan supply. By contrast, the Eastern and Western delivery legs now proposed by Arctic Gas, although substantially reduced and modified from the designs originally proposed in order to improve the economy and efficiency of gas delivery, are capable of transporting Alaskan volumes above 2.25 Bcf/d solely by increasing compression, thereby affording a reasonable measure of cheap expansibility customarily considered desirable in attaching new transmission facilities to new, promising supply areas.

Judge Litt also reviewed El Paso Alaska's basic scheme for delivering Alaskan gas throughout the Lower 48 States by a combination of direct transportation and displacement using existing pipeline systems. He concluded that the overall proposal is "clearly feasible."

Gas Supply

Judge Litt noted agreement by all parties that in-place gas reserves in the Prudhoe Oil Pool on the North Slope exceed 35 Tcf, but disagreement regarding (1) gas deliverability from the Prudhoe Bay Pool (because of the effect of the rate of gas production on ultimate oil recovery); and (2) the extent and location of undiscovered recoverable reserves in other areas of North Alaska.

With respect to gas deliverability from the Prudhoe Bay Pool, the Law Judge called attention to a study commissioned by the State of Alaska indicating that highest oil recoveries were obtained under conditions of water injection and no gas sales, but that these higher ranges of oil recovery could also be approached with gas sales of 2.0 Bcf/d and water injection, as well as with gas sales above 2.0 Bcf/d assuming further water injection. He also noted a statement by the principal producers that gas deliveries of at least 2 Bcf/d will commence once the necessary pipeline and gas conditioning facilities are in place, and that initial gas deliveries of up to 2.5 Bcf/d may be possible without affecting ultimate oil recovery. Thus, he concluded, while there is still some uncertainty concerning the amount of gas that can and will be sold without adversely affecting oil recovery, "the vast weight of the evidence is that between 2.0 Bcf/d - 2.5 Bcf/d of gas will be available initially from the Prudhoe Bay Field." Moreover, he observed, if estimated additional volumes of 11.7 Tcf in the Sadlerochit, Lisburne and Kuparuk formations by 1985 are included, "it is obvious that the 2.0 Bcf/d - 2.5 Bcf/d estimate is indeed conservative."

In regard to other North Slope reserves, Judge Litt said several specific regions could logistically support additional deliveries into the systems of one or more of the three pipeline applicants. While potential reserve estimates vary considerably, nevertheless, "Arctic Gas, because of its larger potential capacity and cheaper expansibility, would be best able to transport additional volumes from any North Slope source."

Turning to the Mackenzie Delta area, Judge Litt found a "reasonable likelihood" of deliveries not less than 1 Bcf/d in the first year of operations and 1.5 Bcf/d in the fifth year. (Arctic Gas, by contrast, assumed initial deliverability of 1.25 Bcf/d in the first year, rising to 2.25 Bcf/d by the fifth year.)

In arriving at this determination, the FPC Judge first looked to total salable gas reserves of 6.21 Tcf from eight Mackenzie Delta fields established by DeGolyer & MacNaughton as of 7/31/75 -- including 3.83 Tcf of proved reserves, 1.02 Tcf of probable reserves and 1.36 Tcf of possible reserves. If the probable reserves are discounted by 30% and the possible reserves by 70%, the Law Judge stated, the DeGolyer & MacNaughton total is reduced to about 5 Tcf which, assuming a rate-of-take of 1:7300, would support an initial gas deliverability of about 0.7 Bcf/d. However, he continued, "it would be totally short-sighted and unrealistic, in view of the potential of the area and the long lead times involved in this project, to rest the case, as only El Paso urges, on the proposition that no additional reserves from new fields or areas can be relied upon to be forthcoming by the time operations commence, say 1982, or within a reasonable time thereafter. The record simply will not permit the conclusion that exploratory drilling activity in the Mackenzie Delta area is either on the verge of coming to a grinding halt or, if continued, will be totally fruitless."

Further, Judge Litt noted, although the Commission in the past has generally not looked beyond the level of proved reserves in making findings as to gas supply in certificate cases, there is "no inflexible policy" which requires disregard of facts favoring consideration of gas supplies not yet proven. More specifically, in this

case, there is no challenge on the record to the assessment that the Mackenzie Delta, onshore and offshore, "constitutes a major gas-bearing province with very substantial potential reserves in the early stages of exploration." Even when estimates of potential undiscovered gas reserves (ranging from 39 Tcf to 250 Tcf) are discounted severely, "the inescapable conclusion remains that a large resource base exists and that substantial additional gas reserves can be discovered over the next several years." Moreover, although the rate of discovery of such reserves is uncertain, it hardly seems likely that the Canadian Government — should it approve the construction of a gas transportation system into the Mackenzie Delta on the basis of pending applications -- "will fail to provide and maintain the regulatory climate conducive to optimum exploitation of that system." The Law Judge added in this regard that recent natural gas price increases in Canada have resulted in a significant increase in exploratory activity in the traditional western producing provinces. "While a similar impact has not yet been perceived in the Mackenzie Delta area, the allocation of financial resources first to the traditional areas with marketing facilities in place is merely good business practice, especially in light of the long lead times involved in any Mackenzie Delta project."

Assuming discovery of proved reserves at an average annual rate of only 0.6 Tcf over the seven-year period 1975-1982 (or roughly two-thirds of the annual discovery rate from 1971 to the mid-1975 date of the DeGolyer & MacNaughton estimate), the Law Judge said the proved reserve total would amount to approximately 8 Tcf in 1982, or sufficient to support a deliverability of about 1 Bcf/d on the basis of a 1:7300 rate-of-take. Moreover, continuation of this "conservative" findings rate during the following five years would result in discoveries of about 11 Tcf and support deliverability of about 1.5 Bcf/d by 1987, the fifth operational year.

Construction and Geotechnical Problems

Judge Litt assessed the technical feasibility of the Arctic Gas and El Paso Alaska projects in detail, concluding that the pipelines proposed by each could be built in the manner and time frame contemplated. In regard to El Paso Alaska, however, he determined that one additional liquefaction train at the Gravina Point LNG plant and one additional LNG tanker would be required in order to assure reliability of its 2.4 Bcf/d case. Finally, the Law Judge held that Alcan had failed to support its engineering or geotechnical designs, nor its plan for construction in three years.

Arctic Gas, the Law Judge noted, contemplates a construction schedule of six years from the time of initial governmental authorization to the commencement of gas flow. The Alaskan and Canadian portions of this construction would be carried out by nine "spreads," with the North Slope portion of the pipeline to be constructed entirely in the final winter by six "spreads" working simultaneously (three in Alaska and three in Canada), each with a seasonal goal of 65 miles of pipeline. This schedule for Arctic construction was challenged by an El Paso-sponsored study which contended that Arctic Gas had overestimated the number of available working days and underestimated productivity rates, thus making completion within the projected time frame unlikely. The FPC Judge accepted Arctic Gas' estimate of a mid-October "opening date" for snow road construction (a critical timing element in its overall construction schedule) and its estimate of access to the tundra for a period of 145-175 days in the final winter. He also considered it likely that each of the Arctic spreads would attain its assigned productivity rate (0.71 miles per working day). "The ability of a spread to achieve its productivity rate depends upon Arctic Gas' ability to move supplies and equipment to the construction sites and the ability of the construction spreads to expeditiously dig and fill the pipeline ditch, lay and weld the pipe, and move the overall operation from one point to the next along the route. The record contains substantial evidence to show that Arctic Gas will be able to carry out each of these phases in timely fashion and so complete its project on schedule."

Risk analyses indicating a high probability of noncompletion of the Arctic Gas project according to schedule, the FPC Judge added, rested on assumptions which were largely disproven on the record. Also, these analyses failed to take account of Arctic Gas rebuttal evidence, introduced in October 1976, which revised its construction costs upward by $210 million for facilities and activities to enable it to meet construction deadlines in Alaska and Canada. In addition, Arctic Gas indicated willingness to commit another $119 million on two additional construction spreads in the third year, if necessary, in order to stay on schedule.

Judge Litt particularly discussed Arctic Gas' plans for construction using snow roads and snow pads in sensitive permafrost areas. This reliance on snow roads was attacked by competing applicants, the State of Alaska and Conservation Interveners on several grounds, including optimistic opening dates for snow road construction, snow fence use, snowfall patterns, snow manufacturing, water availability and surface degradation caused by vegetative mat compaction. In general, these parties argued that, given the history of past "snow road" failures on the North Slope and the huge scale of Arctic Gas project, Arctic Gas had neither proved it can efficiently and safely construct snow roads, nor that these roads will be effective in use. The Law Judge dismissed these argument as unconvincing. "Not only has Arctic Gas committed itself to considerable testing and planning of its proposal, but it has done so by actually building a test road and testing that road under wintertime conditions similar to those it expects to experience in permafrost areas." In short, the "vast weight of evidence demonstrates that Arctic Gas' snow road plan "is both feasible and effective and can be accomplished with a minimum of environmental harm."

The Law Judge additionally endorsed Canadian Arctic's so-called "Cross-Delta" amendment proposed in February 1976, i.e., construction across the Mackenzie Delta instead of its originally proposed route skirting the western edge of the Mackenzie Delta. A major problem respecting the Cross-Delta route, Judge Litt stated, is inaccessibility of the pipeline for repairs during certain periods of the year in the event of an outage. He concluded, however, that the risk of outage is remote. Moreover, twin pipelines are planned for 36.5 miles of the route to reduce problems of inaccessibility. Further, he noted, the Cross-Delta route is 138 miles shorter and $190 million less costly than the originial prime route, and is also considered preferable from certain environmental standpoints.

Turning to the technical feasibility of the El Paso Alaska proposal, Judge Litt declared that special design precautions employed by El Paso for pipeline crossings of active faults are appropriate and should prevent substantial damage and service interruption from a design seismic event (an earthquake registering 8.5 on the Richter scale with ground movement up to 20 or 30 feet horizontally and 5 feet vertically); that El Paso has scheduled a full year for additional seismic analysis which can likely be performed and incorporated in the final pipeline design in that time -- "at a cost"; that design of the Gravina Point LNG facilities for an 8.5 magnitude earthquake -- equivalent to the magnitude of the 1964 Alaska earthquake (the most severe earthquake reading ever recorded) -- and 0.6g ground acceleration is adequate, although El Paso must consider additional seismic factors and undertake further analysis before arriving at a final design; and that El Paso's marine terminal design appears adequate to withstand seismic sea waves (tsunamis) generated by earthquakes.

The Law Judge recommended against El Paso Alaska's so-called "realignment" case -- reflecting realignment of its proposed trans-Alaska pipeline route (basically parallel to the Alyeska pipeline and haul road and within 3,000 feet of these facilities for 85% of the 766-mile distance) in response to suggestion by the State of Alaska urging greater use of the existing Alyeska haul road and facilities. The realignment was not supported by El Paso Alaska (which, however, attested to its feasibility assuming proper precautions) and was opposed by Staff and others because

of the chance of rupture of the Alyeska line due to blasting, collisions of heavy equipment and other construction activities, and because of an estimated $200 million of additional costs which would be required for thicker walled pipeline and more gravel. Judge Litt held that, although geotechnical redesign could most probably eliminate thermal interference between the heated Alyeska oil line and the chilled El Paso gas pipeline, "a combination of the additional costs of realignment and the serious threat of damage to the Alyeska line" dictates consideration of only El Paso's base case alignment.

In regard to the sites of proposed LNG facilities, FPC Judge Litt recommended that if the El Paso Alaska project is certificated, the liquefaction plant in Alaska should be located at Gravina Point in Prince William Sound as filed -- rather than at Cape Starichkof in the Cook Inlet as suggested by Staff -- but that the LNG receiving terminal and regasification plant in California should be shifted from Point Conception to Oxnard. Staff, he said, failed to provide essential technical evidence to support the Cape Starichkof alternative, which accordingly must be denied. On the other hand, El Paso's selection of Gravina Point as its preferred site for an Alaskan LNG plant resulted from a comprehensive site selection study.

As to the proposed LNG facilities in California, the Law Judge concluded that both the Point Conception and Oxnard sites were technically acceptable and feasible, but that the Oxnard site (an industrialized port area with low population and risk levels) was preferable from the standpoint of a lesser amount of pipeline construction (and consequently less capital investment) required to move North Slope gas to the California-Arizona border, greater consistency with present and future land uses, certain environmental considerations, and lesser possibility of seismic occurrences. Accordingly, if the El Paso project is certificated, the Law Judge recommended that authorization to Western LNG Terminal be conditioned upon amendment of its application so as to construct an LNG regasification plant capable of handling 2.4 Bcf/d of North Slope gas at Oxnard.

Finally, with respect to El Paso's cryogenic tanker fleet, Judge Litt determined that one additional LNG vessel -- i.e., a total of nine rather than eight ships as proposed -- would be required to transport 2.4 Bcf/d to California even without a change in terminal location. El Paso, he noted, projected an 11.5-day actual round trip for each tanker, including 10.72 days for the round trip and 0.8 days (19.2 hours) for contingencies. This projection, the Judge asserted, is based on "best-case" assumptions and fails to take account of possible additional delays due to restrictions on nighttime operations at either Gravina Point or Oxnard, reductions in service speed because of bad weather or Coast Guard navigational safeguards in Prince William Sound, and additional port closures because of weather. Also, a shift of the California terminal from Point Conception to Oxnard (70 nautical miles south of Point Conception) would add 140 miles to each round trip. Based on analysis of these factors, he concluded that an additional ship was required to assure reliability.

Similarly, the Law Judge concluded that the proposed six-train design at the Gravina Point liquefaction plant -- assuming El Paso Alaska's 2.4 Bcf/d case -- does not contain sufficient flexibility to assure the necessary reliability of service. He therefore recommended the addition of a seventh liquefaction train.

In regard to the Alcan project, the Law Judge said the lack of necessary preliminary studies in support of geotechnical and seismic design precludes a finding either as to technical feasibility or the reasonableness of Alcan's cost estimates. Also, there is serious question concerning Alcan's three-year construction schedule and proposed summertime construction in permafrost areas. Staff's geotechnic evaluation of Alcan indicates that "summer construction in Alaska cannot be accomplished

without unacceptable environmental impact." Additionally, Alcan's proposed alignment, which would literally be "cheek-to-cheek" with Alyeska for hundreds of miles, raises critical questions regarding potential construction damage to Alyeska.

At the same time, Judge Litt added, Alcan is composed of experienced and knowledgeable companies, at least two of which have extensive experience in building pipelines in both difficult terrain and extreme climates. "The result is that while it has not proved its design or costs, Arctic Gas and El Paso have proven Alcan's general design feasibility and placed outside limits on Alcan's expected costs. At one point or another, a portion of both Arctic Gas and El Paso would go through similar terrain or would be built under similar conditions. . . . In other words, while Alcan did not adduce the evidence to make its case, its piggybacking on those that did gives at least an approximation of what it might cost for comparison purposes."

Operational Factors

Comparing the three projects in terms of fuel usage, heating potential or Btu content, and cheap expansibility, Judge Litt concluded that (1) Arctic Gas, because of its large-diameter, high-compression pipeline, will require less fuel than El Paso or Alcan to transport the same system inlet volume; (2) both Arctic Gas and El Paso, because of the ability of higher-pressure lines to carry a higher proportion of heavier hydrocarbons contained in the wet gas stream, can transport a richer gas stream (i.e., gas with a higher Btu content per cubic foot) than Alcan; and (3) Arctic Gas could expand to carry up to 3.5 Bcf/d of Alaskan gas (assuming maximum volumes of 1 Bcf/d from the Mackenzie Delta) at comparatively low incremental capital cost, thereby providing earlier and cheaper expansibility than El Paso, to expand deliveries beyond 2.4 Bcf/d, which would be required to invest in additional compressors, LNG trains and ships at relatively higher cost. Alcan's claim of cheap expansibility, the Law Judge added, is "nothing but a claim."

With respect to fuel usage, the Law Judge noted estimated fuel requirements of 6.87% for the Arctic Gas project and 13.13% for El Paso Alaska, both assuming a 2.25 Bcf/d case for comparative purposes. The El Paso Alaska estimate, he said, includes fuel usage of 3.17% for transportation-displacement in the Lower 48 States. This fuel usage was estimated by Arctic Gas and is disputed by El Paso. While the record does not permit a determination of the exact fuel requirements for El Paso's proposed Lower 48 transportation-displacement scheme, the Law Judge noted, nevertheless, assuming such usage at only 2% on a 2.25 Bcf/d basis, El Paso's total fuel usage would still be 11.96% compared to 6.87% for Arctic Gas. "This represents a substantial annual saving, exceeding residential consumption in each of a large number of states."

Environmental Considerations

Some 50 pages of Judge Litt's initial decision were devoted to a discussion of environmental objections raised by El Paso, Alcan, the State of Alaska and the Conservation Interveners to routing of the Arctic Gas Project across the Arctic National Wildlife Range. This crossing, it was argued, would destroy "unique" wildlife, wilderness and recreational values of the Wildlife Range and would only lead to a further intrusion of this area in the future.

Judge Litt declared that the Arctic National Wildlife Range must be protected to the extent consistent with its purpose and that any construction through this area should be subject to stringent conditions designed to minimize both short-term and long-term impact. He concluded, however, that pipeline construction by Arctic Gas in the manner proposed -- and subject to appropriate mitigative conditions -- is compatible with the purposes of the reservation as a wildlife range with wilderness values.

Among other things, Judge Litt noted, attitudes toward the Arctic National Wildlife Range depend on subjective evaluations of the terms "unique" and "wilderness." A principal element of "uniqueness" advanced by those opposing a pipeline across the Range, he continued, is one of aesthetics, i.e., the visual aspect from the shoreline to the mountains 20-30 miles distant and the visual unspoiled nature of the Range. However, the FPC Judge observed, a buried pipeline will not interfere with the vista from the coast to the mountains, and it is unlikely that three proposed compressor stations, if built, would bring about any significant visual impairment. Furthermore, he added, smack in the middle of the coastal section of the Wildlife Range is an active Dew Line site (at Barter Island), an airfield, the Village of Kaktovik, and the remains of a long-abandoned Dew Line station at Demarcation Bay. Thus, "the wilderness aspect of the Wildlife Range is maintained by defining Barter Island and Kaktovik out. Similarly dismissed are Demarcation Bay with its beached wrecked ship, temporary native hunting and fishing villages and the Dew Line sites. Arctic Gas cites Lewis Carroll's Humpty Dumpty who said 'When I use the word, it means just what I choose it to mean -- neither more nor less.' Humpty Dumpty would be right at home in a number of briefs filed in this case."

Additionally, Judge Litt stressed that the Arctic National Wildlife Range is not legally a "wilderness" area under the Wilderness Act (which precludes any construction), but rather was created by a Public Land Order in 1960 which expressly provided for issuance of permits under the Mineral Leasing Act -- "a totally useless verbiage if a pipeline right-of-way is excluded." What those opposing Arctic Gas seek, the Law Judge said, is a "bootstrapping from the protection of wildlife in a range to the status of wilderness as if Congress had acted and put the range within the National Wilderness Preservation System." While Congress can effect this change, "the Commission cannot do so as a matter of law."

The Law Judge conceded the argument that construction of a gas pipeline may bring further development within the Wildlife Range, but said this in no way lessens the need for a decision on whether to permit hydrocarbon exploration or to grant such permits as may be in the public interest. In this connection, Judge Litt observed that, considering the present natural gas shortage, exploitation of hydrocarbon reserves is clearly in the public interest, and ultimate incursion into the Wildlife Range for this purpose must be considered a "virtual certainty" unless expressly prohibited by Congress. Therefore, to the extent that such exploitation is likely to occur, "it makes less significant the fact that Arctic Gas is the first major construction project on the eastern reaches of the North Slope since the construction of the Dew Line stations."

Turning to specific impacts of construction across the Arctic National Wildlife Range, the Law Judge found no significant evidence of any serious disturbance to caribou, short-term or long-term, along the Arctic Gas route. Furthermore, he emphasized, the major factor affecting caribou viability in Alaska is not the construction, operation and maintenance of pipelines but rather the state game laws. "Man has been systematically destroying these animals for overhunting, whether by subsistence hunting or sport, to the point where the herds may not be able to maintain population levels necessary for survival. The Forty-Mile Alaska herd, for example, has been reduced in a short period of time from literally hundreds of thousands of animals to a size where it may be exterminated if hunting pressure is not removed. The same could happen to the Porcupine herd, if the same hunting laws are enforced. Therefore, for state and federal officials to sanctimoniously enter into discourses as to whether a pregnant caribou will or will not cross a one- or two-foot high berm, while still permitting almost indiscriminate shooting of these animals by any Alaskan along the migratory route (or any rich hunter wanting a 'double shovel' set of antlers) is illogical."

Further, he concluded, the evidence indicates that the Arctic Gas construction schedule will have neglible impact on polar bears, that sufficient water is available on the North Slope which may be withdrawn for snow road construction without causing significant environmental harm to fish spawning and overwintering areas, that certain fish populations inadvertently damaged by water withdrawal during construction could probably be restocked, and that bird populations on the North Slope will not suffer any serious or long-term effects assuming implementation of satisfactory mitigative measures.

In contrast to the Arctic Gas project which is supported by exhaustive research studies and evidence relating to specific environmental impacts, the FPC Judge said the environmental information pertaining to the El Paso Alaska and Alcan proposals is mostly general in nature and not site-specific. Nevertheless, he noted, a basic environmental advantage stressed by both El Paso and Alcan is the common utility corridor concept (since both proposals would essentially parallel the Alyeska line and, in the case of Alcan, various other pipelines as well as the Alcan Highway). The argument in favor of construction in a common corridor, the Law Judge continued, is that impact will be merely incremental to that already imposed by previous development. However, he declared, this argument appears to rely on a priori expectation rather than actual field research. "El Paso and Alcan have the burden of proving that their respective projects are environmentally acceptable by site-specific evidence, not merely by the fact that they are in a 'corridor.' Each has partially failed to meet this burden, much less show superiority over Arctic Gas."

The Law Judge also discussed potential environmental impacts of pipeline construction by El Paso through the Chugach Forest and its proposed installation of a "once-through sea water cooling system" at the Gravina Point LNG plant. Routing of the pipeline through the Chugach Forest, he concluded, would have significant long-term effects but within acceptable limits if the public interest otherwise requires certification of the El Paso Alaska project. He recommended, however, that El Paso's LNG plant design must include air cooling towers as an alternative, absent a clear showing that its once-through seawater cooling design will not in fact adversely affect the marine biota in Prince William Sound.

In regard to Alcan, the Law Judge said its only advantage on the basis of the record is that it crosses neither the Wildlife Range nor the Chugach Forest. However, he observed, the Alcan project is promoted in part by the same companies which are sponsoring the all-Canadian Maple Leaf project to attach gas in the Mackenzie Delta. Therefore, the Alcan proposal would involve building two pipelines to market the same U.S. and Canadian gas which Arctic Gas proposes to do in one pipeline. "The combined adverse impact of Alcan's facilities far outweighs any environmental savings to the U.S. from building these separate facilities." Morover, Judge Litt added, the same consideration pertains to the El Paso Alaska project. "The overall environmental advantages to the U.S. and Canada in building a single line far exceed an LNG-ship-LNG project at the end of an 800-mile pipeline and an additional 1,000 miles of pipeline for Maple Leaf."

Judge Litt recommended deferral of determination of specific environmental conditions until the second phase of this proceeding when they can be directed to the specific project certificated by the Commission.

Socio-Economic Factors

Judge Litt asserted that the State of Alaska will reap enormous socio-economic benefits from gas pipeline construction, regardless of which project is certificated. The most substantial economic benefit to Alaska, he stated, will come from hydrocarbon severance taxes and royalty payments -- estimated at $135.5 million annually assuming a Prudhoe Bay production of 2.25 Bcf/d and a wellhead price of $1.00/Mcf. This amount will be approximately the same for all projects.

Other socio-economic impacts -- on population, employment, gross state product, personal income, and government revenues and expenditures -- are more difficult to quantify and remain uncertain, the Law Judge continued. For example, while El Paso Alaska and Alcan will create more construction employment in Alaska than Arctic Gas, the number of direct jobs created is not substantial, long-term employment opportunities are few, and a greater population increase will create greater employment disturbances and other immigration problems. Also, Judge Litt observed, there are many uncertainties connected with intrastate use of royalty gas to promote industrial development in Alaska. While the State supports El Paso Alaska as the project best able to encourage industrial development, the present economic realities are not favorable for such development. Moreover, there is a serious question whether the State's anticipated use of gas in Alaska would be compatible with the Federal Government's natural gas end-use policy.

While the views of the State of Alaska -- which supports the El Paso Alaska project on the grounds of greatest net benefits to the State -- are entitled to substantial weight, the FPC Judge concluded, the Natural Gas Act does not permit certification of projects which will benefit one area of the country to the detriment of another. In this case, the great bulk (or all) of the Prudhoe Bay gas will be marketed in the Lower 48 States. While Congress has power to direct that certain actions be taken solely to benefit the economic condition of a particular state or region at the expense of others, no intention was expressed that the FPC create such preferences in performing its duties under the Natural Gas Act. Nor does anything in the Alaska Natural Gas Transportation Act of 1976 require a change in that policy. Thus, "if there exists an alternative system which better meets the overall public interest, it would be contrary to the Commission's accepted regulatory role under the Natural Gas Act to select a particular transportation system at the behest of the State of Alaska in order to accord substantial economic benefits to the State."

Marketability of North Slope Gas

Judge Litt reviewed an Arctic Gas-sponsored study which estimated incremental and rolled-in costs of North Slope gas delivered to eight metropolitan areas in the Lower 48 States (representing the anticipated major markets to be served by the Arctic Gas Group), assuming alternative wellhead prices of 55¢/MMBtu and $1/MMBtu for Alaskan gas (and for new gas supplies developed in the Lower 48). These costs were then compared with competitive energy prices at the citygate of distillate fuel oil, residual fuel oil and electricity. On a rolled-in basis, the estimated cost of Alaskan gas was substantially lower than the price of fuel oil and electricity for all metropolitan areas except in California where parity with fuel oil was shown. On an incremental basis, the price of Alaskan gas was estimated to be lower than fuel oil and electricity except in New York City where gas prices would be equivalent to distillate fuel oil and higher than residual fuel oil. According to the study, however, this price differential in New York would be more than offset by nonprice premiums in excess of 50¢.

The FPC Judge concluded that the above study confirms the marketability of Alaskan gas, on either a rolled-in or incremental basis, "given the assumptions made by its sponsor." 1/

Economics

The Law Judge compared overall unit costs estimated for each project on the basis of 7/1/75 cost levels (with no adjustments for inflation). For this purpose, he looked primarily to costs submitted by each applicant and made certain adjustments (or accepted certain adjustments proposed by others) to achieve greater comparability or to reflect certain modifications or conclusions discussed elsewhere in his decision. The comparison related to proposals to transport initial volumes in the order of 2.0-2.5 Bcf/d from Alaska. The Alcan project was included in the comparison even though, in Judge Litt's view, it cannot be constructed in the time frame proposed (three years) and is incapable of proper cost analysis.

The comparison showed an average cost of $1.60/MMBtu in the fifth year for Arctic Gas, a five-year average cost of $2.15/MMBtu for El Paso Alaska, and a five-year average cost of $1.91/MMBtu for Alcan. Arctic Gas is "clearly superior" under this comparison, Judge Litt asserted. 2/

In arriving at the above figures, the Law Judge adjusted Arctic Gas' estimated fifth year cost of $1.39 for a system transporting 2.25 Bcf/d of Prudhoe Bay gas and 2.25 Bcf/d of Mackenzie Delta gas to reflect the lower volumes expected to be available from the Mackenzie Delta (in the range of 1.0 to 1.5 Bcf/d). The effect of lower volumes of Canadian gas, he noted, is to raise the transportation cost for U.S. gas. Specifically, the cost of service for U.S. deliveries via Arctic Gas was estimated to rise from $1.39 to $1.54 assuming transportation of 1.5 Bcf/d of Canadian gas and to $1.66 assuming transportation of only 1.0 Bcf/d. The midpoint of the two was adopted for comparative purposes. The Law Judge declined to accept El Paso Alaska's proposed adjustments to Arctic Gas' estimates to include construction costs over an additional winter because of various factors alleged to render completion by the scheduled date improbable. Judge Litt noted that Arctic Gas, toward the close of hearings, increased its estimated construction costs in the North Slope region by $330 million -- including $120 million for two more spreads in the final construction winter and $210 million for contingencies -- so as to provide additional resources for completion of construction on schedule.

El Paso Alaska's average cost of $1.88 over the first five years was adjusted by Judge Litt to include an additional financing charge (0.16¢) to achieve financing comparability with Arctic Gas, as well as the estimated incremental cost (0.11¢) of a seventh liquefaction train and ninth LNG tanker determined by the Judge to be necessary to assure reliability of El Paso's 2.4 Bcf/d project.

1/ In another section of his initial decision (relating to financing and tariffs), however, Judge Litt said there were serious questions regarding marketability, primarily because all the prospective beneficiaries are looking for the "top dollar." He also suggested that a $1/MMBtu field price in Alaska might be the maximum if marketability is to be achieved.

2/ In another section of his initial decision, Judge Litt assumed a 20% cost overrun on all of the projects for illustrative purposes. If a 20% cost overrun has a 20% effect on unit costs, he said, the average unit costs for the three projects would become $1.92 (Arctic Gas), $2.58 (El Paso Alaska) and $2.29 (Alcan). "Even at this transmission cost and assuming a rational field price, Arctic Gas is clearly marketable on both an incremental and rolled-in basis. El Paso is marginally so."

With respect to Alcan, the Law Judge adopted a five-year average calculated by Arctic Gas based on certain adjustments to Alcan's estimates. Among other things, the Arctic Gas calculation reflected a deferral (or phasing) of a portion of costs in the first two years of operations to later years, consistent with the approach followed by both Arctic Gas and El Paso Alaska.

The Law Judge made clear that the above comparison was confined to average nationwide costs over a limited period. "Specific costs, including distribution costs, cannot be made on a nationwide basis at this time from this record." Moreover, he declared, the record does not enable estimates of project costs over a 20-year period, either on a nationwide basis or for different regions of the country, as required by the Alaska Natural Gas Transportation Act of 1976. Additionally, the FPC Judge noted, there are presently no tools available to the Commission for performing meaningful and expeditious analyses of the effect of any variations in the applicants' construction or financing assumptions. 1/

Net National Economic Benefits

The Law Judge reviewed net national economic benefit (NNEB) studies submitted by the Department of Interior, Staff, Arctic Gas and El Paso Alaska. As tools for predicting behavior into the future, he said, NNEB studies are still in an embryonic stage of development. Moreover, "to argue that the costs and benefits of these projects standing alone can have a measurable (positive or negative) long-term impact on an economy whose annual GNP measures in the trillions, borders on the fanciful. Comparisons of the small difference in impact of the $2 to $3 billion in any year are totally impossible, given existing tools."

All of the NNEB studies, the Law Judge continued, indicate that each of the three projects here involved will provide a net national economic benefit to the United States. Thus, the only remaining task is to determine, if possible, a relative ranking of the three from an NNEB standpoint. Judge Litt concluded that the Department of Interior model could be used for this limited purpose so long as reliable input data are used. "Precise dollar determinations are not necessary if it can be reliably deduced that one margin favors one applicant over the others." At the same time, the Law Judge added, the Department of Interior model is not necessarily the one best-suited to the task at hand, and it incorporates several variables which are beyond the

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1/ The Law Judge noted that efforts toward the end of the hearings to collect computer software developed by the applicants, for use by the Commission in analyzing the various programs, were only partially successful, not necessarily because of any unwillingness on the part of the applicants to supply material, but because of the limited time available to the Presiding Judge to fully comprehend the logic of all the existing programs as well as to develop additional software to replace the numerous hand calculations performed by each applicant. However, he declared, this computer technology would be of great benefit for the Commission. Accordingly, the FPC Judge directed the parties to supply detailed technical aspects of their computer technology to the Commission, including (1) explanations and workpapers of all manual calculations and all computer software; (2) engineering studies and computer programs used to develop all facility designs and construction estimates; (3) all computer data files used to develop the testimony in this record, and any additional files that may be requested for further analysis by the Commission; and (4) all automated or manual calculations utilized to develop allocated delivered costs to Lower 48 markets, along with current design specifications and contractual arrangements with regard to delivery volumes at specified delivery points.

control of science or diplomacy. Hence, caution should be used in drawing any conclusions from the results derived through application of such model. 1/

On the basis of the evidence, the FPC Judge found that the Arctic Gas project, with a Western Leg, stands to generate a greater net national economic benefit for the United States than either the El Paso or Alcan projects. However, he stated, this finding rests on certain assumptions which, although justified, cannot be considered as "inviolate." Therefore, no more than a "modicum" of weight should be attached to findings based upon the NNEB studies. Judge Litt further made clear that any rearrangement of the three projects on the NNEB ladder would in no way affect his ultimate decision.

Financing and Tariffs

Judge Litt declared that the magnitude of capital investment required for any of the projects here involved is such that the gas transmission company sponsors cannot provide institutional lenders with the degree of security necessary to warrant financing the project. Accordingly, absent credit-worthy private parties, the projects are arguably not financeable without reliance upon either consumers or taxpayers to guarantee project completion and protection of debt service during prolonged service interruptions or premature abandonment. Thus, a significant issue is whether a shifting of traditional risks taken by sellers and transporters to the consumer or taxpayer is in the public interest.

The all-events cost of service tariff proposed by the applicants as well as various tariff modifications proposed by pipeline shippers, the Law Judge noted, are all premised on direct flow through of transportation charges to distributors and then consumers. The sponsoring parties, except El Paso, also suggested the need for federal financial guarantees of some sort. 2/ Staff, New York and California, on the other hand, opposed a shifting of project risks to consumers, while the Treasury Department opposed any steps to involve taxpayers as a guarantor of the project and instead urges that consumers bear at least a portion of financial risks.

1/ The Department of Interior model developed net national economic benefits for hypothetical projects similar to those proposed by Arctic Gas and El Paso Alaska, and for a Fairbanks-Alcan alternative close to the route subsequently proposed by Alcan-Northwest. The study determined an NNEB of $8.7 billion for the hypothetical project similar to Arctic Gas, compared with $7.8 billion for the El Paso alternative. The advantage in favor of the Arctic Gas hypothetical was attributed to relatively lower fuel usage, a lower U.S. share of the cost of the transportation system, and a lower cost of facilities required to carry out a displacement plan. (See REPORT NOS. 1031, pp11-18; 1077, App. pp1-10.)

2/ Judge Litt dismissed El Paso's view that an Alaskan gas transportation system can be financed without federal guarantees provided that (1) the Commission authorizes an all-events cost of service transportation tariff and preoperational surcharge provisions in shippers' tariffs, and amends tariffs of FPC-regulated pipeline purchasers to require that all costs be shifted by state-regulated distributors directly to ultimate consumers, and (2) pipeline purchasers accept the legal theory that future Commissions cannot substantially modify the consumer guarantees under the all-events cost of service tariffs, and that state utility commissions will be unable to prevent timely flowthrough of costs to consumers. While this theory has "substantial merit," the Law Judge said, it can be given "no practical credence" because of its unacceptability to prospective pipeline purchasers.

The FPC Judge concluded that the final financing arrangement should involve assumption of risks by both consumers and taxpayers, and that the Commission and the Treasury Department should cooperate in working out such an arrangement to permit proper financing at reasonable rates. Based on the premise that there is a need for Alaskan gas and that any unusually high price demands for either unattractively located gas supply or relatively low-risk money are not met, the Law Judge declared that "shifting a portion of risk for securing this gas supply to the consumer is in the public interest." However, if the risk is shifted, "Treasury should be prepared either to sell noncompletion or sustained outage insurance or enter into some other type of arrangement to remove the remote risk" of noncompletion or sustained outage. "Coming behind a consumer guarantee of debt service and the sponsors' risk of equity capital, this limited contribution would sustantially reduce the costs of debt capital and might help attract equity."

More specifically, with respect to the shifting or sharing of risks, Judge Litt found as follows: (1) consumers -- as one of the principal beneficiaries of attaching North Slope gas supplies -- should participate in guaranteeing project risks, but only to the extent of debt service; (2) equity holders should accept the usual risk of equity investment, with no guarantee of return of or return on equity investment in the event of prolonged outage; (3) the Federal Government should entertain an insurance or completion guarantee arrangement to facilitate raising project debt capital at a more reasonable cost, thereby reducing the cost of gas to consumers; and (4) legislation to perfect tracking of debt service costs to the consumer level and to approve Treasury participation is necessary.

Judge Litt emphasized that two other creditworthy parties -- namely, the Prudhoe Bay producers and the State of Alaska, both direct financial beneficiaries of Alaskan gas sales -- have declined to offer any financial assistance, either through debt or equity participation, or any form of cost overrun guarantees. Rather, the producers have raised constitutional objections to any arrangements linking sales or sale prices to financing participation, indicated a reluctance to expand energy-oriented activities while faced with divestiture proposals, and cited the desirability of investing discretionary capital in nonregulated business ventures. Moreover, the Law Judge noted, "several of the producers also pleaded poverty, since other investments, including nonenergy-oriented ones like Mobil's recent purchase of Marcor or Arco's purchase of Anaconda Co., have reduced both their available cash and their ability to undertake the level of guarantees which would assure lenders repayment of debt and equity."

The FPC Judge continued as follows:

> "Realistically, in the time frame necessary to expeditiously finance these projects, the Commission is incapable of more than strongly suggesting to the producers that their financial assistance to these projects is both fair and proper and in their best interests. However, if the President and Congress deem it appropriate that the producers, as chief beneficiaries of the sale of Alaskan hydrocarbons, should participate in financing construction of a transportation system to market their product -- a position pressed obliquely by the Department of Treasury representatives on the record and on brief -- legislative methods may be pursued, as Treasury hinted, to secure such participation. If that should occur, many of the problems . . . will become less significant."

As for the State of Alaska, Judge Litt said there is no evidence that other states have participated in financing this type of gas pipeline project. However, in

view of Alaska's avowed intentions to invest its revenues and the high rate of return suggested here for both equity and debt, "the State may see this as a better investment than it can receive elsewhere." Moreover, if the tariffs require the ultimate consumers to shoulder full debt service responsibility and the bonds achieve debt ratings satisfactory to the New York State Insurance Commission, "they would probably also satisfy the State of Alaska's investment trust fiduciary. Nevertheless, such investments are voluntary, and the State of Alaska has not volunteered."

The FPC Judge also raised questions concerning the marketability of Alaskan gas from the standpoint of financing. Unlike most past pipeline certificate cases where large residential, commercial and industrial markets could be assumed, he explained, "here we have a constantly shrinking industrial load which will have cost consequences because lower-priority supply shortages will cause a significant shift in load factor consideration. The higher priority market remaining could well prove sensitive to price, and the unspoken message from the financial community is that the time has come to assess the risk of nonsaleability. It is now apparent that the financial community has raised a warning flag; to ignore this sub silentio questioning would be foolhardy."

One of the prime reasons for the high projected prices of delivered Alaskan gas, Judge Litt continued, is the makeup of the project.

> "Rather than the usual business compromises arranged both to make a marketable product and to split the benefits among those who will gain the financial advantages from a successful venture, all of the prospective beneficiaries are looking for the top dollar. The producers and State of Alaska want a high wellhead gas price even though (1) their overall profit from their North Slope investment is already assured by the sale of the Prudhoe Bay oil under FEA regulations, (2) the product is at the end of an expensive transportation system, and (3) the market is no longer assured. Governor Jay S. Hammond of Alaska, for example, sought and will probably seek again Alaskan legislative approval to raise the severance tax on hydrocarbons from 4% to 10%. Access without equity contribution, withdrawal, underlifting and a host of other proposals put Alaska in the forefront of seeking special treatment at the consumer's expense. . . . [T]he pipeline shippers want consumer guarantees to repay their equity investment but still seek 15% to 17% after tax returns in what could be a low-risk situation. The financial community in general also wants a high rate of return regardless of how the risk might be reduced by consumer or taxpayer guarantees. In the common vernacular, 'everyone has his hand out.' It is in large measure the combination of these elements which creates the serious questions of marketability and, in turn, financeability. Only a limitation on the field price of gas to reflect its value and a reduction on investment returns to reflect limitations on risk can bring these projects 'in from the cold.'"

In short, the Law Judge said, the marketability of Alaskan gas is questionable, with no final determination possible until gas sales contracts are signed. Thus, the matter must be considered again as part of the overall presentation of producer sales contracts and financing at the next phase of these proceedings. Nevertheless, he added, the energy involved here is needed and should be secured. For this reason, project financing will require either consumer or government backstopping, or both, to guarantee project completion.

Further, Judge Litt declared, a crucial element of marketability is the field price of Prudhoe Bay gas, as yet unknown. Such price, he noted, will include not only the purchase of gas but also the cost of gas gathering and conditioning facilities which, on the basis of some untested producer calculations, may total about one-half of the unit cost of transportation system. Hence, the unit cost will be high. At the same time, the FPC Judge observed, the Prudhoe Bay Field is more remote from market than any other domestic supply previously attached, the cost of transporting this gas to market far exceeds that of the most expensive gas transmission line previously built, and gas will be produced as an adjunct to the production of oil. Therefore, the unit value of gas in the field "cannot be favorably compared with production from fields in West Virginia, Michigan or California, located close to market where existing facilities can be used for transportation -- or, for that matter, from fields in the Lower 48 States generally."

These considerations, Judge Litt declared, strongly suggest that a field price for Prudhoe Bay gas should be determined by backing off transportation costs from alternative energy prices in the market. A field price established at a level higher than such value "will sink this project." If the delivered cost of Prudhoe Bay gas "is such that the high-priority consumers which constitute the market are prompted to turn to other energy supplies, the project is uneconomic." Further, the Law Judge stated, "no one should be misled into the belief that this Commission must fix, on an allocated cost-plus basis, a field price for Alaskan gas in excess of its intrinsic market value."

In the above connection, the FPC Judge called attention to Arctic Gas' estimate of $2.41/MMBtu (including a $1/MMBtu field price) as the average citygate cost of Alaskan gas delivered to various Lower 48 markets (in 1975 dollars), as compared with costs of $2.61 for distillate fuel oil, $2.59 for residual fuel oil and $6.89 for electricity. Assuming continuation of these price relationships between competing energy supplies in the future, a premium value of $0.65/MMBtu for natural gas, and an actual transportation cost of $2.00/MMBtu in 1975 dollars, "Alaskan gas with a field price of $1.00/MMBtu would prove to be marketable on an incremental basis." But, the Law Judge declared, a price of $1.00/MMBtu at the inlet of the transmission system (i.e., after gathering and conditioning) "is, in all likelihood, close to the maximum that this gas could command in the field and still be marketable under present market conditions. . . . However, depending upon the ultimate costs of the gathering system and conditioning plant, as well as the allocation of those costs between pipeline gas and the large volume of removable liquids, there would nevertheless appear to be a substantial return to the producers from a total field price at or below $1.00/MMBtu."

Turning to rate of return, the Law Judge said neither the cost of debt capital nor a definite rate of return on equity can be fixed at this juncture. Therefore, determination of a specific rate of return must await the next phase of this proceeding. Nevertheless, Judge Litt observed, the range of equity returns (15% to 17%) sought by the applicants here -- on investments which, under proposed tariff mechanisms, would be virtually insulated from risk through the ability to write off charges in the event of project abandonment or prolonged outages -- is roughly two to three percentage points higher than the highest rate of return previously approved by the Commission for pipeline companies. Specifically, the highest rates of return on common equity allowed by the Commission in recent years for interstate gas pipelines are 13.5% and 13.75%. While these pipelines were not faced with the risks inherent in constructing and operating an Alaskan gas transportation system, "neither did they have the degree of insulation from risk sought by equity investors in the Alaskan project."

Nevertheless, Judge Litt added, in view of the finding that neither return of nor return on equity should be allowed in the event of project noncompletion or sustained or permanent outage, some increment above the previous high pipeline rates of return may be warranted. He suggested 14% to 15% as an "upper limit" -- or, alternatively, 12% to 13% if a partial return of equity were to be allowed in the event of noncompletion or premature abandonment.

Still another issue bearing on financing, the Law Judge said, concerns incremental versus rolled-in pricing. He concluded that, "when, as here, the new gas supply will simply replenish the diminishing existing supply in high-priority markets, incremental pricing to the burner tip would merely introduce unnecessary and avoidable administrative problems which this Commission should not encourage." Deferral of this issue to a subsequent phase of this case -- as urged by Staff, Judge Litt added, would only "further imperil, if not frustrate, the timely financeability of an Alaskan gas transportation system."

The Law Judge also reviewed the feasibility of the different financing plans proposed by the three applicants. (A detailed analysis of these plans was included in a 22-page appendix to the initial decision.) Based on this review, he concluded that financing of the El Paso project appears to be the most feasible, even though certain provisions must be altered. The Arctic Gas project can also be financed, but capital cost premiums and financial restrictions, inherent in its binational makeup, produce less flexibility and higher capital costs. However, there is serious doubt regarding the feasibility of financing Alcan because of the possibility of simultaneous financing of the Maple Leaf project. On the other hand, if Maple Leaf is not in the picture, "there appears to be adequate market capacity in the U.S. and Canada for Alcan to obtain financing."

Next, Judge Litt discussed various proposals designed to permit pre-operations charges to consumers, generally equivalent to prepayment of return on equity, in order to generate cash flow for regulated shippers prior to commencement of deliveries. A number of tariff provisions advanced toward this end, the Law Judge noted, are essentially variations on the basic concept of including construction work in progress (CWIP) in rate base during construction (as opposed to capitalizing AFUDC during construction and putting it in the rate base once operations have begun). The FPC Judge supported the need for consumer prepayment of carrying costs to assist the financing of equity investment. Each pipeline shipper, he noted, must raise its share of an enormous amount of equity capital on the basis of its own credit standing. However, just as the financial wherewithal of these shippers to guarantee project debt is nonexistent, "it also appears that they do not have the ability to raise equity funds absent the generation of cash flow during the construction stage."

None of the reasons advanced by the Commission in Order No. 555 (issued 11/8/76) for excluding interstate gas pipelines from the limited scope of its new policy to allow inclusion of CWIP in the rate base, the FPC Judge noted, is applicable to the Alaskan gas transportation proposals. Moreover, the problem of "intergenerational transfer," which apparently caused the Commission to limit Order No. 555 to certain types of electric utility construction (pollution control facilities and conversions of generating plants to alternate fuels), "is small in the instant case because Alaskan gas should flow within four years of the first surcharge payments." Also, a properly designed pre-operations consumer surcharge is not inequitable to present ratepayers since "benefits flowing from a surcharge for equity returns inure not only to future ratepayers but also to present ratepayers, the most obvious benefit being assurance of continued gas supplies." Another benefit, Judge Litt added, is a lower rate of return on project equity which should flow from the reduction in burdens on the utilities' overall capital structures.

The Law Judge made no attempt to choose a method from among the several proposed to establish a pre-operations surcharge. However, the so-called Method 4 sponsored by Arctic Gas "may well constitute the basic guide for crafting an appropriate provision." 1/

Finally, in regard to specific tariff provisions, Judge Litt (1) recommended a 90% level of performance as the cutoff below which penalties (in the form of a pro rata reduction of return on equity) would apply if a transporter were unable to accept deliveries (the applicants all proposed an 80% cutoff, while Staff urged 100% performance); (2) endorsed El Paso Alaska's suggestion that carrying costs on construction expenditures, after passing Commission audit, should be permitted to be flowed through immediately by pipeline shippers to consumers; (3) recommended that project cost of service tariffs be conditioned to prevent the commencement of billing until such time as contract service can be rendered (the tariffs of companies involved in the Arctic Gas and Alcan groups provided for commencement of billing by each company as soon as facilities are in place, regardless of whether service is actually rendered); (4) found no reason to reject the monthly billing procedure proposed by Arctic Gas and Northern Border on the basis of estimated costs over a six-month period, with adjustments in subseequent billing periods to reflect any deviations from actual costs (this method was opposed by Staff which advocated monthly billing on the basis of actual costs); and (5) supported Staff's proposal for a fixed interim rate, rather than the cost "phasing" procedure recommended by Arctic Gas.

Canadian Issues

The Law Judge said the principal dispute regarding Canadian matters at this time relates to political issues -- including how Canada will act and when it will act.

As to timing, the FPC Judge noted that a decision by the NEB is anticipated in the spring or early summer of 1977 and that a report by Mr. Justice Berger on native claims in the Yukon and Northwest Territories (including the Mackenzie Valley) is expected in the early spring of 1977. As to the latter, Judge Litt considered it unlikely that native claims will significantly modify the Canadian Government's energy decision.

El Paso contends, Judge Litt continued, that Canada will act in the "best interests" of Canadians, which are not necessarily the "best interests" of the U.S. Moreover, despite the hydrocarbon transit treaty negotiated by the U.S. and Canada, 2/

1/ Method 4 would permit each sponsoring pipeline subject to FPC jurisdiction to annually charge its customers a percentage of its accumulated equity investment in the project companies (Alaskan Arctic, Canadian Arctic and Northern Border), the charge generating enough cash flow to cover the carrying costs of each sponsor's equity investment. A figure of 15% is suggested. The charge would commence upon the first equity investment, would be collected throughout the construction period, and would continue to be collected for up to the first 10 years of project operations, although the equity investment to which this percentage is applied would be reduced by at least 10% for each of these first 10 years of operations. The sponsors could accelerate this 10% reduction of equity investment so as to stop customer charges before the end of 10 operating years. Once the project commenced operations, the sponsoring pipelines (shippers) would start refunding to their customers the full amount of the Method 4 charges collected with compound interest (at the Commission-prescribed rate). The refund period would be set by the Commission, though 20 years is recommended.

2/ This treaty was signed by the Canadian Ambassador to the United States and the Assistant Secretary of State on 1/28/77. The treaty is still subject to ratification by both countries.

El Paso suggests that the Canadian Government could remain within the law but still take actions unreasonable from a U.S. point of view in allocating costs of future capacity, granting applications for line expansion, taxes, and other areas within the ambit of Canadian policy.

> "The El Paso Canadian Reply Brief is as well crafted a chamber of horrors as this writer has ever seen and would do justice to the standards set by the Marquis de Sade if he had been interested in economics and politics. But that is also its undoing, for the questions so piously raised for the most part are no more than unrealistic speculations which, if valid, might be as applicable to El Paso's Alaskan and Algerian endeavors as to the Arctic Gas and Alcan proposals here to cross Canada. If El Paso can argue to the American consumer that the gas supply from Algeria will remain constant for the next 20 years or that tax treatment by Alaska will remain constant for a similar period, reliance factors which impact most heavily on El Paso, it cannot at the same time expect its arguments against the reliability of Canada to be given much weight."

Judge Litt acknowledged that there was little justification, from the U.S. consumer standpoint, for actions of the British Columbia Government in requiring the entire burden of curtailments by Westcoast Transmission in the past few years (due to production failures) to be imposed entirely on U.S. customers and none on Canadian customers. On the other hand, he saw nothing untoward in Canadian Government actions raising the export price of gas -- most recently to $1.94 as of 1/1/77 -- in order to achieve a pricing scheme consistent with the commodity value of gas in relation to other fuels.

Also, the Law Judge noted, charges regarding Canadian unreliability ignore "historical facts," namely, a constancy in relationships extending back almost 200 years. If the future Canadian Government were predisposed to act unreasonably, "such imprudence could be countered with equally unsavory activities on the part of the U.S." Still another factor, Judge Litt added, is that, whatever the Canadian Government's decision regarding the continuation or expansion of gas exports to the U.S. in the future, the attachment of Canadian frontier gas reserves can only help U.S. prospects.

SCOMM

#21:20

Senator Ruder

INTERIM REPORT

AND

TESTIMONY SUBMITTED TO JOINT GAS PIPELINE COMMITTEE

PUBLIC HEARINGS

FEBRUARY 17 - 20, 1976

TABLE OF CONTENTS

ITEM NO.		PAGE
I.	Interim Report of the Joint Gas Pipeline Impact Committee.....	1
II.	Agenda - Gas Hearings (February 17,18,19).....	5
III.	Natural Gas Fact Sheet.....	7
IV.	Baker & Botts Report, Rush Moody.....	8
V.	Letter - Herbert Lehfeldt.....	22
VI.	Letter - R.L. Hufman.....	23
VII.	Letter - Dale Teel, Alaska Pipeline Co. (February 16).....	24
VIII.	Letter - Dale Teel, Alaska Pipeline Co. (February 9).....	29
IX.	Cumulative Reserves Graph.....	31
X.	Use of Natural Gas in Alaska, George Silides, P.E.	32
XI.	Testimony - Bob Hartig, OMAR.....	43
XII.	Letter - K.R. Keep, B.P. Alaska, Inc. (February 17).....	48
XIII.	Report - J. Gore, B.P. North America, Inc.	53
XIV.	Sadlerochit Sand Reservoir Oil Data.....	64
XV.	Report on Methanol/Methyl Fuel, Franklin Fleeks.....	65
XVI.	Letter - Lanzer Economics Assocs. (February 13).....	75
XVII.	Total Value of Income from Twenty Years Production.....	79
XVIII.	Methyl-Fuel Report, Wentworth Brothers.....	80
XIX.	Stanford Research Institute Report.....	84
XX.	Letter - Fairbanks Industrial Development Corp. (Feb. 5).....110	
XXI.	Testimony - Thomas Stahr, Anchorage Municipal Light & Power....113	
XXII.	Testimony - John Bennett, El Paso.....114	
XXIII.	Testimony - Howard Slack, Atlantic Richfield Company.....122	
XXIV.	Report - Federal Power Commission/ARCO.....136	
XXV.	Testimony - W.Ray Booth, Exxon Co. U.S.A. 163	
XXVI.	Exhibit A, Exxon.....175	
XXVII.	Exhibit B, Exxon.....196	
XXVIII.	Testimony - Sharron Lobaugh, Alaska Conservation Society..... 202	

INTERIM REPORT
OF THE
JOINT GAS PIPELINE IMPACT COMMITTEE

This Committee, through public hearings and staff investigation, has become convinced that immediate action by the State of Alaska is essential if the citizens of this State are to receive maximum benefit from the State's natural gas resource.

The Committee will issue a full and complete report on its findings and recommendations at a later date, but is impelled to submit this interim report to the Legislature and the people of the State of Alaska because of the urgency of the present situation.

The Committee finds and concludes the following:

1. A federal decision authorizing the transportation of North Slope natural gas across Canada would be inimical to the interests of the State of Alaska. The State's resource would be drained, its people denied access to a premium fuel and raw material, its work force deprived of employment opportunities, and productive economic growth would be thwarted.
2. A federal decision authorizing the transportation of North Slope natural gas across the State of Alaska to an open port will serve the best interests of the State.
3. The level of benefits, and burdens reasonably to be expected by the State as a consequence of any decision on a North Slope gas transportation system are of such magnitude that the routing decision must be regarded as critical to the future of the State. Action to secure a Trans-Alaska routing must be pursued as expeditiously as possible; no reasonable step should be left untaken.
4. The position of the state as owner of a one-eighth royalty in natural

gas and natural gas liquids produced from State-owned lands on the North Slope creates an immediate opportunity for effective State action which can assist in securing a Trans-Alaska transportation system.

5. Affirmative, agressive action by the Governor, the Commissioner of Natural Resources, the State Royalty Board, and the Legislature with respect to the State's royalty gas is imperative.
6. Effective use of the State's royalty gas, to serve the best interests of the State, requires:
   a. The State must elect to take its royalty share of natural gas and natural gas liquids in kind.
   b. The State must commit a portion of its royalty gas to purchasers who will assist in securing approval of a Trans-Alaska transportation system, and who will thereafter utilize such a Trans-Alaska system.
7. Present levels of natural gas demand in Alaska permit a commitment of a portion of the State's royalty gas to purchasers outside the State; while every effort must be made to retain a substantial part of Alaska's gas for present and future in-state needs, it is in the overall best interests of the State to offer for sale outside the State, a substantial portion of the State's royalty gas to purchasers who can, and will, assist in securing authorization of a Trans-Alaska transportation system.
8. Those persons and firms interested in the construction and operation of a Trans-Alaska transportation system can materially alleviate State unemployment problems, and the State should, in striking a bargain for the commitment of State resources to a Trans-Alaska

system, secure appropriate commitments for the hire and training of Alaska residents in the construction and operation of such a system.

9. Finally, the risk that non-action by the State, or delayed action by the State, will cause the selection of a Trans-Canadian routing, and the risk that the State will lose substantial benefit of its natural gas resource are so great, it is the sense of this Committee that State action must not be delayed.

BY REASON OF THE FOREGOING, IT IS THE RECOMMENDATION OF THIS COMMITTEE THAT:

1. The commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with interested out-of-state purchasers to reach definitive sales and/or exchange agreements covering disposition of substantial portions of the State's royalty gas on the best obtainable terms.
2. The Commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with natural gas transporters involved in the proposal for a Trans-Alaska system to reach definitive transportation agreements covering the State's royalty gas sold for out-of-state use, and the State's withdrawal of the unsold portion of its royalty gas from the system for in-state use; appropriate commitments should be obtained with respect to hire and training of Alaska residents.
3. The arrangements and agreements so negotiated should be presented to the Legislature for ratification prior to the end of the Second Session of the Ninth Legislature to avoid, if possible, a special session.
4. The Legislature should hold itself ready for immediate consideration

of and prompt action on, the recommendations of the Commissioner and Board.

5. Such arrangements, contracts, and agreements as are negotiated by the Commissioner and Board and approved by the Legislature should be incorporated into the pending applications for a Trans-Alaska transportation system, presented to the Federal Power Commission by the appropriate transporter-applicant, and approval thereof obtained in the pending Federal Power Commission proceedings.

6. The Legislature should adopt SCR 66 and further seek the active cooperation of all owners of North Slope gas in support of the Trans-Alaska pipeline route.

Alaska State Legislature

Senate

JUNEAU, ALASKA

A G E N D A

GAS PIPELINE IMPACT COMMITTEE

PUBLIC HEARINGS

FEBRUARY 17, 18, & 19 - Supreme Courtroom A, 1-5 PM

FEBRUARY 17

1:00 PM NBC Whitepaper "Natural Gas"

1:45 PM Rush Moody Jr.

3:00 PM George Sellides - Uses of Natural Gas in Alaska

3:30 PM Anchorage Natural Gas, Dale Teel

4:00 PM OMAR

4:30 PM BP Alaska, Joe Josephson

FEBRUARY 18

1:00 PM Legislative Committee on Taxation and Revenue

1:30 PM Wentworth Brothers, J.J. Schons

2:30 PM Fairbanks Industrial Corporation,
Associated General Contractors, Conrad Frank

3:00 PM National Electrical Contractors Association, Julius Kornfiend

3:30 PM Federal Labor Council of Fairbanks, Dave Rasley

4:00 PM Anchorage Municipal Light and Power, Tom Stahr

4:30 PM State of Alaska, Patrick Dobey

FEBRUARY 19

1:00 PM State of Alaska, Guy Martin, William Fackler, Easy Gilbreth

2:00 PM El Paso

3:00 PM Tenneco

3:30 PM ARCO

4:00 PM Exxon

4:30 PM Collier Chemical Corporation

NATURAL GAS FACT SHEET

SADELROCHIT RESERVOIR

Estimated reserves= 26 to 32 Trillion Cubic Feet (TCF)
Estimated daily flow from pipeline= 2.5 Billion Cubic Feet* (BCF)
Estimated yearly flow = .9 Trillion Cubic Feet

Alaska's royalty share= 3.25--4 TCF
Daily royalty share = 312 Million Cubic Feet (MMCF)
Yearly royalty share = 114 BCF

*Department of Interior study.
More proven reserves are expected to be proven in the North Slope area.

ALASKAN USE

Almost all the natural gas used in Alaska is in the Cook Inlet area.

Anchorage Natural Gas uses about 30 BCF per year.
That is equal to 12 days production from Prudhoe Bay.
On a cold day in Anchorage, about 120 MMCF is used.
Anchorage Natural Gas has firm commitments for 10--15 years of gas from Cook Inlet.

Phillips Petroleum uses about 61 BCF per year, most of which is liquified and shipped to Japan.

Collier Chemical Corporation uses about 21 BCF per year in their Ammonia/Urea plant. They are now doubling their operation.

One thousand cubic feet of gas (1 MCF) is equal to about 1 Million BTU. North Slope gas is particularly "rich" at about 1.1 MMBTU.

Six MCF of gas is roughly equal to one barrel of oil.

Consumers are willing to pay a premium for gas. It is a clean energy source.
On strictly energy equivalent, $2.00 per MCF gas = $12 barrel oil.
Considering the advantages of using gas, $2.00 gas = $9 barrel oil.

United States gas production has declined from a peak of about 62 BCF per day in 1973 to 55 BCF/day in 1975.

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January 14, 1976

Senator John Rader, Chairman
Joint Gas Pipeline Impact Committee
The Legislature of the State of Alaska
Juneau, Alaska 99801

Dear Senator Rader:

Your Committee has asked me to address certain issues relative to the transportation of Alaska natural gas, assuming for the purpose of my analysis that there will be gas available for sale from the North Slope. 1/

I propose to set forth in this letter the conclusions that I have reached as a result of my research and my knowledge of the Federal Power Commission, together with certain alternatives which the State might wish to consider. To this letter I will append the legal analysis which leads to the conclusions expressed herein.

1/ You are aware of the possibility that natural gas production for sale may have a detrimental effect on the recovery of oil. Studies conducted by the Department of the Interior and by H.K. Van Poolen and Associates raise questions in this regard which are now being examined by the Committee. This issue is, I agree, of critical importance to State consideration of natural gas transportation issues, inasmuch as the State may find it necessary, for reasons of conservation, to limit natural gas production or require reinjection of associated natural gas for maintenance of reservoir pressure. Such conservation actions are, in my opinion, legally permissable if necessary to prevent waste, see pp. 85-94 of attached analysis, but might result in an indefinite postponement of a natural gas transportation system.

From the outset, I need to make clear my recognition, that State policy relative to natural gas will develop, as it should, through processes of government, and that these policy decisions will involve consideration of far more than questions of law and Federal policy. What I offer can be only a part of the whole which the State will consider as the State moves forward to a sound an productive policy of resource management. 2/

As a substantive starting point in my report to you, it is my judgment that the State should, from the standpoint of legal consequences, decide as quickly as possible the ultimate goals of State natural gas policy. If the State has a strong concern for a retention of a portion of Alaska gas for future Alaska needs, affirmative and aggressive State action will be necessary. Non-action by the State with respect to disposition and transportation of North Slope natural gas threatens permanent loss of the gas resources insofar as Alaska consumers are concerned; non-action creates a risk that natural gas produced in Alaska will not be available to fulfill future Alaska residential or industrial needs.

Let us assume that the El Paso, Trans-Alaska transportation route is authorized. Non-action by the State will result, sooner or later, in producer sales of eight-eighths of the natural gas stream in interstate commerce, either to an interstate pipeline, to distributors in the lower 48 states, or to direct users in the lower 48 states; and non-action by the state will result in the construction and operation of an interstate transportation system designed for, and financed on, the expectation of the flow of eight-eighths of the deliverable natural gas from the North Slope. If the State permits, by non-action, these developments, then certain legal consequences may be expected.

2/ I would ask it to be understood that my opinions do not reflect considerations outside my area of knowledge and training; I have no basis, for example, for advice on environmental or economic factors; nor can I gauge the will of the citizens of Alaska concerning economic growth and industrial development; nor can I estimate how strong will be the demand for revenue because of programs which the State may determine are necessary.

The issues which I address are, therefore, approached only from the relatively narrow standpoint of law and Federal regulation. I do not presume to prescribe what is "right" or "good" for the State. These determinations are peculiarly within the province of this Legislature, which will, I am sure, look to a much broader range of considerations, information, and analysis than are within my capabilities.

1. If producers market Alaska natural gas in interstate commerce, paying the State a one-eighth royalty in cash, the Federal Power Commission can assert jurisdiction over eight-eighths of Alaska production, and thereby attempt to prevent any later efforts by the producers, or by the State, to withdraw the State's one-eighth royalty share for an in-kind taking by the State for use in the State. (pp. 64-73) 3

2. In the event of such a sale by producers to an interstate pipeline, and in the event of FPC denial of a request to withdraw State royalty gas, the only means for securing gas service in Alaska would be through a future demand by Alaska municipalities or distributors for service by the pipeline; such a request may be treated by the FPC, and lower 48 pipeline or distributor customers, as a request for new service which cannot lawfully be authorized. If the pipeline, at the time of the demand, is unable to render adequate service to its non-Alaska customers, or if grant of the Alaska demand would require to enlargement of pipeline transportation facilities, the Commission may be required, by law, to refuse demands for Alaska service -- even for residential and public service needs.

3. If Alaska can successfully claim -- contrary to the hypothesis in Paragraph 2 -- status as an existing customer, pipeline natural gas supplies would be shared by Alaska and non-Alaska customers on the basis of FPC curtailment priorities and allocation orders.

4. In the event of direct sale by producers to end users in the lower 48 states, or sale to distribution companies in the lower 48 states, there is no clear legal mechanism available to the State of Alaska to secure any portion of the natural gas produced in Alaska for future Alaska needs as they may develop.

Non-action by the State, in my judgment, creates serious risk that Alaska natural gas will not be available for future Alaska needs, even if the El Paso transportation proposal prevails. It is not just the

3/ Page references here and later in this letter are to the attached legal analysis.

potential industrial gas demand (which may or may not be a matter of State concern, dependent on the will of the citizenry with respect to industrial development) that is at risk. The needs of Fairbanks, and other communities, for residential service and service to schools, hospitals, and the like is also threatened.

The risk can be lessened by appropriate State action, as hereinafter discussed, if a trans-Alaska routing is authorized. If a trans-Canada routing is selected, whereby North Slope natural gas leaves Alaska north of the Arctic Circle, the State has no means of protecting its future gas needs. The routing question is, therefore, critical to the State -- at least in the context of future availability of Alaska gas for future Alaska needs. 4/

I am of the firm opinion that neither of the present proposals for transportation of North Slope natural gas offers a substantial guarantee that Alaska natural gas needs will be met. If either the El Paso or the Arctic Gas proposal is approved as presently submitted, the State could well find itself unable to draw upon its own gas resources to meet the future needs of the State.

The problems here are inherent in the nature of the applications and the Natural Gas Act: if the Arctic gas proposal prevails, there is no physical means to move gas from North Slope areas to the State's population centers; the Arctic gas routing will simply preclude gas movement within the State since the gas will leave the State north of the Arctic Circle. If, on the other hand, the El Paso proposal prevails on the basis of present filings with the FPC, the full natural gas stream will begin movement in interstate commerce, and even though it may be physically possible to withdraw gas where and when needed in Alaska, it may be legally impermissible to do so.

4/ Whatever the transportation route, natural gas production and transportation may reasonably be expected to contribute significant revenues and economic activity to the State. Accordingly, even if the transportation system which is Federally authorized does not lend itself to serving state natural gas needs, benefits to the State still might result from natural gas production, and transportation. A decision in this regard involves a balancing of economic, environmental, and political considerations which are beyond the scope of the requested analysis, and outside the scope of my knowledge and experience.

The State's present danger stems from the fact that certificates may issue, and interstate service may commence, without formal recognition of the State's needs. Interstate service unconditioned to Alaska's rights, creates grave problems concerning later attempts by the State to withdraw gas from the system -- problems which arise under Granite City Steel Co., v. FPC, 320 F2d 711 (C. A. D. C.. 1963) which suggests that gas customers in Alaska may not be added as pipeline customers if the pipeline is, at the time service to new customers is sought, then unable to meet the needs of existing customers; under Sec. 7(b) of the Natural Gas Act as interpreted by the Commission, which suggests that a partial diversion of the interstate natural gas stream will not be permitted without prior Commission authorization; and under Louisiana Public Service Commission v. FPC, 359 F2 524 (C. A. 5, 1966) cert. den'd. 385 U.S. 833, which holds that commingling of non-jurisdictional natural gas with jurisdictional natural gas results in a single gas stream which is wholly jurisdictional.

It does not follow, however, that Alaska is powerless to influence the movement of North Slope gas in a manner more nearly suited to the State's future gas needs than the proposals now pending. To the contrary, I believe there are reasonable courses of action which the State can pursue.

The State may exercise the option set forth in its oil and gas leases to take royalty gas in kind, and market this production separately from working interest gas; the State need not seek FPC authorization for royalty sales, and should limit the term thereof to the extent possible.

I believe that it would be most unwise, under present circumstances, to permit the producing companies which hold leases on State lands to market the State's royalty share of gas production. If marketing occurs, with the gas moving in interstate commerce, the problems summarized above -- and particularly the Sec. 7(b) abandonment problem -- stand as very real threats to later withdrawal of State royalty gas from the marketing arrangements made by the producers. Most simply put, if 8/8ths of the gas stream is committed to interstate commerce by delivery under an unconditional producer certificate of public convenience and necessity, withdrawal of the royalty 1/8th at a later date may require

FPC approval -- which may, or may not, be forthcoming. This is the lesson of FPC Docket N. C171-879, Superior Oil Company, Letter Order issued June 13, 1975. (pp 64-73).

This particular problem can be mitigated if the State exercises its option, prior to the delivery of any gas, to take its royalty share in kind, with appropriate notice to producer, purchaser, and FPC that the producer is without authority to market the State's natural gas.

The State should, therefore, negotiate for separate sale of its royalty gas on the best terms available, giving due consideration to a relatively short-term sale. The State should take the position that it is not subject to the Natural Gas Act, nor to the jurisdiction of the FPC, and that the State is therefore free to make sales for resale in interstate commerce (or in any other market), without certificate authority, and without restriction as to rates or terms of service. This position, though clouded by the Court decision in FPC v. Corp. Comm. of Oklahoma, 362 F. Supp. 522 (W.D. Okla., 1973) aff'd 415 U.S. 961 (1974) is, I believe, legally sound and legally sustainable.

State marketing of its royalty gas is not a complete answer to the basic problem. That gas must be transported, and the only available means of transport will be through the facilities of an interstate pipeline. The FPC can, therefore, exercise indirect control of royalty gas through its certification powers under Section 7 of the Natural Gas Act, even to the extent of denying the right of transportation if it is opposed to the end-use to which the gas will be put, or the price paid for the gas. See FPC v. Transcontinental Gas Pipeline Corp., 365 U.S. 1 (1961), and pp.3-9 of the attached analysis. Thus, it will still be necessary for the State to involve itself in transportation negotiations and see that FPC approval of transportation arrangements is obtained, even if the State markets its own gas by sale at the wellhead or sale downstream. The protection which the State must have is advance FPC approval of State withdrawal of its gas from interstate commerce, but this approval should be sought and obtained by the transporter in connection with its certificate applications and related tarriff findings.

In suggesting these actions, I hold to the view that the State's power to call upon the gas resource when needed in the future can, in reasonable probability, be exercised if the State's rights and obligations are fully spelled out, fully presented to the FPC, and accepted by the FPC as an integral part of the transportation system which is certified by the FPC.

While all problems relating to future in-State use of State-owned gas may not be wholly solved by advance agreement, and advance FPC clearance, of specific production, transportation, and sales arrangements, it is my judgment that the problems are reduced to the levels of acceptable risk-taking if the FPC, prior to construction and operation of a transportation system, expressly conditions all necessary certificates of public convenience and necessity and pipeline tarrifs to permit and approve such arrangements as are negotiated by the State with respect to its royalty gas.

The State may consider the enactment of legislation to hold State owned resources within the State unless such are surplus to the needs of the state.

Discussed in some detail in the appended legal analysis is a recent Texas statute which is designed to secure for the benefit of the State the resources which are publicly owned. The statute is prospective in operation, and simply requires that all State-issued oil and gas leases shall contain appropriate provisions to prohibit sale of natural gas produced from State-owned lands outside the State unless it is found that such gas is surplus to the needs of the State. (pp. 79-85).

While the State clearly may not "embargo" natural gas through exericse of its regulatory powers, (pp. 43-45 it may be argued that the State's powers incident to ownership of public lands are different from, and greater than, mere regulatory powers. Cannot the State decide to withhold its lands from development? if so, (and about this I can see little argument), does not this right include the lesser right to permit development only upon terms acceptable to the State as a property owner? (pp. 15-17).

I do not offer an unqualified opinion that such legislation would withstand court challenge; I acknowledge that a challenge would probably be forthcoming, and that the legislation might fall as an undue burden on interstate commerce. Nonetheless, there is some chance of upholding protective legislation, and enactment could serve as a clear Legislative expression of Alaska's determination to retain a fair share of Alaska's resources. (pp. 79-85).

The State may consider various means of encouraging conversion of natural gas to methanol, or encouraging extraction of all natural gas liquids, prior to movement of natural gas in interstate commerce.

If North Slope gas is converted to methanol before becoming committed to interstate commerce, the conversion facilities, the methanol itself, and the transportation of methanol would not be subject to FPC control. Since the natural gas would be produced and "consumed" (i.e., converted to something other than natural gas) within the State, the natural gas would never become subject to FPC jurisdiction.

Similarly, if ethane, propane, butane, and other liquids are removed from the natural gas stream prior to transportation or sale in interstate commerce, the extraction facilities, the liquids themselves, and the transportation of the liquids should not be subject to FPC control.

It is beyond the scope of my knowledge to explore the economic feasibility of these alternatives; nor can I judge whether the oil pipeline now under construction can, from an engineering standpoint, serve as a conduit for methanol or other liquids. I believe, however, that the State should be aware that a natural gas stream has enormous potential value other than its obvious value as a heat source. It would be imprudent not to explore all potential uses of the gas stream; particularly where conversion within the State, or liquids extraction within the State, diminishes the range of FPC controls, and where, as here, the use of liquids for generation of heat represents a waste of valuable raw material.

Encouragement of conversion or extraction may be given through legitimate State tax incentives or through dedication, on favorable terms, of State-owned gas to a conversion or extraction project. The most effective means of encouragement should be determined at the time full exploration is made of economic and engineering feasibility.

Legislative action may be considered with respect to extraction operations, but probably may not be considered with respect to a conversion project. The latter situation would almost surely require an impermissable degree of interference with interstate commerce, since any statute directing the flow of natural gas to a con-

version plant would, in actual operation, preclude movement of gas in interstate commerce. Such a restriction would not, in my judgment, withstand Court challenge.

Legislative direction that liquids extraction occur prior to movement of the residue gas in interstate commerce may, on the other hand, be a valid exercise of State regulatory powers to prevent waste. This issue is discussed in some detail in the attached legal analysis (94-100), and I conclude that mandatory extraction, if based on appropriate finding that extraction is necessary to prevent waste of a natural resource, and if properly applied to preclude the possibility of an unconstitutional confiscation, has a reasonable basis and can, therefore, be defended.

In addition to the foregoing alternatives relating to possible State action to retain a portion of the State's gas resources for State use, other, and different, alternatives exist.

What Actions Can the State Pursue to Achieve Benefit from the State's Gas Resources?

Until this point, we have focused on natural gas transportation issues; I suggest that there are other matters which deserve consideration as the State of Alaska moves toward resolution of its basic energy policies. These other matters are not strictly within the request made of me for legal analysis, and indeed some require far more exhaustive consideration before a firm recommendation can be made; I touch upon each briefly because they are germane to the general issues under discussion, and because some, or all, may emerge as part of an overall State strategy of resource management.

1. State leasing policies should be re-examined.

   (a) The State is presently leasing on the basis of a one-eighth royalty. Other producing states, notably Texas and Louisiana, now demand, and receive, a one-fifth or one sixth royalty. Alaska should re-asses its bargaining position, its revenue needs, and whether the greater degree of control which in-kind royalty permits, justify leasing on terms other than those presently employed.

   (b) Consideration whould be given to the possibility that the leasing of State lands, or the withholding of state lands from leasing, is a valid instrument of State policy which can be used to assist in holding State resources for State needs; for example, can

leasing schedules be tied to changes in intrastate supply and demand? Can development be held until the State needs the resource? Here again revenue considerations and State desires regarding the optimum level of drilling and production activity must be weighed, but I suggest that one of Alaska's greatest strengths lies in its ownership of oil and gas bearing lands; thought should be given to the best use of that strength.

2. State taxing policies should be re-examined.

(a) The State presently provides for a production tax on natural gas of 4% of the gross value at the well; other producing states impose a much higher tax--for example, Texas exacts a severance tax of 7-1/2% of the market value of the gas when produced, and Louisiana imposes a basic severance tax of 7 cents/Mcf on natural gas. In considering whether revision of Alaska production taxes is appropriate, thought should be given to the Louisiana form: Louisiana's revenue levels are not controlled by the FPC, while Texas' are, at least to the extent that Texas gas is sold interstate. A further defect in the Texas structure lies in its requirement, in the final analysis, that Texas consumers bear a higher tax than out-of-state users; since the State tax is tied to value, intrastate sales at higher rates than interstate sales produce a higher tax bill for the intrastate producer than for the interstate producer.

(b) Alaska can consider the enactment of a franchise tax on interstate pipelines. Colonial Pipeline Company v. Traigle, 421 U.S. 100, decided April 28, 1975, upheld a Louisiana statute that imposed a franchise tax on a pipeline coany that was admittedly engaged exclusively in interstate commerce.

In 1969, a Louisiana Court held that the commerce clause of the Federal Constitution was violated by a state tax "payable for the

privelege of carrying on or doing business... in this state." The Louisiana legislature then amended the offending provision by providing that the tax was levied upon "(t)he qualification to carry on or do business in this state in a corporate form". The Supreme Court of Louisiana upheld the tax as constitutional levy for priveleges enjoyed by corporations in the state carrying on business, interstate or local, in the corporate form. 289 So. 2d 93 (1974). The U.S. Supreme Court affirmed. The Court cited Memphis Natural Gas Company v. Stone, 335 U.S. 80 (1948), a case that sustained a similar franchise tax imposed by Mississippi on a foreign pipeline corporation exclusively engaged in interstate business. The Court quoted Justice Reed's opinion in the 1948 case: "This is a tax on activities for which the state, not the United States, gives protection and the state is entitled to compensation when its tax cannot be said to be an unreasonable burden or a toll on the inter-state business". The "activities for which the state gives protection" included "protection of... maintaining, keeping in repair, and otherwise manning the facilities of the system," the Court said.

Conclusion

As must be evident, it is my view that from the standpoint of legal consequence, the State should pursue an affirmative, aggressive course of enlightened self-interest if the present and future natural gas needs of the State are to be met. The State must decide what it wants, and then set out to achieve its goals.

My judgment is that the State may reasonably expect success in its negotiations. Consider the pressure points available to the State as bargaining levers:

1. Equity favors the State; it seeks nothing more than a share of the resources which it owns. Further, the State of Alaska alone bears a substantial environmental cost as North Slope resources are developed and transported; since this burden exists, an offsetting benefit should be made available to the people of Alaska.

2. The State has as-yet unused regulatory powers which can materially affect the flow of oil and gas.

3. The State has as-yet unused powers of ownership which can materially affect the flow of oil and gas.

4. The State has as-yet unused powers of taxation which can affect the price of oil and gas.

5. The State probably can retain some control of its royalty gas if the State takes effective action; by non-action the State stands to lose control of its royalty gas. The State's position on its royalty gas is of critical significance because it is doubtful that any North Slope transportation system can go forward without committment of royalty gas to the system, either as part of system supply or as the subject of a continuing transportation agreement. The transportation system needs the royalty gas volumes to support claims of economic viability.

These factors lead me to believe that the State can bargain effectively.

I believe negotiations with both transportation groups are in order. The Arctic Gas proposal has encountered significant opposition, and the FPC staff has only recently concluded that the Arctic Gas group should consider an alternative routing to bring its line down the Alyeska corridor to Fairbanks, and then southeastward. This routing offers an opportunity for physical movement of North Slope gas to, or near, population centers through an Arctic Gas line, a possibility which did not exist so long as Arctic Gas proposed to move eastward out of the State while still within the Arctic Circle.

El Paso should obviously also be approached in definitive negotiations. It has historically supported the principal that a portion of the Alaska gas should be made available for Alaska usage and the El Paso proposal can serve State needs with fewer major revisions than Arctic Gas.

It is, therefore, appropriate for the State to open negotiations with both transportation proponents. It is time to ask, and obtain, positive answers to one basic question: How can Alaska retain the benefit of its natural gas resource under your proposal?

What must be made clear is that the Alaska Legislature and the State Administration, have affirmative duties to ensure, to the fullest possible extent, that the needs of Alaska are served. Others may, and should, consider private interests. But it must be unmistakeably clear that Alaska will judge its present and future position on leasing, regulation, taxation, and royalty gas disposition with due regard to Alaska's present and future needs.

It seems to me that if Alaska can derive no benefit from natural gas produced within its borders in the sense of sharing in the use of the resource, then clearly Alaska can protect its citizen's rights only by looking to natural gas as a source of revenue. Every legitimate means of using gas to raise revenue should be explored. If, on the other hand, Alaska is permitted to share in the benefit of a secure and reliable source of natural gas for use as a non-polluting heat source and as a raw material feedstock, then Alaska need place less emphasis on direct revenue and more emphasis on cooperative development.

If men of good will make an intelligent effort at accommodation and understanding, there is no reason why the mutual problems of producer, transporter, and consumer cannot be solved in a manner which balances fairly their respective interests, and which also serves the interests of national and state government as well.

Respectfully submitted,

Rush Moody, Jr.

RM/ap

CITY OF VALDEZ

P. O. BOX 606
PHONE: (907) 835-4313

February 10, 1976

ZIP CODE: 99686

Senator John Rader, Chairman
Gas Pipeline Impact Committee
Pouch V
Juneau, Alaska 99801

Subject: Gas Pipeline Impact Committee Meeting, February 17,18, 19, 1976

Dear Senator Rader:

This is in reply to your letter of February 2, 1976 regarding possible consumption of natural gas in the city of Valdez.

If natural gas becomes available to the city of Valdez, a whole new era would be opened up. The natural gas would be utilized to heat homes, businesses, schools and hospitals, power electrical generation turbines, and for processing raw materials, minerals and other as yet unknown industries. The use of natural gas would replace the use of heating fuel for heating purposes, thus allowing the heating fuel to be utilized in other more economical ways.

While I have no idea as to the quantity of natural gas which would be consumed by a city of 10,000 to 15,000 people, I am certain it is considerable.

With the El Paso natural gas pipeline passing through the city of Valdez, it would be very inexpensive to construct a short service line into the city proper. The savings to the consumer would be fantastic just in transportation costs alone.

As soon as we become aware that the El Paso gas pipeline is to be built, the city administration of Valdez will immediately undertake the necessary steps to assure an adequate distribution system for the city.

The availability of natural gas to the citizens of this state is a vital necessity if the state is ever to become other than a consuming state. A low cost energy source is necessary if Alaska is ever going to be able to compete with other states in the production of consumer goods.

I urge you to exert every effort to assure that state royalty gas be retained for use within the state of Alaska.

Very truly yours,

Herbert W. Lehfeldt
City Manager

HWL:ss

GOLDEN VALLEY ELECTRIC ASSOCIATION INC. Box 1249, Fairbanks, Alaska 99707, Phone 907-452-115

February 13, 1976

Senator John Rader, Chairman
Joint Gas Pipeline Impact Committee
Alaska State Legislature
Juneau, AK 99801

Dear Senator Rader

I recently read the Moody report and wholeheartedly concur with its recommendations.

There is a substantial potential market for natural gas available in Interior Alaska. GVEA will have 140,000 KW of base load type gas turbine capacity in operation by November 1977. These units, at nominal base load capacity would require approximately 25,000 cu. ft/day. Eight other reserve peaking units could be adapted to burn gas quite easily and would be if the economic anlaysis proved favorable. Our system plans to add an additional 100,000 KW of generation by 1980-81; therefore, by 1981 GVEA alone would be capable of using in the neighborhood of 50,000 cu. ft/day of natural gas. Other area steam/electric plants in combination would require about 30,000 cu. ft/day.

Further, I feel certain that Alyeska would consider burning natural gas at their pump stations 5 through 12 now scheduled to burn #2 distillate. These stations in combination phase 3 operation would use approximately 70,000 cu. ft/day.

Arrangements might be made to have them back off and go on liquid fuel as other industrial gas requirements and needs within the State developed.

It appears that this is one way that the State might initially utilize this valuable resource and more important, better guarantee its continued availability within the State of Alaska.

Best wishes.

Very truly yours

R. L. Hufman
General Manager

RLH:dee

ALASKA PIPELINE COMPANY
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ANCHORAGE, ALASKA 99502
3000 SPENARD ROAD
PHONE (907) 277-6651

February 16, 1976

Senator John Rader, Chairman
Joint Gas Pipeline Impact Committee
The Legislature of the State of Alaska
Juneau, AK 99801

Dear Senator Rader:

At your invitation we have rescheduled our travel in order to be present at this hearing, together with our consultant, Mr. Charles E. Smith. Charlie was the Alaska manager for Union Oil Company of California from 1959 to 1962, and later was their vice president for natural gas and gas liquids. He is now president of Transworld Gas Systems Inc., of Whittier, California. He has broad and thorough knowledge of the natural gas industry and its problems and prospects, and has assisted in preparing our position today.

We believe that it is essential and even imperative that the State should resolve not to let the Prudhoe Bay royalty gas become committed to or sold in interstate commerce and thus become subject to federal jurisdiction. Our review of the "Legal Analyses of Issues Relating to Natural Gas Transmission" as submitted by Rush Moody, Jr., strengthens this belief.

Based on our present sales and historical growth rate, we may have less than 10 years' supply remaining in our present contract for gas from the Kenai Gas Field. We are doing whatever we can to supplement these supplies: from Cook Inlet Royalty Gas; by negotiations for additional gas from existing uncommitted reserves in the Cook Inlet area; and by our own exploration program in the Susitna Valley. However, there is competition for all such gas reserves, from Japan and

west coast cities, and it is apparent to us that existing Cook Inlet area gas sources will not be sufficient to supply all the existing demand for this gas. In fact, we can show that there is a projected deficit of about four (4) trillion cubic feet to the year 2000. This conclusion can be seen from the report (SRI Project ECC-4304) which Stanford Research Institute prepared in December 1975 for Pacific Alaska LNG Company. This deficit is approximately the same as the quantity of proven Prudhoe Bay royalty gas. In order to adequately protect the consumer, we do not believe it would be prudent for us, nor would it be in the public interest for the State, to rely on any but proven reserves as the future supply for use within Alaska. We do believe the State should view the Prudhoe Bay royalty as the best proven gas reserve for Alaskan use in future years, regardless of which route is selected for delivering this gas to market.

If the El Paso project is finally approved, which we favor, the alternatives open to the State are more straightforward. State gas can be removed from the pipeline prior to delivery to the LNG plant, and a pipeline connection can be made to the existing gas distribution system in Anchorage. In addition new distribution systems could be installed in any city within economic range of the line. Gas which is surplus to the needs of these distribution systems can be stored in underground reservoirs for future deliveries and peaking service, or converted to methanol fuel for distribution throughout Alaska, particularly as an alternative

ALASKA PIPELINE COMPANY

ANCHORAGE, ALASKA

fuel for power generation. In our opinion such a plan would exempt the gas from the jurisdiction of the Federal Power Commission.

In the event the Canadian routing were to be chosen for Prudhoe Bay gas, there are several possible alternatives to be considered for the treatment and transportation of the royalty gas:

(1) A small gas line might be laid to bring the gas to the vicinity of Fairbanks. After satisfying Fairbanks' needs, the remaining gas could be converted to methanol fuel or LNG for further delivery by appropriate means. Methanol fuel has equal or superior qualities as a fuel, and is also in demand as a petrochemical feedstock. Methanol fuel can be utilized as a liquid fuel replacing oil, with minimal equipment change out, but with combustion characteristics equivalent to natural gas. It would be an ideal peaking fuel for the gas turbines which supply power in Anchorage and Fairbanks. Thus even if the 7/8 of Prudhoe Bay gas is taken through Canada, the royalty could be used as fuel by many Alaskan communities and any excess could be sold in the world market. Methanol fuel could be transported by rail to Seward or Whittier for further delivery throughout Alaska. LNG might be exchanged with Pacific Alaska LNG Company for natural gas reserves in place in the Cook Inlet area.

(2) The Prudhoe Bay royalty gas could be converted to LNG or methanol fuel at wellhead and delivered by Boeing 747 cargo aircraft. Transworld Gas Systems has made studies in cooperation with Boeing which indicate that air movement of LNG is technically feasible for transportation from remote areas. Such a method adapts itself to small deliveries of gas into areas not yet being served. Further, LNG would be valuable as peaking fuel in the Anchorage area and it could provide base load fuel after the Cook Inlet reserves are depleted or otherwise committed.

ALASKA PIPELINE COMPANY
ANCHORAGE, ALASKA

The cost of detailed evaluation and engineering of these alternatives cannot be justified unless or until it is known that the Canadian route will be chosen, and in such event there should be adequate time for the State to provide for handling of royalty gas by the time actual gas deliveries begin. However, as a precautionary measure we believe the State should retain the option to keep the royalty gas in place whether prior to completing its delivery facilities or during any "downtime" of these facilities after deliveries have started.

Regardless of the gas line routing decision, Prudhoe Bay royalty gas is a vital resource for Alaska, and control of its use should be reserved to the State rather than federal authorities. We do not believe that the State should allow even temporary deliveries into interstate commerce because of the danger in relying on existing regulatory and judicial precedents. Only by retaining the gas in place or by taking it as it is produced can the State maximize its opportunity to retain control We urge the legislature to act now, before any commitment can be made or even presumed by federal authorities or by the applicant companies.

If adequate gas supplies should become available in the Cook Inlet area in the future and the Prudhoe Bay royalty thus becomes surplus, the State could at such time release it into interstate commerce.

ALASKA PIPELINE COMPANY

ANCHORAGE, ALASKA

The foregoing is the only direct testimony we have at present. We would request that response to any questions be extended to include our consultant, Mr. Charles Smith of Transworld Gas Systems and Mr. Harold Schmidt, who is our senior vice president, and Mr. Bill Hickman, who is our management analyst.

Very truly yours,

Dale Teel
President

DT:jdh

ALASKA PIPELINE COMPANY

P. O. BOX 6288
ANCHORAGE, ALASKA 99502

3000 SPENARD ROAD
PHONE (907) 277-5551

February 9, 1976

Senator John Rader, Chairman
Joint Gas Pipeline Impact Committee
The Legislature of the State of Alaska
Juneau, Alaska 99801

Dear John:

In 1975 our sales were about 30 billion cubic feet (BCF), to military and civilian power plants and to all other uses, residential and commercial. At the end of 1975 we had 450 BCF remaining under contract. Recovery of waste heat and other reductions of demand for gas by the power plants can be projected, and we are not obligated to the military after 1980. However, it may be prudent for us to anticipate that our annual sales will increase by 1 BCF or more each year for the foreseeable future. Thus we should be working to obtain additional reserves at every opportunity.

We have not been negotiating for Prudhoe Bay royalty gas thus far, because royalty gas is now available in the Cook Inlet area and because there may be about as much other uncommitted gas in the Cook Inlet area as there is of royalty gas at Prudhoe Bay. The distance (investment) and the daily volume required for using Prudhoe Bay royalty gas have made it comparatively impractical for us to consider thus far.

We have begun exploring for gas in the Susitna Valley in the hope that reserves for our requirements could be found and thereby avoid the full impact of competition by Los Angeles, Portland, or Tokyo for gas from the Cook Inlet area. However, we need gas (not just "hope") and if Prudhoe Bay royalty gas will be available within 5 to 10 years, we believe we should begin considering it as an alternative or supplementary supply. As I read the material you sent me, it seems to be essential that the Prudhoe Bay royalty gas should not be commingled with producer gas regardless of the route selected, in order for the State to retain control of its gas. This would mean that a separate pipeline would have to be built for this royalty gas.

If the State were willing to do the financing of such a pipeline, and compressors as necessary, it may be possible for us to arrange to take part or all of the Prudhoe Bay royalty gas. I believe that a 20 inch (?)

ALASKA PIPELINE COMPANY

ANCHORAGE, ALASKA

pipeline, refrigerated to avoid permafrost problems, could be built along the oil pipeline right of way to the Fairbanks area and then along the new highway to the Anchorage area. It could serve the requirements of Chugach when their "Beluga" supply becomes inadequate, as well as our requirements particularly for the municipal and military power plants. It might also serve some of the requirements of present or future petrochemical industries. I am not sure what daily rate of royalty gas is being considered, but I assume it to be of the order of 100 to 200 million cubic feet per day, which compares to our present peak capacity of 160 million and our present average daily sales of about 75 million.

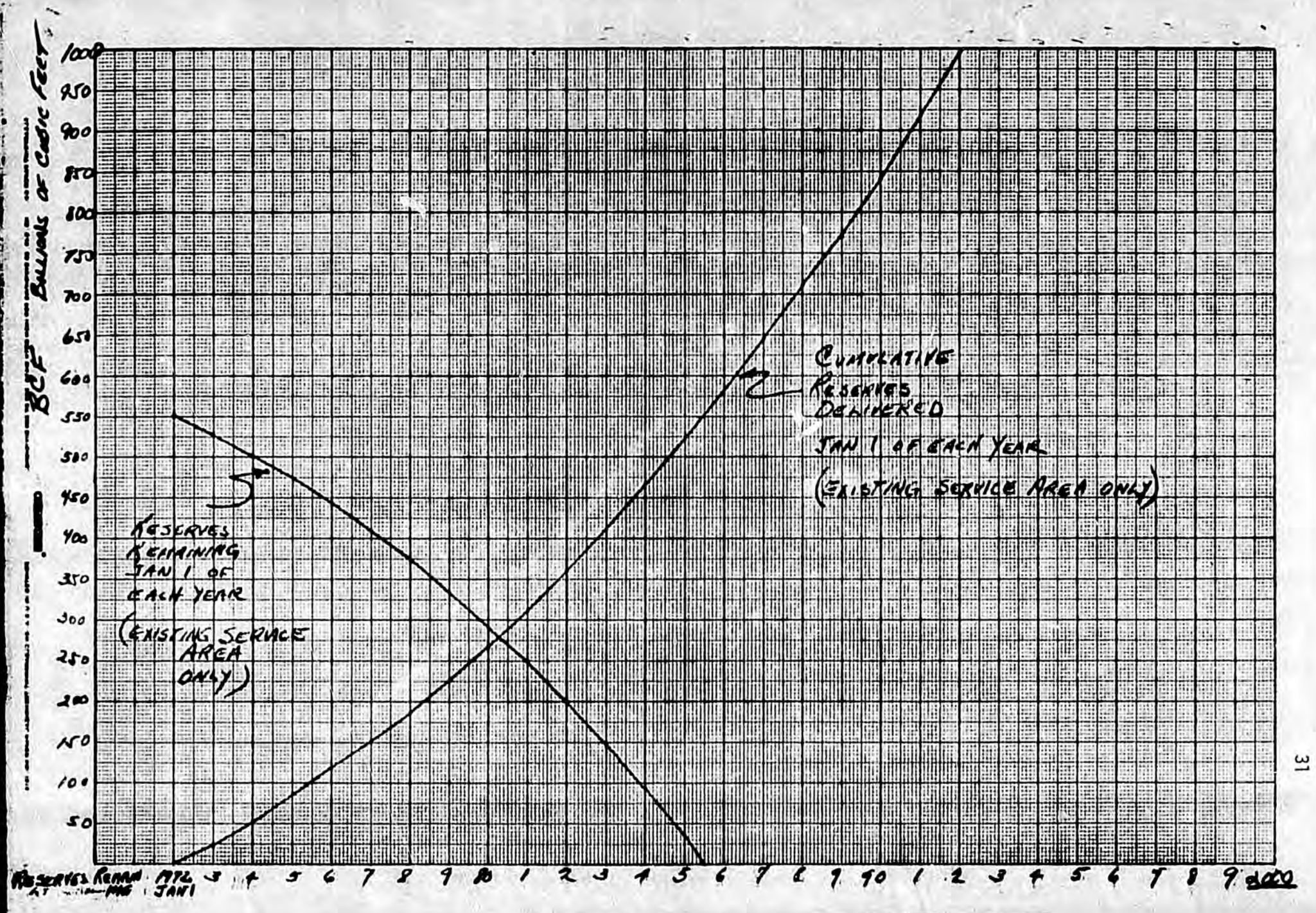
The seasonal aspect of our demand for gas may be the primary problem with our taking Prudhoe Bay royalty gas, but it may be possible to solve that problem by off-season industrial applications or other means. At any rate, we believe there may be sufficient prospect for Alaskan use of this gas that it should be fully explored.

We are not prepared to testify on February 17-20, and will be out of the state on those days. However, we believe our position should be considered as your committee studies this subject.

Very truly yours,

Dale Teel
President

DT:dh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USE OF NATURAL GAS IN ALASKA

BY

GEORGE C. SILIDES, P. E.

TO THE

SPECIAL LEGISLATIVE COMITTEE ON

GAS PIPELINE IMPACT

FEBRUARY 17, 1976

INTRODUCTION

For the record, my name is George Silides. I am a Registered Professional Engineer in private practice, a former State Senator, and a member of the Eighth Legislature's Interim Natural Gas Pipeline Committee

Thank you Senator Rader, and members of the Ninth Legislature's Special Committee on Gas Pipeline Impact, for your invitation to appear before you and express my thoughts on the complex issues confronting you.

The Committee of which I was a member made three recommendations to the Legislature.

1. That a Special Legislative Committee be established in order to continue studying the alternative proposals of gas pipeline construction and routings, and to keep abreast of the actions of the Federal Power Commission and the Congress.

2. Obtain legal expertise in the area of Federal Power Commission regulation in order to protect Alaska's interests.

The creation of this Committee before which I appear today, and the retention of Mr. Rush Moody, formerly with the F.P.C., bears witness that the first two recommendations were accepted.

3. The third recommendation was that the State take such action as appears necessary so as to make it's position crystal clear. I am proceeding under the assumption that this Committee intends to move in that direction. To this date no clearly stated intent as to the use of our royalty gas or oil has been announced, nor has the Commissioner of Natural Resources invited specific, bona-fide, binding proposals from interested persons for the purchase and use of our royalty gas or oil. There is a partial legislative remedy for this as I shall suggest later.

Senator Rader, who chairs this Committee, invited me to speak on the uses of Natural Gas. Most of my comments will deal, primarily, with this aspect, but I would be remiss in not exploring with you some of the other considerations that relate and govern our ability to secure the use of the gas.

Many of my comments appear similar to those of Mr. Rush Moody. I make no opologies for this since I, and others, have been making these comments to the Legislature since 1972. It is encouraging to be joined in them by someone of Mr. Moody's reputation, experience, and a Washington, D.C. address, who gives us a much clearer insight than before as to what we might expect from the Federal Power Commission.

AMOUNT OF GAS

Prudhoe Bay reportedly contains 26 trillion cubic feet of recoverable cap and solution gas. Each barrel of oil produced will bring up about 750 cubic feet of solution gas. Therefore, 9.6 billion barrels of oil production may be expected to result in the con current production of 7.2 trillion cubic feet of solution gas. In terms of daily production 1.2 million barrels of oil results in 900 million cubic feet of solution gas and 2.0 million barrels per day results in 1.5 billion cubic feet of solution gas daily. This, I stress, is exclusive of any allowable cap gas production.

At 12 1/2% royalty interest, Alaska's share of solution gas amounts to approximately 185 million cubic feet of solution gas daily. When cap gas recoveryis allowed for full pipeline throughput, Alaska's royalty share will rise to about 310 million cubic feet daily under the El Paso proposal, and 435 million cubic feet daily under the Arctic Gas scheme. The question immediately arises as to whether or not a pipeline through Canada is detrimental to Alaska's internal economies by depleting our royalty share at a rate faster than we can consume or convert to the myriad of products capable of being produced from Natural Gas. Add to this the certainty that the price of Natural Gas at the market place will continue to rise in relation to the cost of production; should cause us to consider net income just as important as production of the oil reservoir in determining the allowable rate of production.

ALLOWABLE RATE OF PRODUCTION

This is not to suggest that we should curtail solution and cap gas production below that which is necessary to comply with sound reservoir engineering. Nor do I subscribe to the simplistic, out-of-context, interpretation from a recent report to support the theory that we would lose 4 1/2 per cent of recoverable oil reserves unless all gas production was witheld to the year 2000 or so. Mr. O. K. Gilbraith and Mr. Pat Dobey of the Division of Oil and Gas are the ones to question on that account.

I am assuming that for about the first two years of oil production we will allow removal of about one half the solution gas and none of cap gas until the true nature of the reservoir and its flow pressures can be accurately determined by the State's Engineers. I mention these figures as significant because in point blank questioning, officials of El Paso claimed that they would be willing to proceed with construction even at this early-on reduced flow, while the larger diameter-different system of the Canadian line apparently cannot afford such curtailment. In other words, we tend to further lose control unless an Alaska route is used.

USES OF NATURAL GAS

We come now to the various uses of Natural Gas. Let me say at the outset that the least efficient use one can make of gas is to burn it simply for heat or to generate power. Product manufacture is much more beneficial. Through such latter use we not only provide high quality employment but we actually preserve the resource by conversion to a usable product.

It is at this point that I feel compelled to digress into discussion of another route which my associates and I consider of greater benefit to Alaska for reasons that will become apparent.

Thus far you have had two proposals - one through Canada and one through Alaska to Gravina Point. That latter route touches only one urban area - Fairbanks.

Let me also suggest an alternative route to Cook Inlet - specifically the Beluga area. By so doing, the following benefits accrue:

1. The resource is made accessable to the majority of the people of the State, not just 15%.

2. One of the telling criticisms levelled against the El Paso scheme by Arctic Gas is the almost 8% of the gas to be consumed in the liquification process. At Beluga, coal can be used to power the liquification pumps, thus conserving a valuable resource and materially

assisting the creation of a coal mining industry.

3. Methanol manufacture from our royalty gas can be used for the export of coal in slurry form, capable of being transported by tankers. Heretofore, water was used to transport crushed coal in pipelines. Upon arrival at the boiler, about 90-95% of the water content had to be removed. Using a methanol carrier, the slurry can be fired directly into the using boilers.

This, of course, is burning up the resource, not the most efficient use. But, at least, it has assisted in the formation of jobs and taxable income.

Methanol is a liquid chemical commodity of many uses. One important use is the manufacture of formaldehyde, from which are made synthetic adhesives for use in plywood, particle boards and in compressed wood - a superior substitute for scarce hardwoods. It also leads into a long chain of melamine plastics whcih can easily be manufactured in Alaska for export.

Other salient characteristics of products capable of large scale manufacture of products in Alaska are:

Amonia, urea and nitrates, needed in increasing quantities to sustain the world food supply. Alaska should become a major exporter of fertilizer. These products can be traded for imports which we need.

Nor should the agrarian potential of Alaska be ignored. Cattle ranchers on Kodiak Island and Aleutian Islands have been inhibited by the high cost of feed. The Tanana Valley is producing grain at more than twice the national average per acre. The key to successful cattle and swine raising in Alaska is abundant, cheap fertilizer. Gas is the raw material.

A particularly pure iron can be smelted continuously in the electric furnace, using gas or synthesis gas in place of coke. The tetaniferous iron ores of Klukwan and Snettisham can be smelted by this process in a clean manner.

Going quickly through a partial list of possible uses in Alaska for very large amounts of gas we find the following:

Synthesis Gas
Amonia
Urea
Nitric Acid
Methanol
Formaldehyde
Lime
Pelletized Ore and Iron
Cement
Acetylene
Vinyl Chloride and Polyvinyl Chloride
Nitrates
Fertilizers
Plastics
Adhesives
Residue Board and Compressed Wood
Polypropylene, Polyethylene
Styrofoam
LNG

Also of importance is the availability of bottled gas to the smaller towns and villages which now suffer both high prices and fuel shortage problems. Obviously, these smaller communities cannot afford piped distribution systems.

We can see then, that gas derivitives such as ethane and propane can provide a substantial,, clean petrochemical industry in Alaska. Non-availability of feedstocks rather than cost retards petrochemical capacity. Investment is moving toward the oil and gas producing areas where feedstock availability can be assured. Examples are the Province of Alberta and British Columbia. Last year a 1.5 billion dollar ethane plant was announced in B.C.

CONTINGENCY PLAN

The question arises: "Can we have these things in the face of adverse ruling by the F.P.C., either in routing through Canada or attempted interference in our internal affairs." The answer is, "Yes, if we have a contingency plan."

First: Take the gas in hand. Make no committment of sale to either pipeline, but retain control from the well head to the market place. Declare this intent by final passage of SB 174 on oil and gas. That Bill was introduced by the Senate Resources Committee at my request in 1974. It passed the Senate 18-2 and now resides in the House Resources Committee. If the Administration cannot make up its mind on this matter the Legislature can do it for them.

Do not, as has been suggested, amend the provisions of the statute giving legislative overview of the decision of the Oil and Gas Advisory Board. This Bill was co-sponsored in 1974 by Senator Silides, Senator Butrovich, Senator Poland and Senator Croft. It has proven the corner-stone of public scrutiny by the Legislature.

Second: In either routing, and especially if the line goes through Canada, negotiate a trade for our share of the Methane in exchange for Gas Liquids. This trade should be on a BTU equivalent.

Methane constitutes about 68 1/2 per cent of the gas produced at Prudhoe. The availability of Methane within the State is not as important as the availability of gas liquids, relatively speaking. It is the Methane that the mid-West cities are seeking to introduce into their distributor systems. Alaskan cities, with the exception of Anchorage and Fairbanks, do not warrant such distributor systems.

Ethane, Propane and Butane are more important to the State.

A. Bottled gas for rural use is needed to enhance the quality of life throughout the State.

B. The gas liquids are the main feedstocks for petrochemicals.

C. The gas liquids appear not to be subject to F.P.C. regulations.

D. The volume of gas liquids thus obtained could make a small diameter, high pressure pipeline possible from Prudhoe Bay to Tidewater. It most certainly bears study by the Committee.

CONCLUSION

I could continue this complex discussion at even greater length, but I may have already exceeded my brief. My main purpose was first to indicate the value of the resource, and secondly, to suggest that avenues other than the very obvious remain open, and that they should be explored with a firm, positive action.



The ORGANIZATION for the MANAGEMENT of ALASKA'S RESOURCES, INC.

TESTIMONY PRESENTED BEFORE THE GAS LINE IMPACT COMMITTEE

FEBRUARY 17, 1976, JUNEAU, ALASKA

MY NAME IS BOB HARTIG, I SERVE AS ONE OF THE 49 FOUNDERS AND A MEMBER OF THE EXECUTIVE COMMITTEE FOR THE OMAR GROUP. WHILE OUR ORGANIZATION SEEKS TO PROMOTE THE WISE MANAGEMENT OF ALL ALASKA'S RESOURCES, FOR THE PAST 10 MONTHS, OMAR HAS BEEN DIRECTING ALL ITS EFFORTS TO ONE PROJECT--THE CONSTRUCTION OF A TRANS-ALASKAN, ALL AMERICAN NATURAL GAS PIPELINE RATHER THAN THE PROPOSED TRANS-CANADIAN LINE.

OMAR WELCOMES THE OPPORTUNITY TO SPEAK TO YOU AGAIN TODAY, AND COMMENDS YOU FOR YOUR CONTINUING INTEREST. WE ALSO WISH TO COMMEND THE COMMITTEE'S ACTION IN COMMISSIONING RUSH MOODY, JR. TO RESEARCH AND REPORT ON SOME OF THE MATTERS CONCERNING THE STATE'S RIGHT AND ABILITY TO CONTROL ITS NATURAL RESOURCES.

I DO NOT WISH TO RESPOND TO THE TECHNICAL QUESTIONS WHICH WERE POSED BY THIS COMMITTEE IN ITS CALL OF THIS HEARING BECAUSE OMAR IS NOT AN ENGINEERING FIRM. INSTEAD, WE ARE A GROUP OF CONCERNED CITIZENS AND, IT IS IN THE AREA OF PUBLIC POLICY THAT WE FUNCTION.

MOST IMPORTANT OF THE THREE POINTS WE WISH TO MAKE TODAY IS THAT WE ARE DETERMINED TO SEE THE GAS LINE BUILT THROUGH ALASKA. OUR REASONS ARE BOTH ECONOMIC AND ENVIRONMENTAL. IT MAKES SENSE TO USE THE CONTINUED DEVELOPMENT OF ALASKA'S RESOURCES TO KEEP UNEMPLOYMENT RELATIVELY LOW. IT MAKES SENSE TO KEEP OUR RELATIVELY PROSPEROUS ECONOMY AT THE CURRENT LEVEL. IT MAKES SENSE TO USE THE EXISTING ROADS, CONSTRUCTION CAMPS, LANDING STRIPS AND COMMUNICATIONS

FACILITIES AS MUCH AS POSSIBLE FOR A GAS LINE ONCE THE ALYESKA LINE CONSTRUCTION IS COMPLETED IN ORDER TO REDUCE ENVIRONMENTAL DAMAGE AND REDUCE LOADING COSTS.

IN ADDITION TO BEING VITALLY AFFECTED BY THE COSTS OF THE TRANSPORTATION SYSTEM FOR THE NATURAL GAS, ALASKANS ALSO DESERVE THE OPPORTUNITY TO USE THE ROYALTY SHARE OF THE GAS - 12½% - TO MAXIMIZE ECONOMIC BENEFITS TO THE ENTIRE STATE.

THEREFORE WE RECOMMEND THAT THE MEMBERS OF THIS COMMITTEE CONSIDER TAKING THE FOLLOWING ACTIONS:

1. REQUEST THAT THE ADMINISTRATION NOTIFY ALL HOLDERS OF THE PRUDHOE BAY OIL AND GAS LEASES THAT THE STATE ELECTS TO TAKE ITS ROYALTY GAS IN KIND.

2. TO INSURE CONSTRUCTION OF THE TRANS-ALASKA PIPELINE, CONSIDERATION SHOULD BE GIVEN TO THE PRESENT SALE OF THE ROYALTY GAS TO THE FIRM WHICH WILL BUILD SUCH A LINE. SUCH A COMMITMENT OF ROYALTY GAS TO A TRANS-ALASKA PIPELINE WILL SUBSTANTIALLY HELP BRING THAT LINE INTO BEING.

3. WHILE IT IS RECOGNIZED THAT MOST GAS SALES CONTRACTS ARE NORMALLY LONG TERM CONTRACTS, AN EFFORT SHOULD BE MADE TO OBTAIN A RELATIVELY SHORT TERM SALE. PROVISIONS SHOULD ALSO BE MADE IN THE ROYALTY GAS SALES CONTRACT TO WITHDRAW CERTAIN PERCENTAGES OF THE GAS THROUGHPUT TO PROVIDE FOR NEEDS OF COMMUNITIES ALONG THE PIPELINE ROUTE, INCLUDING THE FAIRBANKS AREA. WHILE THESE EXACT NEEDS MAY NOT BE DETERMINABLE, IT IS SUBMITTED THAT PROVISIONS WHICH WOULD PERMIT INCREASING PERCENTAGE WITHDRAWALS OVER THE PERIOD OF THE SALES CONTRACT WOULD MEET THE INCREASED DOMESTIC AND INDUSTRIAL DEVELOPMENT NEEDS AS THEY BECOME IDENTIFIABLE.

THE RECOMMENDATION TO SELL THE STATE'S ROYALTY GAS IS BASED ON THE RECOGNITION OF THE FOLLOWING:

1. ALASKA HAS NO IDENTIFIABLE USE FOR THE GAS.

2. AMOUNTS OF FLOW ARE STILL UNDECIDED WITH INITIAL FLOWS BEING DETERMINED BY THE ALASKA OIL AND GAS CONSERVATION COMMITTEE ON PROJECTIONS. THESE FLOWS WILL LATER BE ADJUSTED BASED ON EXPERIENCE OF PRODUCTION.

3. ONLY AFTER THE PRODUCTION SCHEDULE IS ESTABLISHED CAN A FIRM DETERMINATION BE MADE OF HOW TO BEST MEET THE NEEDS OF OUR COMMUNITIES, AND POSSIBLE PETROCHEMICAL DEVELOPMENT.

4. PETROCHEMICAL DEVELOPMENT NORMALLY REQUIRES LEAD TIMES OF BETWEEN 5 AND 10 YEARS.

5. FUTURE DISCOVERIES WILL BE AVAILABLE TO MEET FUTURE NEEDS.

WE FEEL THIS PROGRAM RECOGNIZES THE NECESSITY OF HAVING THE STATE'S ROYALTY GAS AVAILABLE FOR USE WITHIN THE STATE AND THE IMPORTANCE OF UTILIZING THE AVAILABILITY OF THE STATE'S ROYALTY GAS AS A WEAPON IN GETTING THE PIPELINE BUILT THROUGH ALASKA.

AS TO THE SPECIFIC QUESTIONS POSED BY YOUR COMMITTEE IN YOUR LETTER OF JANUARY 30, 1976:

(1) (a) WE ARE IN AGREEMENT WITH MR. MOODY'S LEGAL ANALYSIS. PRELIMINARY RESEARCH CONDUCTED BY OMAR PERSONNEL TOGETHER WITH INFORMATION GAINED IN MEETINGS WITH OUR CONGRESSIONAL STAFFS AND PERSONNEL WHO POSSESS AN EXPERTISE IN FPC MATTERS, HAS ALREADY CONVINCED US OF THE NEED TO ESTABLISH A NATURAL GAS POLICY FOR THE STATE AND THE IMPORTANCE OF AND THE ACCURACY CONTAINED IN MR. MOODY'S LEGAL ANALYSIS.

(b) MOST OF MY STATEMENT HAS BEEN DIRECTED TO ANSWERING THIS. HOWEVER, WE WOULD URGE THAT STATE LEGISLATION ALTER TAXATION AND LEASING STATUTES TO PROVIDE INCENTIVES TO THOSE PRODUCERS WHO UTILIZE THESE RESOURCES

WITHIN THE STATE.

(2) RESERVOIR RECOVERY IS BEYOND OUR PROVINCE. HOWEVER WE WOULD EMPHASIZE THE QUALIFICATIONS PLACED ON THE STUDY BY THE CONTRACTOR AND THE STATE. THAT IS, THAT "RESERVOIR PERFORMANCE PREDICTIONS ON A FIELD WITHOUT PRODUCTION HISTORY ARE APPROXIMATE AT BEST". AND IN ADDITION, WE WISH TO CALL ATTENTION TO THE FACT THAT ARCTIC GAS HAD RECOVERY PROJECTIONS SIMILAR TO THE STATE, YET ACCORDING TO A NEWS REPORT FROM THE OTTAWA JOURNAL, THE CONSORTIUM STILL INTENDS TO BUILD A PIPELINE SYSTEM LARGER THAN NEEDED, IN EXPECTATION OF TRANSPORTING FUTURE GAS FINDS THROUGH THAT SAME LINE. THIS MEANS THE INITIAL TRANSPORTATION COST WOULD BE HIGHER THAN NECESSARY, AND THE RESULTANT RETURN TO THE STATE OF ALASKA LOWER THAN IT SHOULD BE.

(3) REGARDING PROSPECTIVE PURCHASERS FOR THE ROYALTY GAS, AND USES WITHIN THE STATE, WE FEEL CONFIDENT THAT ONCE A GIVEN QUANTITY OF GAS AND DATE OF AVAILABILITY IS DETERMINED, THERE WILL BE NO LACK OF PURCHASERS FOR PETROCHEMICAL USE. BUT ALL OF THAT IS MOOT IF WE DO NOT DEAL WITH THE GAS AS A WEAPON IN GETTING THE GAS LINE BUILT THROUGH OUR STATE.

IN SUMMARY:

(1) ONLY WITH A TRANS-ALASKAN NATURAL GAS PIPELINE WILL THE STATE BE ASSURED OF THE OPPORTUNITY TO RETAIN ITS ROYALTY SHARE FOR FUTURE DOMESTIC AND INDUSTRIAL USES.

(2) IN ORDER TO ENSURE THE APPROVAL AND CONSTRUCTION OF A TRANS-ALASKAN PIPELINE THE DISPOSITION OF THE STATE'S ROYALTY GAS SHOULD BE USED AS A WEAPON. IN THAT REGARD, AND, RECOGNIZING THAT THERE IS PROBABLY NOT A PRESENT IDENTIFIABLE NEED FOR THE GAS, THE STATE SHOULD : (1) NOTIFY ITS OIL AND GAS LESSEES OF ITS PRESENT ELECTION TO TAKE ITS ROYALTY SHARE IN

KIND (2) ARRANGE FOR SHORT TERM SALES OF THE ROYALTY GAS IF POSSIBLE OR IN THE ALTERNATIVE, LONG TERM SALES WITH PROVISIONS TO ACQUIRE INCREASE PERCENTAGES ON A FIXED SCHEDULE.

IN ADDITION:

(3) THE LEGISLATURE SHOULD CONSIDER LEGISLATION WHICH WOULD ALTER FUTURE LEASES FOR OIL AND GAS TO PROVIDE INCENTIVES FOR UTILIZING THESE RESOURCES WITHIN THE STATE.

BP Alaska Inc. 100 Pine Street, San Francisco, California 94111. Telephone (415) 445-9400

February 17, 1976

Senator John Rader
Chairman, Joint Gas Pipeline Impact
Committee
The Legislature Of The State Of Alaska
Juneau, Alaska 99801

Dear Senator Rader:

We appreciate having an opportunity to submit our comments on your letter of January 30, 1976, soliciting testimony on the Rush Moody Report, the State's Reservoir Analysis and Royalty Gas Options. We will also respond herein to your letter of January 15, 1976, asking five questions regarding the recently published Department of Natural Resources Study on Sadlerochit Reservoir Conservation.

At the outset, there are a few things that should be said about the position of BP Alaska in these matters. By means of its 1969 agreement with Standard Oil Company (Sohio) BP Alaska conveyed its working interests in the oil and gas leases in the Prudhoe Bay area to Sohio reserving to BP Alaska a seventy-five percent net profits royalty interest from production from the Prudhoe Bay properties attributable to production in excess of a certain level. The effect of this agreement is to make Sohio the working interest owner of all the gas under the Sohio/BP leases in Prudhoe Bay. The same agreement made BP Alaska the operator of the Sohio interests in Prudhoe Bay.

The BP Alaska net profits royalty interest does not come into play until production of oil reaches levels in excess of approximately 1,200,000 barrels per day. It will be recalled that this is the level of production which the Trans Alaska Oil Pipeline will be capable of handling under current authorization.

Since the BP Alaska net profits royalty interest in gas is triggered by certain criteria of sustained oil production of specified volume and at specified times, it will be seen that the BP gas interest is of small magnitude in comparison with the interests of the principal gas working owners in the Prudhoe Bay Field which are ARCO, EXXON and SOHIO.

BP Alaska has entered into an agreement with Northern Natural Gas Company giving that company the option to purchase the as yet undefined volumes of gas that may be attributed to BP Alaska through BP Alaska's net profits interest agreement up to a maximum volume of three trillion cubic feet. It should be noted that the Northern Natural Gas agreement covers not only gas from Prudhoe Bay but also any other gas which is attributable to BP Alaska and which may be produced from other North Slope oil and gas leases owned by Sohio and BP.

BP has further agreed with Columbia Gas Transmission Corporation to make available to that company any BP gas which is not required to satisfy its undertaking with Northern Natural Gas.

BP Alaska has not entered into any agreements which concern the basis or method of transport of the gas which the above two companies have the option to purchase or in respect to any other gas that may be available to our company on the North Slope. BP Alaska has no intention of participating in the construction of a gas line nor of assisting in the financing of such a venture. BP Alaska is not aligned with the proponents of either of the two principal schemes for transportation of Prudhoe Bay gas. Our role is simply that of a producer of gas.

The Moody opinion represents a very substantial exercise in legal scholarship involving a number of complex legal issues. As the author concedes, it also raises issues which involve rather longer term implications than the immediate question of the State's disposition of royalty gas and the alignment of the gas pipeline.

We can not responsibly endorse or reject an effort of this magnitude without comparable research and analysis. We understand the State's concern with its ability to control the disposition of its royalty gas in the light of Federal law and regulation. We believe the Moody Report is correct in its conclusion that the State should decide as quickly as possible the ultimate goals of the State's natural gas policy. If the State determines that it is in its best interest to attempt toretain a portion of Alaska's gas for future Alaskan needs, we agree with Mr. Moody's recommendation that positive action must be taken before the gas has been committed to interstate commerce. Such participation could include, as Mr. Moody suggests, active involvement by the State in transportation negotiations with the Federal Power Commission.

With respect to the possible changes in the State's leasing and taxing policies, discussed by Mr. Moody, the discussion centered as much on questions of policy as on legal issues. In view of the complexity of the policy and legal issues which might be presented by novel taxation proposals and suggested changes in the State's leasing laws and regulations, we propose to defer comment until the committees of the legislature meet to consider specific proposals incorporating such changes.

We now turn to your letter of January 15, 1976, which poses questions arising out of the State's recent study on the Sadlerochit Reservoir. For ease of reference we set out below the questions and our answers.

1. What effect does the recent study, "Prediction of Reservoir Fluid Recovery Sadlerochit Formation Prudhoe Bay Field", have on marketing plans for Prudhoe Bay gas?

   The State study evaluated several possible reservoir management schemes and indicated the relative effect of each hypothetical case. The results are not inconsistent with our anticipation that a practical reservoir management scheme can be implemented that will allow gas offtake from the field at rates of the order of 2 bscf/d sales.

2. How does this study differ from industry and federal studies?

   Published studies have predicted various production characteristics, consistent with the available detail and reliability of the data applied. It is to be expected that slightly differing results will be found in these circumstances, but generally the same relative effects of reservoir management schemes are to be found.

3. How accurate can a model be without production history?

   Model studies incorporate many uncertainties with or without any production history. They are certainly more reliable when production history is available for calibrating the various input parameters. They can be considered to be reliable as to general performance and are specifically valuable in assessing relative effects due to varying reservoir production schemes. Good reservoir management planning recognizes and allows for these uncertainties.

4. Will some production history be necessary before an accurate model is established that will prove feasibility of a gas pipeline for marketing of Sadlerochit gas?

   We believe it is possible to plan now for a reasonable level of gas offtake from the field, recognizing that the actual circumstance that results during production may need some modification to the reservoir management, particularly with regard to pressure maintenance, to continue to effectively produce the field.

5. How critical are the results of this study in obtaining FPC certification and financing for the gas pipeline project?

5. The above remarks indicate that we believe it is feasible, under a satisfactory reservoir management scheme, to plan for sustained gas sales. As a potential producer, it is not our principal expertise to comment on the gas marketing or financing questions. These could be more authoritatively answered by the gas pipeline/ marketing companies.

In conclusion, we do not believe that the recently published State of Alaska Department of Natural Resources Study nor the lack of production history should adversely affect the F.P.C. decision on the certification of a pipeline.

BP Alaska did not participate in the F.P.C. proceedings and has not been asked to respond to the interrogatories set out in the F.P.C. letter dated December 12, 1975. We have, however, testified at the hearings of your committee held on December 10, 1975, in Anchorage and at that time responded to some of the same questions included in the F.P.C. interrogatories.

It may be useful for you to be aware of answers we shall be providing to questions posed by the Senate Interior and Insular Affairs Committee and the Senate Commerce Committee under cover of a letter dated January 27, 1976, from Senators Warren G. Magnuson and Henry M. Jackson. A copy of the above letter and the referenced questions are enclosed for your convenient reference together with a draft of BP Alaska's response to those questions. The BP response is in the form of an internal memorandum dated February 12, 1976, to J. Gore of BP Alaska's Washington, D.C. office from D. B. Walker who is Vice President, Production Planning for BP Alaska.

If the Committee should desire further information on these or other matters during our new deliberations we will make every effort to respond.

Sincerely,

K. R. Keep

K. R. Keep
Vice President and General Manager

Enclosure

United States Senate

WASHINGTON, D.C. 20510

January 27, 1976

Mr. John Gore
Manager, Government Affairs
B. P. North America, Inc.
1730 M Street, N.W.
Washington, D.C. 20036

Dear Mr. Gore:

The Senate Interior and Insular Affairs Committee and the Senate Commerce Committee are examining the extent of Arctic natural gas reserves and alternative transportation systems for delivery of this gas to markets in the lower 48 states. The Committees are also examining the institutional, resource and other factors which may constrain or significantly influence the cost of this natural gas and the timing and mode of its delivery into the existing distribution system.

To facilitate our respective Committees' consideration of this matter and to develop the factual background relevant to major policy decisions respecting the development of Alaskan natural gas, our Committees request that you respond to the issues raised in the attached questionnaire by Parts I.A.; I.B.(1), (2), (3) and (6); II.A.(3), (a) and (b); and II.B. (2), (a), (b), (c) and (d). We would appreciate delivery of five copies of your response to these questions to the Interior and Commerce Committees no later than February 11, 1976.

For further information, please contact Henry Lippek at 224-9351 or Thomas Platt at 224-0611.

Sincerely yours,

Warren G. Magnuson

WARREN G. MAGNUSON, Chairman
Committee on Commerce

Henry M. Jackson

HENRY M. JACKSON, Chairman
Committee on Interior and
Insular Affairs

94th Congress
2d Session } COMMITTEE PRINT

ISSUES CONCERNING THE TRANSPORTATION OF ALASKAN NATURAL GAS

QUESTIONNAIRE

PREPARED FOR THE

COMMITTEES ON INTERIOR AND INSULAR AFFAIRS

AND

COMMERCE

UNITED STATES SENATE



JANUARY 1976

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MEMORANDUM OF THE CHAIRMEN

In February 1976, the Senate Committee on Interior and Insular Affairs and the Senate Committee on Commerce will conduct joint oversight hearings on Arctic natural gas reserves and alternative transportation systems for delivery of this gas to markets in the lower 48 states. The Committees will examine the institutional, resource and other factors which may constrain or significantly influence the cost, timing and mode of delivery of this natural gas into existing distribution systems.

To facilitate our respective Committee's consideration of this matter and to develop a factual background on the major policy decisions respecting Alaska gas, interested persons are invited to respond to all or any of the attached questions by February 11, 1976.

Materials submitted will be included in the hearing record on this matter.

HENRY M. JACKSON,
Chairman, Committee on Interior and Insular Affairs.
WARREN G. MAGNUSON,
Chairman, Committee on Commerce.

I. ASSESSMENT OF NATURAL GAS SUPPLIES

A. Natural Gas Supplies

(1) What are the current estimates of proven reserves in:
(a) the Sadlerochit formation of the Prudhoe Bay field,
(b) other formations in the Prudhoe Bay field,
(c) reserves elsewhere in Arctic or Interior Alaska, or on the Arctic OCS, and
(d) the Mackenzie Delta and adjacent Canadian onshore and offshore areas.

(2) What additional reserves can reasonably be expected to be discovered and produced from each of these areas by 1985?

(3) What is the range of uncertainty and/or dispute in each of the estimates in questions 1 and 2 above:
(a) resulting from geological or engineering uncertainty,
(b) depending on leasing or resource development policies, or
(c) resulting from uncertainty about other factors (economic incentives, industry response, logistical problems, etc.)?

(4) What are the potential natural gas resources in each of the areas identified in question (1) and the likelihood of their producibility in volumes which could influence the viability or relative merits of alternative systems for delivery of Prudhoe Bay natural gas?

(5) Consider specifically what leasing or development policy regarding the Alaska outer continental shelf, Naval Petroleum Reserve No. 4, the Arctic Wildlife Range, state lands and lands controlled by Alaska Native corporations might be necessary to make viable various alternative transportation systems? Consider also the possibility of major discoveries in Lower Cook Inlet, the Gulf of Alaska, or other areas of Alaska, and their implications for the viability or merits of alternative transport systems?

B. Deliverability and Cost

(1) What levels of natural gas production could each of the areas considered in subpart A above reasonably be expected to support in each year 1980 through 1985, if transportation were available, given due allowance for the time necessary for field development?

estimates? Consider particularly the relationship between crude oil recovery and natural gas production from the Prudhoe Bay field.

(3) The Van Poollen study for the State of Alaska implies that the potential tradeoff between gas and oil production from the Sadlerochit formation will not be known until

(a) tests have been made of the ability to inject water into the reservoir and a source of water has been assured, and

(b) the operation of the aquifier underlying the reservoir has been observed during oil production.

Is this inference correct? If not, can the optimum rate of gas production presently be calculated? If so, what is it? If the inference is correct, when are the earliest and latest dates that enough information might be available to make a prudent decision on the rate of gas production and the system to transport such natural gas

(4) (a) What is the statutory mandate and policy of the oil and gas conservation authority in Alaska with respect to optimizing the joint production of oil and gas?

(b) To what extent is there a requirement or authority for the agency or the State to consider economic or development factors (as opposed to physical conservation alone) in regulating field production levels?

(5) (a) Could the rates of production at Prudhoe Bay now contemplated by the applicants in Docket CP–75–96 before the Federal Power Commission be appreciably reduced by actions of the State of Alaska?

(b) When will the Alaskan conservation agency decide on the allowable rate of natural gas and oil production?

(c) Can its initial decision be later modified?

(d) Is there a conflict between the FPC's certificating authority and the State's conservation authority? If so, which authority would prevail?

(6) What is the anticipated cost (not necessarily equal to price) of Prudhoe Bay natural gas at the wellhead? Please supply the assumptions and detailed back-up for such estimates. Specifically:

(a) Are these calculations incremental costs, assuming that all joint costs of lease acquisition and field development are borne by oil production, or do they assume an allocation of such joint costs to gas production; and

(b) Does the cost estimate include the value of oil production forgone, if any?

A. Anticipated Shortages

In the absence of the Alaskan gas, what are the anticipated natural gas shortages in the lower 48 states by region in the 1980–85 period?

(1) Which pipelines are expected to be in deepest curtailment of priority users in that period? What is the range of uncertainty associated with these estimates?

(2) What is the anticipated intrastate demand for natural gas in Alaska during the 1980–85 period?

(a) How much of the Prudhoe Bay gas is planned to be consumed in Alaska?

(b) To what extent do these projections of Alaskan consumption assume natural gas use for boiler fuel and other uses for which oil or coal could be substituted?

(c) How much do these estimates vary with different assumptions concerning natural gas and oil prices?

(3) Which pipelines or distributors have options to purchase Alaskan natural gas at this time?

(a) Would the same piplines and distributors obtain Alaskan natural gas regardless of whether the Arctic Gas or the El Paso project are approved?

(b) What are the terms and conditions of these options to purchase?

(c) If Prudhoe Bay gas were to be sold to the pipeline systems in greatest need on the basis of the best current projections pursuant to the FPC's current curtailment policy, which pipelines would receive the gas and what quantity would be sold to each?

(d) On what terms would non-transportation system owners have access to the Alaskan gas transportation system?

(4) The State of Alaska has not yet committed its royalty share of the Prudhoe Bay gas to sale or options. Will the State's decision regarding disposition of its royalty gas (a), between interstate and intrastate purchasers, or (b) among interstate purchasers, significantly influence the viability or the FPC's evaluation of alternative transportation systems?

B. Price

(1) Is the demand for Alaskan natural gas sensitive to natural gas prices and to the price of alternative fuels in the lower 48 states?

(2) When do the producers and purchasers intend to enter into firm long-term contracts for the sale of the Prudhoe Bay natural gas?

(a) What is the reason for the delay to date?

(b) What price will the producers receive in the absence of FPC price controls?

(c) What will be the duration of the sales price?

(d) What are the other likely major terms of such contracts?

(3) For the two transportation systems proposed by the applicants and the modifications recommended by the FPC environmental staff, what are the anticipated:

(a) capital costs (in 1975 dollars);

(b) the initial total transportation tariff per Mcf delivered to points on the West Coast, in the Midwest and in the East; and

(c) the total transportation tariff per Mcf delivered to such destinations 13 years after initial delivery?

(4) Are current estimates realistic in light of the large cost overruns that recently have characterized major construction projects like the TransAlaksa oil pipeline, the Washington Metro or nuclear generating plants? To what extent do the current cost estimates take into account the likelihood of materials shortages, failure to perform by certain contractors, defects or late delivery of equipment, labor disputes, unusually severe weather, regulatory delays, etc.? If the experience of the Alaskan oil pipeline and all these factors are taken into consideration, what is the magnitude of total system costs (in both current dollars and 1975 constant dollars) that conceivably could be expected?

(5) To what extent does transportation at each system's design capacity depend upon additional discoveries of new reserves? What is the range of anticipated total capital and operating costs per Mcf at various levels of throughput?

6. (a) What is the size of the market for Alaskan gas in the lower 48 states if its average lower 48 city gate price (in constant 1975 dollars) is $2.00 per Mcf? $2.50 per Mcf? $3.00 per Mcf? $4.00 per Mcf? $5.00 per Mcf? What is the assumed oil price in these estimates?

(b) At each average price what portion of the total gas over the course of a year would be consumed by priority users, (residential and commercial) and at what price; and what portion would have to be sold for boiler fuel or as interruptible supply, and at what price?

(7) What would be the impact on demand for Alaskan gas if its price at the city gate were substantially higher than the equivalent average price of oil? At what price per Mcf would pipelines no longer be willing to purchase Alaskan gas? What is the probability and under what circumstances, taking into account production costs, all tariffs

and taxes, that the price of Alaskan gas would exceed the amount purchasers are willing to pay for an equivalent volume of base load supply?

Please provide the estimates requested in questions (6) and (7) on the alternative assumptions that Alaska natural gas is required to be priced (1) incrementally or (2) on a "rolled in" basis.

C. Cost of Delay

(1) What revisions must be made in project costs for each year of delay (up to five years) in the commencement of construction?

(2) What is the best estimate of the total cost to consumers for each year of delay beyond 1980 in terms of the price of alternative fuels or impact on the economy of a gas shortage?

III. STATUS OF REGULATORY APPROVALS

A. Agencies Involved

List all of the Federal and state agencies which must issue permits or approvals as a prerequisite to the construction or operation of an Alaskan gas transmission system.

(1) State the estimated timetable for the applicants to obtain such approvals in the absence of expediting legislation.

(2) Is it possible or reasonable for the FPC to grant a certificate for any gas transportation system before the deliverability issues identified in subpart I, B are resolved?

(3) State any approvals required after the FPC issues a certificate of public convenience and necessity. Can the necessity of any such approvals delay or even prohibit construction of the system?

(4) Identify the possibilities for slippage and delay in the timetable for the FPC and other agency approvals?

B. Federal-State Relations

(1) Are Federal and state approval processes coordinated?

(2) Is there a potential for conflict between state land-use, coastal zone management, construction, conservation, safety and other regulatory or taxation activities and Federal requirements and permits?

(3) What is the mechanism, or what mechanism should be established, for encouraging early state input and resolving differences between Federal and state policies?

C. Judicial Review

(1) Which Federal or state agency decisions regarding the transportation of Alaskan gas are the likely subjects of judicial review? What is a reasonable estimate of the time required to complete such judicial review of agency decisions? Could construction commence while such judicial review was underway?

(2) In the absence of any legislation, what is the expected date on which construction could commence? Be completed?

D. Alternatives

Please provide estimates of the costs, environmental impacts, construction lead times and other relevant facts concerning:

(1) An alternative pipeline route from the North Slope to Fairbanks and then paralleling the Alcan Highway;

(2) Conversion of natural gas to methanol and shipment by the trans-Alaska oil pipeline or tanker or submarine; and

(3) Other possible alternatives.

E. Safety

What are the design and operation techniques to assure safe and continuous operation of Alaskan natural gas transportation systems?

1. What is the relationship between the Federal Power Commission and the Department of Transportation with respect to safety standards during gas pipeline construction and operation?

2. What are the probable and worst case estimates of injury and damage of natural gas pipeline accidents?

3. Which State and/or Federal agencies have jurisdiction over LNG terminal siting with respect to safety, distance from population centers, and ship traffic control?

4. What plans or procedures have the responsible agencies or the applicant devised to prevent or deal with LNG tanker collisions or other LNG handling accidents? What is the best available technology to minimize the risk of an LNG accident and to deal with serious LNG accidents?

5. What are the probable and worst case estimates of injury and damage that could result from an LNG tanker or terminal accident? What are the owners' liabilities for such an accident? Are existing liability laws adequate to provide compensation for all damages resulting from a probable and worst case accident?

F. Canadian Procedure

(1) What is the status of Canadian proceedings regarding the Arctic Gas and Maple Leaf projects? What is the anticipated schedule for final approvals by the National Energy Board and the Cabinet? What approvals are required by Provincial Governments? Are there other opportunities for delay of a Canadian decision, such as settlement of Canadian native claims? What is the best estimate of when the Canadian Government will reveal whether a trans-Canada route to transport Alaskan gas is acceptable to Canada?

(2) To what extent does the Canadian decision in fact await or depend upon a decision by the United States?

(3) What diplomatic channels or other mechanisms are available to assure coordination of the U.S. and Canadian approval processes? How would differences be resolved if incompatible trans-Canada routes are approved in the U.S. and Canada?

G. Treaty Status

(1) What is the anticipated initialling date for the U.S.-Canadian pipeline treaty?

(2) What are the terms of the draft treaty?

(3) Would the treaty limit or restrain the taxation or regulatory authority of state or Provincial governments?

(4) What other issues remain to be resolved in a specific protocol dealing with an Alaska-Canada transmission system?

IV. FINANCING

A. Private Capability

(1) Do private capital markets have the capability to provide the necessary funds for the construction of an Alaskan gas transportation system? Can the equity capital for this project be attracted solely on the basis of regulated revenues from natural gas consumers? What is the anticipated interest rate at which needed long-term debt capital can be raised?

(2) Assume the project encountered substantial cost overruns. Could it still be financed privately? What are the outer limits of the amount of capital that could be privately raised?

B. Subsidies

(1) To what extent are either of the applicants intending to seek Federal subsidies, loan guarantees or other forms of financial assistance to offset costs or provide cost overrun protection?

(2) Can either project be constructed and operated without any such Federal assistance?

(3) If Federal assistance to protect against cost overruns is required, what incentives can be incorporated to give the successful applicant incentives to minimize costs?

(4) If a project requiring LNG transportation is certified:
(a) How many vessels would be needed?
(b) Where would such vessels be constructed?
(c) What is the amount of subsidies or loan guarantees likely to be requested?

C. Tariffs

(1) Is it anticipated that Alaskan gas will be sold pursuant to an all-events full cost of service tariff whereby rates are automatically adjusted to reflect any costs incurred and are paid by purchasers whether natural gas is delivered or not?

(2) What is the anticipated risk that gas deliveries will be interrupted over the life of a project?

(3) Is the private financing of the Alaskan gas transportation system contingent upon state and Federal approval of such an all-events tariff?

(4) Are there precedents for an all-events tariff in other situations?

(5) What is the likelihood that state public utility commissions would approve natural gas purchases conditioned upon such tariffs?

(6) Can purchasers obtain insurance from private markets to insulate them against financial difficulties if gas deliveries are interrupted?

(7) If the risk of interruption is significant, would it be prudent to limit the percentage of Alaskan gas entering any pipeline or distribution company?

V. LEGISLATION

(1) What legislation, if any, is required to facilitate the construction of an Alaskan natural gas transportation system?

(2) What subjects should such legislation address? Consider and comment on such matters as:
(a) an expedited schedule for FPC action;
(b) a narrowing of judicial review in time and scope;
(c) establishment of a Congressional review process;
(d) congressional selection of one or more routes by directing all involved federal agencies to expeditiously grant all required permits and licenses;
(e) establishment of wellhead price ceilings and tariffs for Alaskan gas;
(f) establishment of a consolidated administrative process for the siting of LNG facilities;
(g) basis for and extent of an LNG vessel owner's liability for damages in the event of accident;
(h) provision for financial assistance to assure project construction;
(i) providing for allocation of Alaskan gas to pipeline systems in greatest need;
(j) resolution of environmental issues associated with the transportation of Alaskan gas; and
(k) other matters.

○

February 12, 1976

TO: J. Gore - Washington, D.C.

FROM: D. B. Walker - San Francisco, CA

Response to questions regarding "Issues Concerning the Transportation of Natural Gas":

I.A.1. (a) The current estimate of proven reserves of gas in the Prudhoe Bay pool, consisting of the closely related Sadlerochit, Sag River and Shublik Formation, is 24 trillion cubic feet.

(b) No other hydrocarbon-bearing formations in the Prudhoe Bay field are, at this time, considered to contain proven reserves of gas.

(c) & (d) BP Alaska does not have sufficient data to establish whether proven reserves of gas exist elsewhere in Arctic or interior Alaska or on the Arctic OCS or in the Mackenzie Delta and adjacent Canadian onshore and offshore areas.

I.A.2. BP Alaska does not have sufficient data available to make any reasonable predicition of the volume of additional gas reserves that may be discovered and produced from these areas by 1985.

I.A.3. (a) Geological and engineering data would suggest that the uncertainty in the reserves estimate given in I.A.1. (a), above, is approximately ±15%.

(b) & (c) As we are unable to make any reasonable prediction of the volume of gas reserves in areas other than in the proven acreage of Prudhoe Bay, the estimates are not sensitive to factors listed in this question. There can be no doubt that leasing and other policies that give real incentives for active exploration and development work will increase the prospects of additional gas reserves being discovered and proven.

I.A.4. We have made no estimate of the potential gas reserves of the areas listed that could be considered to be reliable,

nor have we evaluated the effect these might have on transportation systems for Prudhoe Bay gas.

I.A.5. BP Alaska is not directly involved in any gas pipeline ventures and therefore is not best qualified to respond to this question. Any leasing and development policies that give incentives for active exploration and production should lead to a situation where more data will exist to evaluate the possible alternative transporation systems.

I.B.1. When a gas pipeline is constructed and available to transport gas from the Prudhoe Bay field, sometime after the commencement of oil production, the field should be able to produce sales volumes of about 2 to 2.5 billion cubic feet of gas per day. These rates should be sustained by the operation of the field under an overall reservoir management scheme with pressure maintenance by water injection being applied and continued as necessary.

I.B.2. Until further information is available from both reservoir data and production history, there will remain some uncertainty as to the reservoir management necessary to sustain the offtake rates quoted. However, BP Alaska considers that offtakes within the range given can be sustained with appropriate development drilling and facilities installation, and with pressure maintenance as necessary so that there will be no significant loss of ultimate oil recovery.

I.B.3. BP Alaska has not yet received the full Van Poollen report and therefore is unable to comment on the implications in that study. Experience from production history and tests will enable the operators in the field to more precisely design a management scheme that will enable the field to be efficiently produced to sustain the planned offtake rates. We do not consider that any trade off between gas and oil production is implied by recognizing that this additional data will enable the operators to refine or revise their development plans.

I.B.6. It is not currently possible to estimate reliably what the ultimate cost of the facilities to be installed for gas production will be, nor, without any experience, what the exact operating costs might be until gas production commences. Both the unique nature of the location and the current trend

of escalating costs make any reliable estimations difficult. Further such direct costs should not be viewed in isolation from the overall costs of exploration for the discovery of this gas and the taxes that will be applied.

II.A.3. BP Alaska has entered into an agreement with Northern Natural Gas Company, which gives them the option to purchase the as yet undefined volumes of gas that may be attributed to BP Alaska through the BP Alaska/Sohio net profits interest agreements, up to a maximum volume of 3 trillion cubic feet. BP Alaska has not entered into any agreement which concerns the basis or method of transport of the gas which Northern Natural has the option to purchase, or any other gas that may be available to our company on the North Slope.

BP Alaska also has made similar commitment to Columbia Gas Transmission Corporation with respect to any Prudhoe Bay gas not required to satisfy its undertaking with Northern Natural Gas.

II.B.2. (a) As indicated previously, BP Alaska has granted to Northern Natural Gas an option to purchase up to 3 trillion cubic feet of gas attributed to its net profits interest in Prudhoe Bay leases, held by Sohio, and some of BP Alaska's other leases on Alaska's North Slope. The amount of Prudhoe Bay gas owned by BP Alaska is related by contract to the time and volume of sustained oil production from Prudhoe Bay, and also is related to the level of oil produced at specific times. The total amount of Prudhoe production also is dependent upon unitization and production methods, all of which makes it impracticable, if not impossible, for Northern to exercise its option until the Prudhoe field goes on production.

(b), (c) & (d) Northern's option provides for good faith negotiations of the price and other terms at the time gas is available for purchase.

BP Alaska also has made similar commitment to Columbia Gas Transmission Corporation with respect to any Prudhoe Bay gas not required to satisfy its undertaking with Northern Natural Gas.

PRUDHOE BAY FIELD

SADLEROCHIT SAND RESERVOIR OIL DATA ---JOHN HUBER

ANALYSIS OF STOCK TANK OIL SAMPLES

H_2 S-% wt.	NIL
SULPHUR % WT	0.95
POUR POINT	27.5°F.
KINEMATIC VISCOSITY (CENTISTOKES)	
50°F.	53
70°F.	26
100°F.	12.6
GRAVITY API	27.9
VANADIUM ppm	13.5
NICKEL ppm	7
WAX % WT	6.3
MELT PT WAX°F	135
% DISTILLED 150°C.	9.5
" 200°C.	17.5
" 300°C.	38.0

SEPARATOR GAS DATA

	PRESSURE (psia)	TEMP.	GOR.	GAS SP. GR.	S.T.O. GRAVITY
1st	615	130	620	0.785	
2nd	100	120	130	0.950	
3rd	15	115	37.7	1.33	0.8864
			787.7		(28.13°API)

SEPARATOR GAS MOL %

	1st	2nd	3rd
CO_2	15.27	18.75	12.91
N_2	0.75	0.23	0.03
C_1	73.94	55.66	24.03
C_2 - C_9	10.04	25.36	63.03

NOTE HIGH CO_2 CONTENT

RESERVOIR TEMPERATURE - 200°F.

REPORT ON METHANOL/METHYL FUEL

Prepared for: Senator John Huber

By: Franklin D. Fleeks

Introduction

Along with the discovery of the Prudhoe Bay oil field came the discovery of a vast pool of gas located at the same field. In order to exploit and remove this resource various schemes have been brought forth. The focus has been on removal by a gas pipeline. The Legislature formed the Joint Gas Pipeline Impact Committee to make a thorough study to help formulate and implement necessary policy decisions.

While gathering its data, questions have arisen dealing with (1) competing gas line proposals, (2) how to handle the state's royalty gas, and (3) problems with federal regulatory agencies. In a thought-provoking report, the consultant to the Committee -- Rush Moody, Jr., succinctly outlined the federal problem. If natural gas is sold in interstate commerce, regulation will be done by the Federal Power Commission. Whether or not the state's royalty gas is initially taken "in kind" it is more than probable that when a later request is made, the state could not withdraw its royalty share without FPC approval.[1]

Considering the current regulated price of gas and the degree of possible federal interference with Alaska's policy regarding its natural gas resource, several alternatives have been looked at. Senator Huber, a member of the Joint Committee, has pursued an alternative based on conversion of the gas to methanol/methyl fuel.

We use methanol here for convenience. The proper term should be methyl fuel, a liquid consisting principally of methanol, produced catalytically from synthesis gas, a mixture of hydrogen and carbon monoxide.

What is Methanol/Methyl Fuel and Its Uses

Methanol/Methyl Fuel or methyl alcohol, CH_3OH, is a colorless, neutral liquid at ambient temperature with a mild odor.[2] In its earliest form, it was called "wood alcohol." It is a clean burning stable fuel which can be converted from natural gas and coal. It can be shipped in conventional tankers and stored in conventional tanks.

The versatility of methanol is clearly shown in the use that can be made of it. Some of its more important uses currently and in the future are:

(1) Directly as a liquid boiler fuel;

(2) Turbine fuel;

(3) In automotive fleets;

(4) Petrochemical feedstock;

(5) Development of Alaskan coal resources.[3,4]

Chemical Feedstock

As Exhibit 1 shows, methanol/methyl fuel can be converted into a number of chemicals having commercial value. The methanol/methyl fuel produced from Alaskan gas and coal resources can create an array of downstream petrochemical industries. With the decrease of hydrocarbon feedstocks based on natural gas in the lower 48 there is a market for methanol/methyl fuel produced from Alaskan coal and gas.

Gasoline Additives

Methanol/methyl fuel can be used as a gasoline additive or as a substitute for gasoline.

As an additive, methanol/methyl fuel will decrease current gasoline consumption on a barrel for barrel basis. According to available information, there is no fall off in fuel efficiency up to approximately ten percent blend levels.[5] Methanol/methyl fuel, however, has about half the heating value per gallon when compared to gasoline. Comparison of some of the properties of methanol/methy fuel and gasoline are shown in Exhibit 2.[6] A bill, introduced in the California Legislature in 1975, would require the addition of methanol to gasoline sold in the state.

Methanol/methyl fuel can effectively reduce the level of pollutants caused by automotive emissions.[7] From a study carried out by the Lawrence Livermore Laboratory in 1974 the following is given:

> ". . . The health effects on man as a consequence of emissions from methanol as compared to gasoline fired automobiles can be summarized as follows: (1) reduction in adverse health effects of photchemical smog as a consequence of reduced photoactivity, (2) elimination of the possibility of lead toxicity to children and other sensitive individuals, because no lead is needed to boost the octane number (3) aromatic emissions from automobiles will be drastically reduced, reducing the carcinogens released to the atmosphere, and (4) reduce exposure to sulfuric acid mist. . ." 8

One of the crucial elements in the gas pipeline/methanol energy debate is what is the net effective energy. If methanol is added in at ten percent blend it will increase the efficiency of energy used in the automobile.

> -". . . (The) maximum BTU's available from the estimated Prudhoe Bay maximum gas production-is 2.36 trillion BTU/degrees. That same gas, transformed into methanol at the wellhead would yield at least 514,000 bbl of methanol. Transported to the lower 48 states at no BTU shrinkage . . . it would displace 514,000 bbl of gasoline in a ten percent blend. Gasoline has a BTU content of 514 million BTU per bbl so the net gain in effective energy in the transportation part of the lower 48 market would be 2.7 trillion BTU/day. This is more than the natural gas delivered BTU's of heating value. . . ." 9

Industrial or Electrical Utility Fuel

The use of methanol/methyl fuel as a liquid boiler and liquid turbine fuel is currently feasible. Tests have been carried out by the electrical utility industry which show that turbines perform more " efficiently on methanol/methyl fuel. Although twice as many gallons of methanol/methyl fuel must be burned to provide the same number of BTU's as oil, turbines burning methanol/methyl fuel generate up to six percent more power per million BTU's.[10]

Transportation of Methanol/Methyl Fuel

The transmission of methanol/methyl fuel to a shipping point for transport to potential markets can be done in a variety of ways. After conversion at Prudhoe Bay, it can be shipped on a batch basis through the Alyeska pipeline, a common carrier.[11] The enabling legislation for the Alyeska Pipeline project (PL 93-153) allows for transportation of synthetic or gaseous fuels through the Alyeska Pipeline.[12] Also a pipeline could be built entirely for methanol/methyl fuel and other synthetic or gaseous fuels.

Once the methanol/methyl fuel reaches tidewater it can be shipped in conventional tankers. Unlike liquified natrual gas (LNG) methanol/methyl

fuel does not need special tanker ships to carry it or special storage facilities. Present proposals call for the transportation of natural gas by pipeline to Gravina Point where it will be liquified for shipment via tankers (to be built) to it[13] emand markets. Use of conventional tankers in transporting methanol/methyl fuel can cut into the lead time needed to get the product from the gas field to market.

Methanol/Methyl Fuel Concept Effect on Alaska

One immediate effect would be to remove the gas from FPC jurisdiction. In Mr. Moody's letter of January 14, 1976, he concluded:

> ". . . if North Slope gas is converted to methanol before becoming committed to interstate commerce, the conversion facilities, the methanol itself, and the transportation of methanol would not be subject to FPC control. Since the natural gas would be produced and "consumed" (i.e., converted to something other than natural gas) within the state, the natural gas would never become subject to FPC jurisdiction. . ." 14

For Alaska, one of the most promising concepts that methanol/methyl fuel opens up is the possibility of using the state's coal resources. By taking the state's royalty gas in kind and transporting the gas to the vicinity of the major Alaskan coal fields, especially those near tidewater, a new industry can be developed.

The coal and gas mixture increases the conversion to methanol/methyl fuel by approximately ten percent. The building of the methanol/methyl fuel plants will provide an infrastructure that will be in place once the natural gas resource is depleted. That infrastructure will be available to further develop the state's coal resources. The building

of the methanol/methyl fuel plants will provide needed energy for the state, increase employment, and provide the industrial infrastructure needed to develop one of the state's most abundant resources, coal.

Conclusion

From review of the literature and studies, most of the data presented is in a prospective form. Even though prospective, the production of methanol/methyl fuel using Alaskan gas is feasible and should be pursued as a viable alternative. The methanol/methyl fuel concept will negate federal regulation, provide a substitute to help alleviate the nation's energy problems and protect the environment by reducing pollutants. The market for industrial chemical uses is not yet defined. However, the net quantities of methanol/methyl fuel produced from Alaskan natural gas can be absorbed by the electrical utility and automotive markets. Continued study should be made of the methanol/methyl fuel concepts.

FOOTNOTES

1. Rush Moody, Jr., Legal Analysis of Issues Relating to Natural Gas T Transportation, 64 (1976).

2. Lecture, Methanol -- Feedstock for the Chemical Industry and Fuel of the Future, Tiemann and Raghuraman, Selas of American, April, 1973.

3. Alaskan Methanol Concept -- A Pre-Feasibility Study, Institute for Energy Analysis, Oak Ridge Associated Universities, IEA Research Memorandum, 75-5, Nov., 1975.

4. The Clean Synthetic Fuel That's Already Here, E. Faltermeyer, Fortune Magazine, Sept., 1975, 147.

5. Alaskan Methanol Concept, supra.

6. Methanol -- The "New Fuel" from Coal, Mills and Harney, Chemtech, January, 1974, 26.

7. Arctic Energy A New Perpesctive, Westinghouse Oceanic Division, January, 1976, 42.

8. Paper, Environmental Aspects of Methanol as Vehicular Fuel: Health and Environmental Effects, Beverly J. Berger, Lawrence Livermore Laboratory, Sept., 1974, 4-5.

9. Arctic Energy, A New Perspective, supra, 50.

10. Faltermeyer, supra, 150.

11. Alaska Methanol Concept, supra, 66.

12. Arctic Energy, A New Perspective, supra, 10.

13. Trans-Alaska Gas Pipeline Project, State of Alaska, Department of Labor, December, 1975, 2.

14. Moody, Jr., Cover letter, supra, 8.

EXHIBIT 1

73

Figure 1

METHANOL

- **Formaldehyde**
  - **Trimethylolpropane**
    - Alkyd Resins
    - Polyurethanes
  - **Pentacrythritol**
    - Plasticizers
    - Alkyd Resins
    - Pentaerythritol-tetranitrate
      - Explosives
  - **Urea-formaldehyde Resins**
    - Malamine-formaldehyde Resins
    - Phenol-formaldehyde Resins
    - Acetal Resins
    - Cresol Resins
    - Crecylic Acid Resins
    - Resoremol Resins
    - Urea Formaldehyde Fertilisers
    - Paraformaldehyde & Trioxane
    - Disinfectant & Preservative
    - Dyes, Rubber chemicals & pharmaceuticals
    - Explosive
    - Phenol Resin Curing
    - Hexamethylene tetramine
    - Ethylene Glycol
      - Antifreeze
      - Cellophane
      - Explosives
      - Polyethylene-Terephthalate
      - Alkyd Resins
- **Methyl Bromide**
  - Grain Fumigant
- **Methyl-Chloride**
  - Tetramethyllead
  - Methylene Chloride
- Antifreeze
- Aircraft fuel
- Inhibitor
- Solvent
- Methylacrylate
- Methyl Parathion
- Dimethyl Sulfide
- Formic Acid
- **Methylamines**
  - **Mono-Methylamines**
    - Herbicides
    - Insecticides
  - **Di-Methylamines**
    - Rubber Accelarators
    - Dimethyl-Formamide
      - Textile Chemical
  - **Tri-Methylamines**
    - Chlorine products
      - Vitamin
- **Dimethyl Terephthalate**
  - Polyethylene Teraphthalate
    - Fibers
    - Films

SELAS OF AMERICA (NEDERLAND) N.V.

EXHIBIT 2

COMPARISON OF METHANOL AND GASOLINE

	Methanol	Gasoline
Formula	CH_3OH	$C_4H_{10}C_{12}H_{26}$
Boiling point, F	148	100-400
Freezing point, F	-144	-100
Latent heat of vaporization at bp BTU/lb	502	116
Liquid density 16/gal.	6.6	6.2
Heat of combustion (liquid-fuel-liquid H_2O) BTU/lb.	9,776	20,260
BTU/gal.	64,500	124,800

Source: Mills and Harney, Methanol -- The "New" Fuel" from Coal; Chemtech, January 1974, 27.

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February 13, 1976

Senator John Huber
Chairman,
Special Committee on Taxation and Revenue
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear John:

Thank you for sending me a copy of the Rush Moody report on "Legal Analysis of Issues Relating to Natural Gas Transportation." I did indeed find it quite interesting and informative. While I am not competent to comment on the legal issues analyzed, I am happy to respond to your request for comments or recommendations on the report, as it may touch on economic questions. This letter represents my initial reaction to some of these matters:

1. As I understand the Moody report, a key legal conclusion is that the State should take royalty gas in kind rather than in value; otherwise, it may lose control in the future of this royalty gas because it will come under FPC regulation, and thus it would be possible that none of Alaska's natural gas would be available for consumption within the State.

2. From an economic point of view, I think the State would also be wise to take royalty gas (and maybe royalty oil also) in kind, so as not to lose the future option on having the royalty gas. This is particularly true because the real value of the royalty gas to the State may be much higher than its market value, for the following reasons.

3. First, at present the price of FPC regulated natural gas moving in interstate commerce is about one-fourth its real market value, as measured by prices on intra-state sales (50¢ versus $2.00 per MCF). While natural gas prices may be deregulated in a few years, there is no present certainty on this.

4. More important, in the long run I think it is generally agreed that the use of natural gas for its heat content as a fuel is a waste of a valuable resource, since its greatest value would be as a petrochemical feedstock. This suggests among other

things that over the long run natural gas prices will rise as it increasingly is reserved for its more valuable use.

5. But, because of the high profit rates the oil companies use in their DCF calculations (as discussed at length in my report), their decisions will tend to be made on short run profit considerations, which may not be best for the State. By way of hypothetical illustration, I constructed a case to show where it might be better for the State to have the gas stay in the ground until it became more valuable, while for the companies it would be more profitable to produce quickly. The hypothetical assumptions were that natural gas would sell at $2 per MCF in the 1980s, $6 per MCF in the 1990s, and $18 per MCF thereafter. Assuming a time value of money, or discount rate, for the companies of 20% per year and for the State of 10% per year, it turns out that if a gas field has a 20 year life, the companies would be best off producing all the gas in the 1981-2000 period, while the State would be better off with the gas produced in the 1991-2010 period. (See attached table.)

6. The problem of the State having a lower discount factor, and hence a longer time horizon, than the companies is of course a general one which may lead to conflicts of interest in many oil and gas areas. Thus, for example, it may be better for the State if all oil and gas were produced at a slower rate than the companies would like, and it is possible that this could be handled under conservation regulations. Specifically, however, with regard to its royalty gas, if the State decides it would be better off with gas production at a slower rate than the companies want, perhaps a way could be worked out to require the companies to leave the royalty gas in the ground until the State requests it, either for its own use or for resale. Alternatively, the State could perhaps exchange the royalty gas with companies for "future gas" to be delivered by them when desired by the State.

7. Another factor favoring taking of royalty gas in kind is that market prices of gas may not reflect the full economic cost to the State of not having the gas. In the short run, a lack of gas could mean costly shutdowns of industry and great consumer inconvenience. In the long run, the absence of an assured supply of gas might hinder the whole economic development of the State. Thus, the question of royalty gas cannot be divorced from questions of planning long-run economic development. But, at least keeping the option to take gas in kind does not foreclose future industrial development opportunities.

8. Also, I think taking royalty gas in kind would have the advantage that it will help the State learn more about the oil and gas business, from practical experience. With oil companies fully integrated from the raw material through petrochemicals, and with the allocation of costs between oil and gas production,

and between raw material production and other functions, often being arbitrary, it is important for the State to have a good grasp of the practical economics of the gas business as well as the oil business. This is vital for the State even if it is to simply maximize its benefits as a tax collector.

9. Finally, I certainly agree with the Moody Report's general recommendations that State leasing policies and taxation on natural gas should be reconsidered. In my opinion both of these questions call for detailed study of possible alternatives. Here I would only observe that tax rates in Texas and Louisiana, where the oil companies have widespread political support from small producers, would not normally be an adequate yardstick as to what rates of taxation could be imposed.

I hope these general comments will be of use to you. My thanks also for your kind words about my report.

Yours sincerely,

Michael Tanzer

Dr. Michael Tanzer,
President

ALASKAN NATURAL GAS PRODUCTION: HYPOTHETICAL EXAMPLE ILLUSTRATING POSSIBLE CONFLICT OF INTEREST BETWEEN THE STATE AND THE COMPANIES OVER TIMING OF PRODUCTION

Assumptions:

(1) Prices of natural gas ($ per MCF): 1981-90, $2; 1991-2000, $6; 2001-2020, $18.

(2) Ignore in all cases investment and operating costs (Alternative interpretation: Prices are net of costs).

(3) Potential production = 1 MCF per year for 20 years.

(4) Discount factors for computing present value in 1980 of future income from gas: companies, 20% per year; State, 10% per year.

TOTAL VALUE OF INCOME FROM 20 YEARS OF GAS PRODUCTION ($):

	1981-2000	1991-2010	2001-2020
A. Gross Value (undiscounted)			
(a) First 10 years	20	60	180
(b) Next 10 years	60	180	180
(c) Total 20 years	80	240	360
B. 1980 Present Value, Discounted at 20% per year (company rate)			
(a) First 10 years	8.39	4.06	1.96
(b) Next 10 years	4.06	1.96	.32
(c) Total 20 years	12.45**	6.02	2.28
C. 1980 Present Value, Discounted at 10% per year (State rate)			
(a) First 10 years	12.29	14.22	16.43
(b) Next 10 years	14.22	16.43	6.32
(c) Total 20 years	27.51	30.65**	22.75

** = Most profitable production period

METHYL-FUEL

Wentworth Brothers, Inc.

Cincinnati, Ohio

At the onset, I would like to very briefly outline the METHYL-FUEL concept.

At the present time, the total installed world's methanol production (chemical grade) is about 25,000 short tons, (a short ton contains about 7.2 API barrels, or just over 300 gallons). This capacity consists of about 5,000 tons in Japan with the balance about equally split between the U.S. and the balance of the world.

In the U.S., our personnel have designed about 30-35% of the installed capacity, including the current worlds largest chemical grade plant (2,500 TPD) down in Beaumont, Texas.

In part stemming from the later plant, and recognizing the large volumes of associated gas being flared in remote locations, the METHYL-FUEL concept was brought forth as a means to bring this energy to market in a stable liquid form. Events in 1973, the Middle East war, temporarily brought a halt to this endeavor in many parts of the world.

This then prompted a renewed look at producing METHYL-FUEL from our nations coal reserves.

When considering coal as feedstock, one is forced to consider the environmental unacceptable coals, the low quality coals or the marginal coals in remote locations. Good, high quality coal should be used as is.

A brief while back, it was brought to our attention that significant quantities of coal existed in Alaska. Very preliminary studies indicated that these coals can be quite economically converted to METHYL-FUEL and transported as a liquid to distant markets. Through this work, the melding of possibilities came forth wherein the production of METHYL-FUEL from the State's coal and/or from the State's coal and gas, appears to offer a very attractive situation. Examples:

1. The synthesis gas from coal for METHYL-FUEL production is deficient in hydrogen. Synthesis gas from natural gas is deficient in carbon. This brings forth the prospect of a optomized combination coal and gas fed plant with thus a considerable increase in conversion efficiency.

2. Many of the Alaskan coals appear to be the type that would lend themselves to simple coal beneficiation. This brought forth the concept wherein, for example, two tons of coal would be mined, one ton would be upgraded to a dehydrated, low sulfur, high BTU coal, the other ton (or the reject from the beneficiation) would serve as METHYL-FUEL feedstock. The METHYL-FUEL would then be utilized as the slurrying media for the beneficiated coal. This not only results in further increases in conversion efficiency, but permits very economical transport of the beneficiated coal and a most appropriate use of gas and coal in the State.

3. It is understood that the gas with Alaskan crude contains a rather large amount of carbon dioxide (CO_2). For METHYL-FUEL production, this presence of CO_2 is a benefit in that it does not have to be removed to permit METHYL-FUEL production, but rather augments it and becomes of the product -- METHYL-FUEL.

4. It is understood that the Alaskan associated gas contains a fair amount of LPG (Propane and Butane) and natural gas liquids (iso pentane and heavier). Our firm has a proprietary process wherein the butane and heavier liquids can be handled very economically with METHYL-FUEL with no loss in conversion efficiency for these stocks. This concept can thus result in the elimination of the waste in at least one, perhaps two, or even three of the other energy systems that will result. The capital and operating cost

savings that are possible here can be quite outstanding. Also, it is this point that makes comparison of METHYL-FUEL handling with other gas handling alternatives about like comparing "apples with oranges" -- with the apples in this case being much more valuable than the oranges because of the inherent case in handling METHYL-FUEL.

5. Last, but not least, is the further processing on the Alaskan scene of the byproducts from a METHYL-FUEL complex with the value added benefits to Alaska. The ones that immediately suggest themselves are ammonia, urea, the ammonium nitrates and the many -- many drivatives possible from the chemical grade alcohols. In summary, it is believed that METHYL-FUEL should be given serious consideration in Alaska. The benefits resulting are many, and far reaching; i.e.:

A.) METHYL-FUEL from coal will in effect revive an old industry and initiate a new vibrant Alaskan industry.

B.) METHYL-FUEL from coal and gas will start and establish an infrastructure which, when the gas reserves are depleted the quantities of coal remaining will permit an on-going clean energy supply situation into the next century.

C.) The existance of a METHYL-FUEL facility will permit consideration of a vast downstream petro-chemical complex for products which in their own right may not otherwise be economically viable.

LNG, METHANOL, FISCHER-TROPSCH SYNTHESIS: METHODS OF UTILIZING REMOTE NATURAL GAS

SRI has recently completed a $300,000 technoeconomic study on this subject. This in-depth study is sponsored by 40 companies from 16 countries.

At the present time, trillions of cubic feet of natural gas are being burned uselessly in flares in remote oil fields in the Middle East, Africa, South America, Indonesia, and elsewhere. Remote natural gas fields have not been developed because of lack of markets.

The economical utilization of remote gas would be attractive to both the exporting and importing countries. Schemes previously considered uneconomical for transporting and utilizing this gas are now being seriously proposed. The two most commonly suggested means of utilizing remote natural gas are liquefaction of the gas to LNG or conversion to methanol and transportation of the liquid product to the market. Several LNG projects are in operation or planned for utilizing natural gas from Algeria, Libya, Brunei, Indonesia, Nigeria, and Alaska. Proposed fuel methanol-from-gas projects have been announced for Middle East gas.

Less attention, however, has been given to other methods of utilizing remote gas. These methods include:

- Fischer-Tropsch liquid fuels
- Long distance natural gas pipelines
- Petrochemical manufacture.

This study includes technical and economic evaluations of all of these options for various distances between producing and consuming regions.

The cost of this study is US$8,000.

STANFORD RESEARCH INSTITUTE
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November 6, 1975

Senator John Huber
Pouch V
Juneau, Alaska 99811

Dear Senator Huber:

As I promised at our meeting here last month, I am sending you the Table of Contents of our recently issued report, "LNG, Methanol, Fischer-Tropsch Synthesis: Methods of Utilizing Remote Natural Gas."

If you have any questions, please contact me.

Sincerely,

Jim Moll

A. James Moll, Director
Energy Technology Department

AJM/jlb

Enclosure

cc: Anchorage, Alaska

John Thrasher

October 1975

LNG, METHANOL, FISCHER-TROPSCH SYNTHESIS: Methods of Utilizing Remote Natural Gas

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SRI Project ECC-3777

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CONTENTS

ACKNOWLEDGMENTS iii

LIST OF ILLUSTRATIONS xi

LIST OF TABLES xvii

ABBREVIATIONS AND CONVERSION FACTORS xxv

I INTRODUCTION 1

II SUMMARY AND CONCLUSIONS 5

International Trade in Natural Gas 5
Liquefied Natural Gas, Methanol, and Fischer-Tropsch Liquids 5
Petrochemicals in the Producing Country 8
Gas Pipelines 9

III WORLDWIDE SUPPLY-DEMAND FOR NATURAL GAS 11

Introduction 11
Summary 12
Demand 17
World Demand 18
United States 19
Western Europe 22
Japan 24
Communist Countries 25
Rest of the World 27
Supply 28
Middle East 32
Africa 33
South America 34
USSR 35
Far East 36
Reserves 37

IV ECONOMIC AND DESIGN BASES 41

Introduction 41
Design Bases 41
Location 41
Ambient Conditions 42
Gas Composition, Temperature, and Pressure 42
Plant Capacities 42
Storage Facilities 43
Plant Operating Factors 44
Capital Investment Bases 44
Location Factors 44
Utilities 46
General Facilities 47
Plant Facilities Investment 47
Town Facilities 48
Land 48
Royalties 48
Working Capital 48
Organization and Start-Up Expenses 48
Total Capital Investment 49
Annual Operating Costs 49
Materials and Supply Costs 49
Labor 49
Purchased Utilities 50
Fixed Costs 50
Total Annual Operating Costs 51
Financial Parameters 51
Capital Source 51
Interest 51
Debt Retirement Schedule 51
Depreciation 51
Project Life 52
Income Taxes 52
Profitability Calculations 52
Construction and Cash Flow Schedule 52
Discounted Cash Flow Method of Analysis 53
U.S. Regulated Utility Method of Analysis 57
References 60

V LIQUEFIED NATURAL GAS 61

Introduction 61
Summary 66

V LIQUEFIED NATURAL GAS (Continued)

LNG Liquefaction 73
Background. 73
Process Description--Lean Gas Case. 79
Economic Analysis--Lean Gas Case. 97
Process Description--Rich Gas Case. 114
Economic Analysis--Rich Gas Case. 118
LNG Receiving Terminals. 126
Background. 126
Process Description 129
Economic Analysis 137
Uses of LNG Cold 149
Concept of Cold Use 149
Existing Facilities that Utilize LNG Cold 154
Specific Applications of LNG Cold 155
Integrated Coldplex 158
References 162

VI METHANOL 167

Introduction 167
Summary. 168
Production of Methanol 174
Background. 174
Process Description--Lean Gas Case. 179
Economic Analysis--Lean Gas Case. 190
Process Description--Rich Gas Case. 199
Economic Analysis--Rich Gas Case. 203
Methanol Receiving Terminals 207
Conversion of Methanol to Substitute Natural Gas 210
Process Description 210
Economic Analysis 211
Utilization of Methanol. 217
Introduction. 217
Methanol's Physical and Chemical Properties 218
Methanol as an Alternative Automotive Fuel. 221
Methanol's Future as an Automotive Fuel 227
References 228

VII FISCHER-TROPSCH LIQUIDS. 231

Introduction 231
Summary. 231
Production of Fischer-Tropsch Liquids. 235
Background. 235
Process Description--Lean Gas Case. 242

VII FISCHER-TROPSCH LIQUIDS (Continued)

Operating Requirements 253
Economic Analysis--Lean Gas Case. 253
Process Description--Rich Gas Case. 259
Economic Analysis--Rich Gas Case. 262
Fischer-Tropsch Products. 262
Fischer-Tropsch Receiving Terminals and Transportation . . 272
References 275

VIII OCEAN SHIPPING 277

Introduction 277
Summary. 277
Background 282
LNG Shipping. 282
Methanol Shipping 285
Fischer-Tropsch Fuel Oil Shipping 285
Design and Economic Bases. 286
Size of Vessels 286
Shipping Distances. 286
Country of Construction 286
Flag. 287
Fleet Size Requirements 287
Cost Elements 288
Salvage 292
Financing Terms 292
Tax Structure 293
Methodology Used in Calculating Ocean Shipping Costs. 293
LNG Tankers. 293
Shipping Characteristics of LNG 293
Containment Systems 294
Free Standing Versus Membrane 294
Commercial Tank Designs 297
LNG Vessel Operating Characteristics. 301
Tanker Design Used in Economic Analyses 305
Construction Costs. 306
Nonvariable Annual Operating Costs. 306
Capital and Operating Costs Used in the Economic Analyses 308
Alternative Cases 313
Methanol Tankers 321
Shipping Characteristics of Methanol. 321
Methanol Tanker Operating Characteristics 322
Tanker Design Used in the Economic Analyses 323

VIII OCEAN SHIPPING (Continued)

Construction Costs 323
Nonvariable Annual Operating Costs 324
Capital and Operating Costs Used in the Economic Analyses 324
Alternative Cases 328
Fischer-Tropsch Fuel Oil Tankers 332
Shipping Characteristics of Fischer-Tropsch Fuel Oils 332
Fischer-Tropsch Fuel Oil Tanker Operating Characteristics 332
Tanker Design Used in the Economic Analyses 332
Construction and Nonvariable Annual Operating Costs 332
Capital and Operating Costs Used in the Economic Analyses 332
Alternative Cases 334
Future Developments 336
Other Ocean Shipping Costs 337
References 339

IX PETROCHEMICALS IN THE PRODUCING COUNTRY 341

Introduction 341
Summary 342
Ethylene and Derivatives 343
Supply and Demand 343
Economic Analysis 347
Ammonia 356
Supply and Demand 356
Process Description 358
Economic Analysis 362
Fischer-Tropsch Chemical By-Product and Hydrogen 367
References 373

X GAS PIPELINES 375

Introduction 375
Summary 375
Background 375
Technological Considerations 376
Pipe Laying Techniques 378
Arctic Construction 379
Arctic Grade Pipe 380

X GAS PIPELINES (Continued)

Iran to West Germany Pipeline. 381
Design Description. 381
Capital Costs 384
Operating Costs and Delivered Gas Price 386
Pipeline Versus LNG. 388

Appendix A--ALASKAN GAS PIPELINE PROPOSALS 393

ILLUSTRATIONS

II-1	Comparison of Delivered Costs of Methanol and Liquefied Natural Gas as a Function of Shipping Distance.	7
II-2	Comparison of Delivered Costs of Methanol and Fischer-Tropsch Liquids as a Function of Shipping Distance.	7
III-1	Imports into Markets for Remote Natural Gas	16
III-2	Comparison of Natural Gas Export Potential and Import Requirements	17
III-3	U.S. Natural Gas Consumption and Production	21
III-4	Western Europe Natural Gas Consumption and Production.	23
III-5	Japan Natural Gas Consumption and Production.	25
III-6	Eastern Europe Natural Gas Consumption and Production.	27
III-7	Middle East Natural Gas Consumption and Potential Production.	33
III-8	Africa Natural Gas Consumption and Potential Production.	34
III-9	South America Natural Gas Consumption and Potential Production.	35
III-10	USSR Natural Gas Consumption and Potential Production.	36
III-11	Far East Natural Gas Consumption and Potential Production.	37
V-1	Projected Liquefaction Capacity for International LNG Export/Import Projects.	67
V-2	Price of Regasified LNG as a Function of Shipping Distance and Tanker Size.	70
V-3	Cooling Duty Curves for Liquefaction Cycles	75

V-4 Cascade Cycle 76

V-5 Mixed Refrigerant Cycle 77

V-6 PRICO Mixed Refrigerant Cycle Process 78

V-7 LNG Plant Purification, Section 100--Amine Purification. 83

V-8 LNG Plant Purification, Section 100--Molecular Sieve Dehydration 84

V-9 LNG Plant Refrigerant Makeup, Section 200 87

V-10 LNG Plant Liquefaction, Section 300 89

V-11 Combined-Cycle Compressor Drivers, Section 300. 92

V-12 LNG Plant Storage and Loading, Section 400. 95

V-13 Sensitivity of LNG Price to Tanker and Plant Size . . . 107

V-14 Revenue Required for LNG as a Function of Financial Parameters--1,000 MM scfd Plant, 80,000 Cubic Meter Tankers 108

V-15 Revenue Required for LNG as a Function of Financial Parameters--1,000 MM scfd Plant, 125,000 Cubic Meter Tankers 109

V-16 Revenue Required for LNG as a Function of Financial Parameters--1,000 MM scfd Plant, 165,000 Cubic Meter Tankers 110

V-17 Revenue Required for LNG as a Function of Financial Parameters--500 MM scfd Plant, 80,000 Cubic Meter Tankers 111

V-18 Revenue Required for LNG as a Function of Financial Parameters--500 MM scfd Plant, 125,000 Cubic Meter Tankers 112

V-19 Revenue Required for LNG as a Function of Financial Parameters--500 MM scfd Plant, 165,000 Cubic Meter Tankers 113

V-20 LNG Plant LPG Separation, Section 200--Rich Gas Case. . 119

V-21 LNG Plant Sulfur Recovery, Section 500--Claus Plant, Rich Gas Case. 121

V-22 Ethane Price to Ethylene Plant. 125

V-23 Submerged Combustion LNG Vaporizer. 128

V-24 Direct-Fired Convective Heat Exchanger. 129

V-25 Intermediate Fluid LNG Vaporizer. 130

V-26 LNG Terminal--Schematic Flow Diagram. 131

V-27 Effect of Tanker Size on Incremental Revenue Requirements for an LNG Terminal. 148

V-28 Incremental Revenue Required as a Function of Financial Parameters for a 450 MM scfd LNG Terminal--125,000 Cubic Meter Tankers 150

V-29 Incremental Revenue Required as a Function of Financial Parameters for a 450 MM scfd LNG Terminal--165,000 Cubic Meter Tankers 151

V-30 Incremental Revenue Required as a Function of Financial Parameters for a 900 MM scfd LNG Terminal--125,000 Cubic Meter Tankers 152

V-31 Incremental Revenue Required as a Function of Financial Parameters for a 900 MM scfd LNG Terminal--165,000 Cubic Meter Tankers 153

V-32 Integrated Coldplex for a 26.8 Million Normal Cubic Meter Per Day LNG Receiving Terminal. 160

VI-1 Cost of Methanol and SNG from Methanol as a Function of Shipping Distance and Tanker size 172

VI-2 Methanol from Natural Gas 185

VI-3 Conceptual Methanol Reactor 188

VI-4 Effect of Methanol Plant Capacity on Estimated Required Capital Investment 194

VI-5 Effect of Feed Cost on Revenue Required from Sale of Methanol 197

VI-6 Effect of Economic Variables on Revenue Required from Sale of Methanol 198

VI-7 Effect of Rich Feed Gas on Revenue Required from Sale of Methanol 206

VI-8 Fuel Efficiency and Emissions Using Methanol-Gasoline Blends 225

VII-1 Cost of Fischer-Tropsch Fuels as a Function of Shipping Distance and Tanker Size 235

VII-2 Process Flow Diagram of a Fischer-Tropsch Plant--Lean Gas Case 245

VII-3 Schematic of the Kellogg Reactor Section. 251

VII-4 Effect of Natural Gas Feed Cost on Revenue Required from Sale of Fischer-Tropsch Products--Lean Gas Case. . 260

VII-5 Revenue Required as a Function of Financial Parameters for Fischer-Tropsch Fuel--Lean Gas Case. . . 261

VII-6 Effect of Natural Gas Price on Revenue Required from Sale of Fischer-Tropsch Products--Rich Gas Case. . 267

VII-7 Typical Distillation Curves for Fischer-Tropsch Oils. . 269

VIII-1 Ocean Shipping Costs by Ship Type, Size, and Distance. 279

VIII-2 Capital Investment by Ship Type, Size, and Distance. 280

VIII-3 Capital Investment Per Million Btu Delivered Annually by Ship Type, Size, and Distance 281

VIII-4 Kvaerner-Moss Tank Design 298

VIII-5 Conch Free-Standing Tank Design 300

VIII-6 Gaz Transport Membrane Tank Design. 302

VIII-7 Technigaz Membrane Tank Design. 303

VIII-8 LNG Tanker Transportation Costs for Selected Trading Distances 314

VIII-9 Revenue Required as a Function of Financial Parameters for a 125,000 nm^3 LNG Tanker Fleet at 6,000 Nautical Miles. 315

VIII-10 Structure of a Typical Tax Leverage Lease 319

VIII-11 Methanol Transportation Costs for Selected Trading Distances 329

VIII-12 Revenue Required as a Function of Financial Parameters for a 300,000 dwt Methanol Tanker Fleet at 6,000 Nautical Miles 330

VIII-13 Fischer-Tropsch Transportation Costs for Selected Trading Distances 334

VIII-14 Revenue Required as a Function of Financial Parameters for a 300,000 dwt Fischer-Tropsch Tanker Fleet at 6,000 Nautical Miles. 335

IX-1 Effect of Relative Construction Costs and Financing Basis on Permissible Ethane Cost--Polyethylene Production. 353

IX-2 Effect of Relative Construction Costs and Financing Basis on Permissible Ethane Cost--Ethylene Production. 354

IX-3 World Nitrogen Production Capacity. 357

IX-4 Block Flow Diagram of the Methanol/Ammonia Complex. . . 360

IX-5 Block Flow Diagram of an Ammonia Plant Based on Methanol Plant Purge Gas. 361

IX-6 Effect of Gas Price on Ammonia Sales Price. 367

IX-7 Revenue Required as a Function of Financial Parameters for Ammonia from Natural Gas 368

IX-8 Revenue Required as a Function of Financial Parameters for Ammonia from Methanol Plant Purge Gas. . 369

X-1 Route Map--Iran to West Germany Natural Gas Pipeline. . 383

X-2 Required Prices of Gas Delivered by Pipeline or as Liquefied Natural Gas 391

TABLES

II-1	Summary Economics for LNG, Methanol, and Fischer-Tropsch Liquids from Natural Gas.	6
III-1	Total World Demand for Natural Gas, 1970-2000	13
III-2	Total World Gas Production, 1970-2000	14
III-3	World Trade in Natural Gas.	15
III-4	Historical and Projected Demand for Primary Energy in the World, 1950-2000	18
III-5	Historical and Projected Demand for Primary Energy in the United States, 1950-2000	19
III-6	Historical and Projected Demand for Primary Energy in Western Europe, 1950-2000.	22
III-7	Historical and Projected Demand for Primary Energy in Japan, 1950-2000	24
III-8	Historical and Projected Demand for Primary Energy in the Communist Countries, 1950-2000	26
III-9	Historical and Projected Demand for Primary Energy in the Rest of the World, 1950-2000	28
III-10	Natural Gas Production in 1972.	29
III-11	Natural Gas Supply Data	38
III-12	Proven Natural Gas Reserves and Potentially Recoverable Natural Gas Resources of the World.	39
IV-1	Gas Compositions and Delivery Conditions.	43
IV-2	Example of Capital Investment for DCF Calculations. . .	54
IV-3	Example of Annual Operating Costs for DCF Calculations.	54
IV-4	Example of DCF Rate Calculation	55
IV-5	Example Investment for U.S. Regulated Utility Calculations.	57
IV-6	Example of U.S. Regulated Utility Rate of Return Calculation	59

V-1 International Liquefied Natural Gas Projects. 62

V-2 Liquefied Natural Gas Baseload Receiving Terminals. . . 64

V-3 Summary of Liquefied Natural Gas Project Costs. 69

V-4 Summary of Capital Investments for an LNG Project . . . 71

V-5 Material and Fuel Balance for a 1,000 MM scfd LNG Plant--Lean Gas Case. 81

V-6 Major Operating Requirements for an LNG Plant--Lean Gas Case 97

V-7 Estimated Capital Investment for LNG from Lean Natural Gas--1,000 MM scfd Plant. 98

V-8 Estimated Capital Investment for LNG from Lean Natural Gas--500 MM scfd Plant. 99

V-9 Estimated Annual Operating Costs and Revenue Required for LNG from Lean Natural Gas--1,000 MM scfd Plant, 80,000 Cubic Meter Tankers 101

V-10 Estimated Annual Operating Costs and Revenue Required for LNG from Lean Natural Gas--1,000 MM scfd Plant, 125,000 Cubic Meter Tankers. . . . 102

V-11 Estimated Annual Operating Costs and Revenue Required for LNG from Lean Natural Gas--1,000 MM scfd Plant, 165,000 Cubic Meter Tankers. . . . 103

V-12 Estimated Annual Operating Costs and Revenue Required for LNG from Lean Natural Gas--500 MM scfd Plant, 80,000 Cubic Meter Tankers 104

V-13 Estimated Annual Operating Costs and Revenue Required for LNG from Lean Natural Gas--500 MM scfd Plant, 125,000 Cubic Meter Tankers. 105

V-14 Estimated Annual Operating Costs and Revenue Required for LNG from Lean Natural Gas--500 MM scfd Plant, 165,000 Cubic Meter Tankers. 106

V-15 LNG/LPG Plant Material and Fuel Balance--Rich Gas Case 115

V-16 Major Operating Requirements of an LNG/LPG Plant--Rich Gas Case 118

V-17 Estimated Capital Investment for LNG from Rich Natural Gas 123

V-18 Estimated Annual Operating Costs and Revenue Required for LNG from Rich Natural Gas. 124

V-19 Major Operating Requirements of LNG Receiving Terminal. 136

V-20 Estimated Capital Investment for an LNG Terminal--900 MM scfd Sendout Capacity. 138

V-21 Estimated Capital Investment for an LNG Terminal--450 MM scfd Sendout Capacity. 139

V-22 Estimated Annual Operating Costs for an LNG Terminal--450 MM scfd Capacity, 80,000 Cubic Meter Tankers 141

V-23 Estimated Annual Operating Costs for an LNG Terminal--450 MM scfd Capacity, 125,000 Cubic Meter Tankers 142

V-24 Estimated Annual Operating Costs for an LNG Terminal--450 MM scfd Capacity, 165,000 Cubic Meter Tankers 143

V-25 Estimated Annual Operating Costs for an LNG Terminal--900 MM scfd Capacity, 80,000 Cubic Meter Tankers 144

V-26 Estimated Annual Operating Costs for an LNG Terminal--900 MM scfd Capacity, 125,000 Cubic Meter Tankers 145

V-27 Estimated Annual Operating Costs for an LNG Terminal--900 MM scfd Capacity, 165,000 Cubic Meter Tankers 146

V-28 Effect of Plant Size on LNG Terminal Economics 147

V-29 Effect of Tanker Size on LNG Terminal Economics 147

V-30 Characteristics of LNG Cold Users 156

V-31 Savings Through Use of LNG Cold 157

V-32 Operating Characteristics of Units in a 26.8 Million nm^3 per day Coldplex. 161

VI-1 Summary of Total Capital Investment for a Methanol from Natural Gas Project. 170

VI-2 Summary of Methanol Project Costs 171

VI-3 Methanol Plant Material and Fuel Balance--Lean Feed Gas 181

VI-4 Methanol from Natural Gas 187
VI-5 Methanol Plant Utilities and Labor Requirements 190
VI-6 Estimated Capital Investment for Methanol from Lean Natural Gas. 191
VI-7 Estimated Annual Operating Costs and Revenue Required for Methanol from Lean Natural Gas 196
VI-8 Methanol Plant Material and Fuel Balance--Rich Feed Gas 201
VI-9 Methanol Plant Utilities and Labor Requirements--Rich Feed Gas 203
VI-10 Estimated Capital Investment for Methanol from Rich Natural Gas. 204
VI-11 Estimated Annual Operating Costs and Revenue Required for Methanol from Rich Natural Gas 205
VI-12 Estimated Capital Investment and Operating Costs for a Methanol Receiving Terminal 209
VI-13 Conversion of Methanol to Substitute Natural Gas. . . . 213
VI-14 Major Operating Requirements for Conversion of Methanol to Substitute Natural Gas. 215
VI-15 Estimated Capital Investment for Conversion of Methanol to SNG 215
VI-16 Estimated Annual Operating Costs and Revenue Required for Converting Methanol to SNG 216
VI-17 Comparison of Properties of Methanol, Gasoline, and Distillate Fuels. 219
VI-18 Toxicity of Methanol and Hydrocarbon Fuels. 220
VI-19 Automobile Efficiency and Emissions under Lean Operating Conditions--Comparison of Methanol and Gasoline Fuels. 226
VII-1 Summary of Fischer-Tropsch Project Costs. 233
VII-2 Summary of Total Capital Investment for Fischer-Tropsch Plant Based on Natural Gas Feedstock. 234
VII-3 Fischer-Tropsch Process Development 237
VII-4 Commercial Fischer-Tropsch Plants 238

VII-5 Fischer-Tropsch Plant Material and Energy Stream Flows--Lean Feed Gas. 247

VII-6 Fischer-Tropsch Operating Requirements. 254

VII-7 Estimated Capital Investment for a Fischer-Tropsch Plant Based on Natural Gas Feedstock--Lean Gas Case . . 256

VII-8 Fischer-Tropsch Storage Requirements. 257

VII-9 Estimated Annual Operating Costs and Revenue Required for a Fischer-Tropsch Plant, Based on Natural Gas Feedstock--Lean Gas Case. 258

VII-10 Fischer-Tropsch Plant Material and Energy Flows--Rich Feed Gas 263

VII-11 Estimated Capital Investment for a Fischer-Tropsch Plant Based on Natural Gas Feedstock--Rich Gas Case . . 265

VII-12 Estimated Annual Operating Costs and Revenue Required for a Fischer-Tropsch Plant Based on Natural Gas Feedstock--Rich Gas Case. 266

VII-13 Typical Properties of Fischer-Tropsch Oils. 268

VII-14 Typical Carbon Number Distribution of Fischer-Tropsch Oils. 270

VII-15 Typical Nonacid Chemical Yield Distribution of Fischer-Tropsch Products. 271

VII-16 Typical Yield Distribution of Organic Acids from Fischer-Tropsch Products 271

VII-17 Fischer-Tropsch Shipping Costs. 273

VII-18 Estimated Capital Investment and Operating Costs for a Fischer-Tropsch Receiving Terminal. 274

VIII-1 LNG Shipping Distances. 287

VIII-2 Learning Curve Effects for Multiple Ship Construction. 289

VIII-3 Estimated Annual Overhead and Miscellaneous Costs for LNG Carriers. 292

VIII-4 Estimated Annual Overhead and Miscellaneous Costs for Methanol and Fischer-Tropsch Fuel Oil Carriers. . . 292

VIII-5 Principal Characteristics of Spherical, Free-Standing Tank LNG Carriers. 307

VIII-6 Spherical, Free-Standing Tank Design LNG Carriers--Construction Costs per Vessel 308

VIII-7 Spherical, Free-Standing Tank Design LNG Carriers--Nonvariable Annual Operating Costs per Vessel 309

VIII-8 Capital and Operating Costs for LNG Tanker Fleets . . . 311

VIII-9 Principal Characteristics of Methanol and Fischer-Tropsch Fuel Oil Tanker Vessels 324

VIII-10 Methanol and Fischer Tropsch Fuel Oil Tankers--Construction Costs per Vessel 325

VIII-11 Methanol or Fischer-Tropsch Fuel Oil Tankers--Estimated Nonvariable Annual Operating Costs. 326

VIII-12 Capital and Operating Costs for Methanol Tanker Fleets 327

VIII-13 Capital and Operating Costs for Fischer-Tropsch Fuel Oil Tanker Fleets. 333

VIII-14 Ocean Transportation Costs for Other Commodities Used in Economic Analyses 338

IX-1 New Petrochemical Plants Under Construction, Planned, or Proposed. 344

IX-2 Planned Polyethylene Projects 345

IX-3 Future Ethylene Capacity Requirements 345

IX-4 Estimated Capital Investment for Ethylene and Polyethylene Production 348

IX-5 Ethane Value for Low-Density Polyethylene Production. 351

IX-6 Ethylene and Polyethylene Production Costs. 351

IX-7 Ethane Value for Ethylene Production. 352

IX-8 World Fertilizer Supply/Demand for Nitrogen 358

IX-9 Capital Investment for an Ammonia Plant 363

IX-10 Estimated Annual Operating Costs for Ammonia from Methanol Plant Purge Gas 365

IX-11 Estimated Annual Operating Costs for Ammonia from Natural Gas. 366

IX-12 Production of Nonacid Chemicals from a Fischer-Tropsch Plant 370

X-1 Major Large Diameter Pipeline Projects for Natural Gas and Crude Oil 377

X-2 Capital Investment Iran-to-West Germany Gas Pipeline. . 384

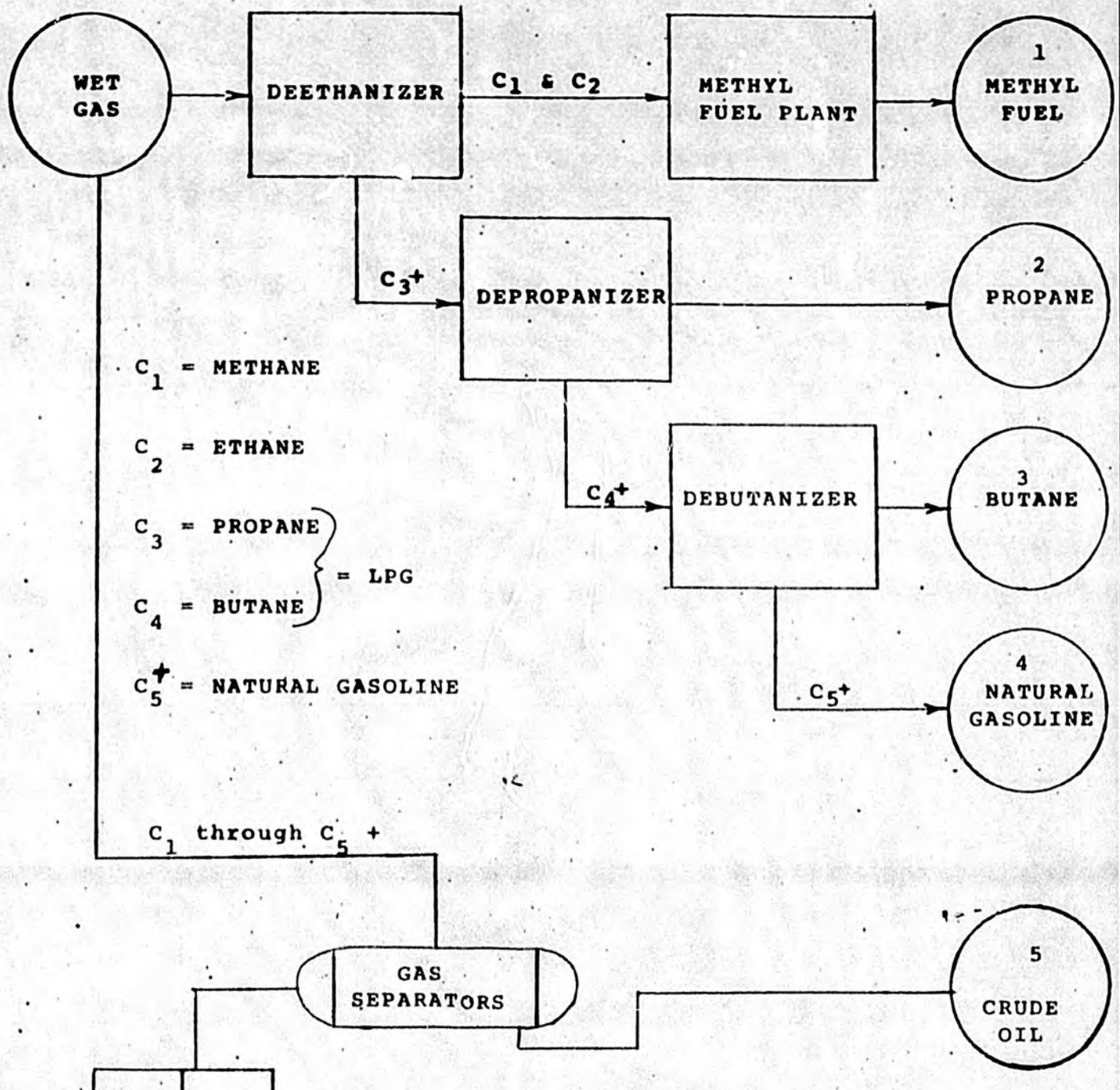
X-3 Annual Operating Costs and Revenue Requirements Iran-to-West Germany Pipeline 387

X-4 Sensitivity Analysis of the Iran-to-West Germany Pipeline. 389

X-5 Required Delivered Gas Prices--Iran to Western Europe. 390

A-1 Summary of Alaskan Pipeline Transportation Alternatives. 396

SYSTEMS



WENTWORTH BROTHERS, INCORPORATED

BLOCK FLOW DIAGRAM
GAS HANDLING
CONVENTIONAL CASE

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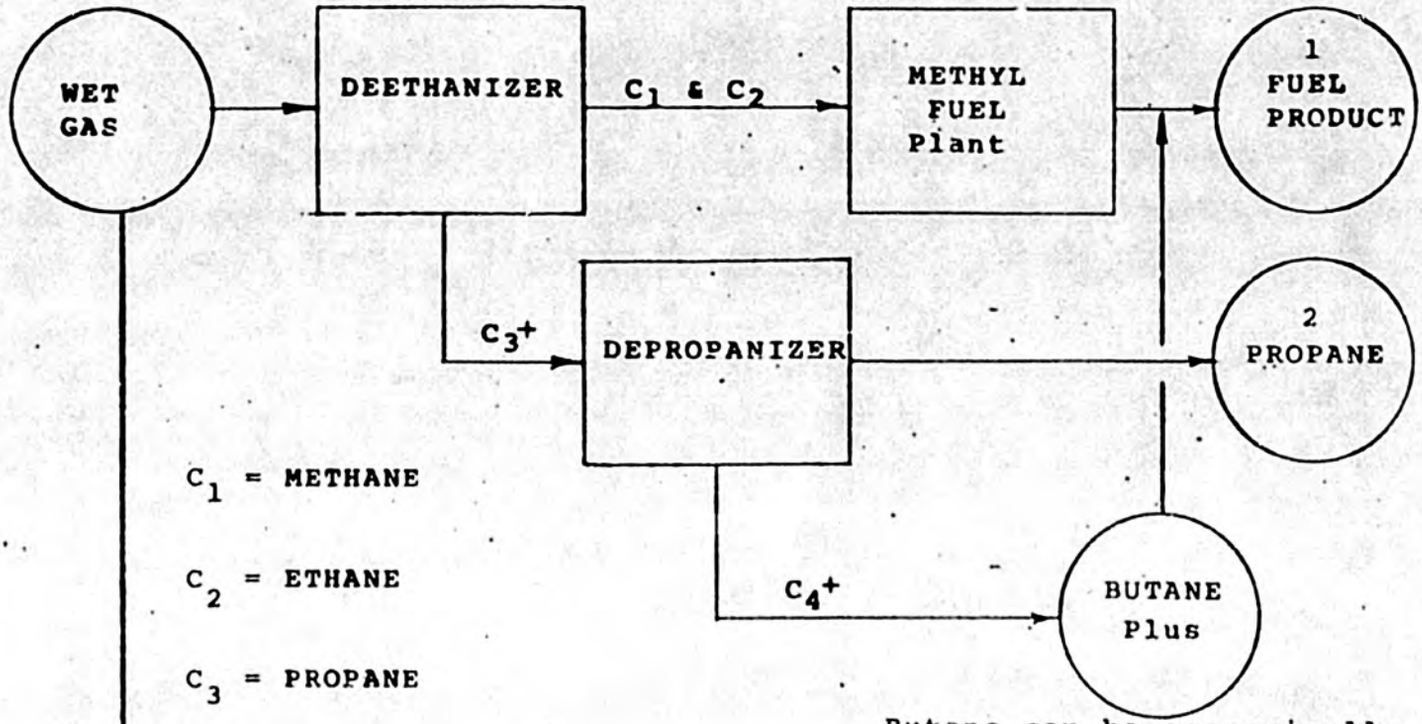
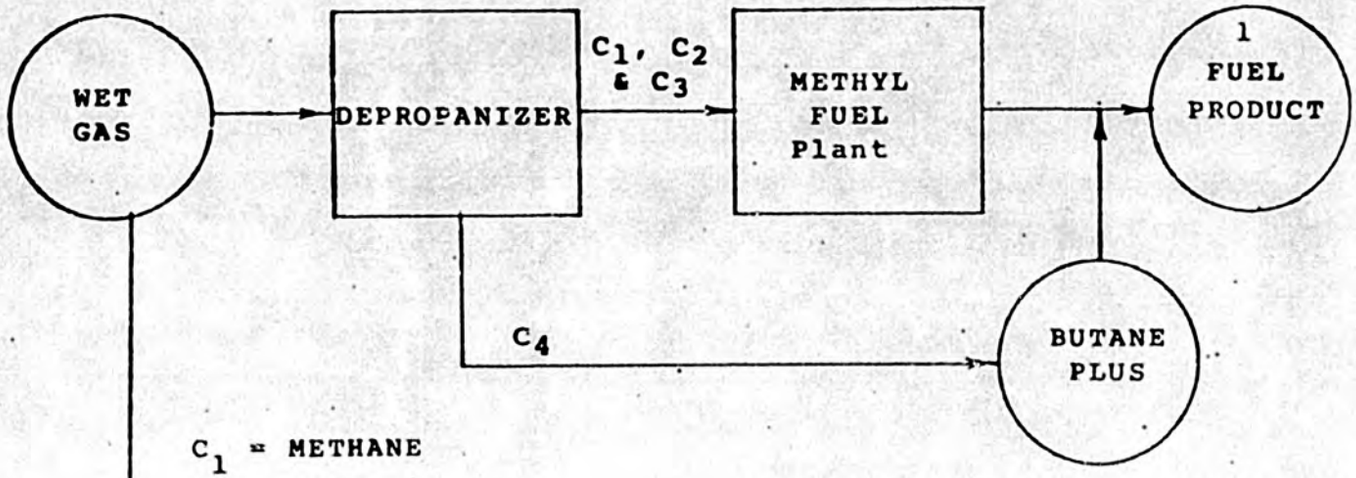


WENTWORTH BROTHERS, INCORPORATED

BLOCK FLOW DIAGRAM
GAS HANDLING
ALTERNATIVE I

DRAWN BY MRD	DATE 9/24/75	JOB NO. P203	DWG. NO. A-P203-1-109



C_1 = METHANE

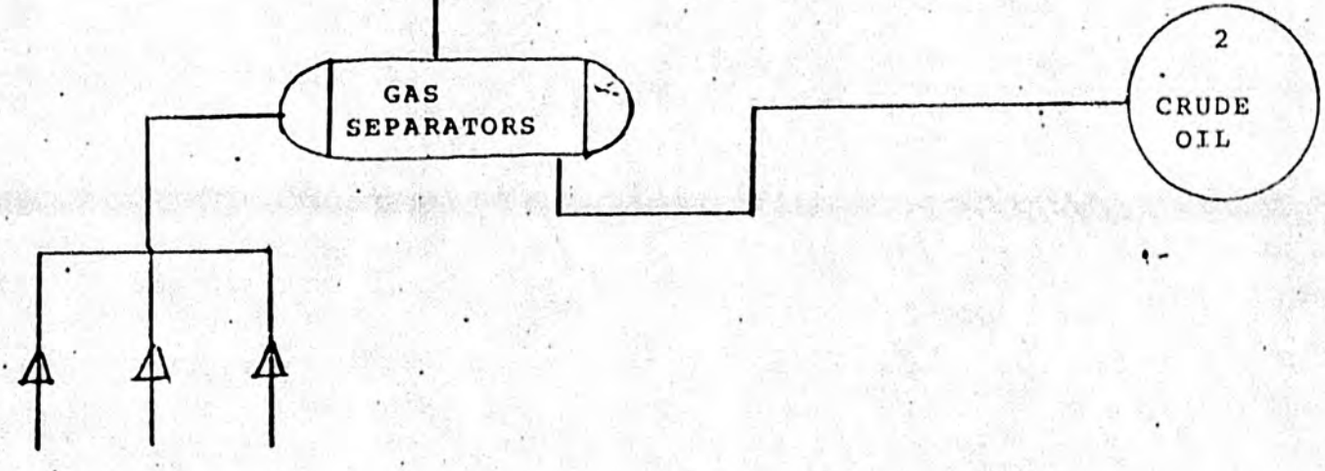
C_2 = ETHANE

C_3 = PROPANE

C_4 = BUTANE

C_5 = NATURAL GASOLINE

Butane can be economically recovered at the receiving port



WENTWORTH BROTHERS, INCORPORATED

BLOCK FLOW DIAGRAM
GAS HANDLING
ALTERNATIVE II

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DR. WILLIAM R. WOOD
EXECUTIVE VICE PRESIDENT

FAIRBANKS INDUSTRIAL DEVELOPMENT CORPORATION
Phone 907 452-5400 or 452-5752 619 Eleventh Avenue Fairbanks, Alaska 99701

February 5, 1976

Senator John Rader, Chairman
Joint Gas Pipeline Impact Committee
Alaska State Legislature
Juneau, Alaska, 99801

Dear Senator Rader:

The undersigned, representing a number of leading labor, business, professional, and industrial groups and more than seven thousand jobs for as many thousands of workers and their families in the Fairbanks area, have studied with deep interest the "Moody Report" submitted to your committee on 14 January 1976.

We heartily commend your foresight in authorizing a study of such fundamental significance for all Alaskans. Your selection of Mr. Rush Moody, a former member of the Federal Power Commission, to conduct the analysis of Alaska's natural gas issues was most wise and fortunate.

Mr. Moody's informative, forthright, yet restrained and objective report to you and your committee clearly reflects the deep-seated concerns of the Alaska tax-paying residents whom we represent. With all of the complexities involved, including the authority of the FPC to fix the well-head price of gas, conceivably Alaska could derive little or no benefit from its great store of natural gas, a rare and precious commodity in the world today. Specifically, we endorse the following basic ooncepts presented in the Moody Report:

1. "The State should pursue an affirmative, aggressive course of enlightened self-interest" to meet its present and future natural gas needs.

2. The State should "place less emphasis upon direct revenue and more emphasis upon cooperative development" with the private interests involved in exploration, extraction, transportation, processing in Alaska, and marketing to insure that Alaska "share in the benefit of a secure and reliable source of natural gas for use as a non-polluting heat source and as a raw material feedstock." In particular, it is essential that the State establish forthwith a stable business climate conducive to such cooperation with potential purchasers or processors of Alaska royalty gas.

3. The State should adopt a basic energy policy that will encourage and stabilize interest in the wisest possible use of its natural gas resources, emphasizing processing within the State to provide the benefits of meaningful and productive employment opportunities for Alaskans on a long-term basis. Such basic policy is required for orderly and economical development of both present and potential commercial oil and gas fields of Alaska.

4. The State should consider in depth the advantages to be gained by the enactment of legislation to hold State owned resources within the State unless ... surplus to the needs of the State" and thus encourage the making in Alaska of more of our own consumer products through the good use of our own human and other natural resources.

5. Since "a natural gas stream has enormous potential value", the State should promptly and aggressively explore all potential uses ... " where conversion within the State, or liquids extraction within the State" strengthens the State's control of its own resource and ... diminishes the range of FPC controls." Especially the State might well consider how best to arrange for the conversion of natural gas to methanol and ways of removing butane, propane, and other LPG's "from the natural stream prior to transportation or sale in interstate commerce."

We pledge our full support of prompt and responsible legislative action as suggested in the conclusion stated in the Moody Report that will effectively secure for Alaskans the

opportunity to make the best use of the State's natural gas resource. It strikes us as an urgent necessity that strong action on these vital issues be taken now without further delay. Clearly, at this point the regulation and taxation are less significant than stimulation and encouragement to make wise use of our resources.

Sincerely yours,

Dave Rasley, Secretary-Treasurer
Central Labor Council

Wally Baer, General Manager
Chamber of Commerce

James Kelly, Manager, Fairbanks Chapter
Associated General Contractors

John C. Morris, M.D., Fairbanks
Chairman, OMAR

J.A. Kornfeind, Manager, Alaska Chapter
National Electrical Contractors Assn.

Al Seeliger, Secretary-Treasurer
Fairbanks Industrial Development
Corporation

WRW/kb
cc: Members, Committee
Senator J. Butrovich
Representative F. Brown
Senator T. Stevens
Senator M. Gravel
Congressman D. Young
Governor J.S. Hammond
Commissioner L. Motley
Commissioner G. Martin

OUTLINE OF TESTIMONY TO THE GAS PIPELINE IMPACT COMMITTEE

I am Thomas R. Stahr, Manager of the Municipal Light and Power Department (ML&P) of the Municipality of Anchorage. I am testifying on behalf of the Municipality of Anchorage.

Municipal Light & Power consumed 6.3 Billion cubic feet (BCF) of natural gas for electric power generation in 1975. Our projections indicate 14.6 BCF of gas will be required by 1985. The projected figure is based on the use of waste heat recovery and other conservation measures. Significant improvements in efficiency cannot be anticipated beyond then so the annual increase in usage will be somewhere between 6 and 12%, 8-9% appearing as most likely unless major hydro power projects are built. In the latter case, natural gas consumption for power generation will likely decrease somewhat.

Alaska Gas and Service Company states their total sales are approximately 30 BCFfor all purposes and anticipate a one BCF increase annually. It is our (ML&P) opinion they have slightly under-estimated the increase in electric power generation but the difference is not critical.

The Stanford Research Institute in their report titled "Natural Gas Demand and Supply to the Year 2000 in the Cook Inlet Basin of South-Central Alaska" projects a household-commercial usage of 55 BCF by the year 2000 and requirements for electric power generation as high as 150 BCF per year. Based on the previously cited study and general considerations it appears that the local needs of the area plus the proposed exports cannot be supported over the next 25 years by the now known reserves in the Cook Inlet area. While it is likely that additional local sources will be found, there is no certainty to this. Even if Hydroelectric power becomes available we certainly do not have a secure energy future unless additional reserves are secured. I believe the needs of Alaska should be served before our energy resources are irretrievably committed to others.

Commissioner Guy R. Martin
Chairman, Alaska Royalty Oil and Gas
Development Advisory Board
Department of Natural Resources
Juneau, Alaska

I have been authorized by the El Paso Company to make a formal proposal to purchase the State of Alaska's royalty gas which is excess to the State's needs in Alaska. The following is a draft Memorandum of Agreement which sets forth El Paso's proposal:

(Quote)
WHEREAS, THE EL PASO COMPANY (El Paso), either singly or in conjunction with others is willing to construct and operate facilities to transport natural gas in a large diameter pipeline from the North Slope of Alaska across Alaska to a point on the south central coast, providing outlets for markets enroute, and thence by LNG tankers to markets in the lower forty-eight states ("The Alaska Project");

WHEREAS, the implementation of the plan contemplated by the Alaska Project is in the maximum interest of Alaska and the nation in coping with the critical energy shortage; and

WHEREAS, the State of Alaska ("the State") is entitled to take in kind its royalty share of natural gas produced on state-owned lands within Alaska ("Royalty Gas");

NOW THEREFORE, to the end that the Alaska Project may be realized and the State's objectives achieved, the parties hereto agree as follows:

1. El Paso agrees that the Alaska Project will be constructed and operated in a manner suitable to the handling of the State's Royalty Gas to achieve its objectives herein set forth;

2. The State, having indicated a desire to make its Royalty Gas available for use within the state, will authorize such gas to be delivered to the Alaska Project for transportation to such points along the route of the pipeline as it shall designate;

3. Those quantities of the State's gas determined by it to be surplus to its economic and sociological needs ("Surplus Gas") shall be sold to and purchased by El Paso at the terminus of the pipeline;

4. The charge for the transportation of the State's Royalty Gas shall be that fixed by the appropriate regulatory agency;

5. El Paso shall pay the State for the Surplus Gas at a rate equal to the highest price paid by any responsible purchaser from time-to-time for gas of which the State's Royalty Gas is a portion;

6. If from time-to-time the State shall have available to it additional quantities of Royalty Gas, El Paso agrees to transport and/or purchase such additional quantities of gas on the same terms and conditions set forth herein;

7. The term applicable to the purchase of the Surplus Gas shall be for a period of such years and for such amounts as shall be determined by the State to be surplus to its needs. The State agrees to quantify these amounts and to enter into a further definitive agreement to implement the Alaska Project within one month after signature of this agreement;

8. The State may withdraw any portion of its Surplus Gas from sale to El Paso whenever additional gas is made available to El Paso by others in a volume equal to that withdrawn by the State;

9. At the end of the term of the agreement which will be entered into pursuant to paragraph 7 herein, the State shall have the option to sell and El Paso agrees to purchase the volumes of such gas then determined by the

State to be surplus to its economic and sociological needs for an additional term of similar duration and upon the same terms herein set forth;

10. The undertakings of both the State and El Paso are subject to the receipt of all requisite government approvals, provided, however, that either party shall have the right to cancel this agreement upon thirty (30) days written notice to the other party if El Paso's application to construct and operate the Alaska Project is denied by the Federal Power Commission, or if the certificate which may be issued contains conditions which are unacceptable to El Paso, or to the State, or conditions which render El Paso unable to perform its contract with the State; and

11. At the appropriate time, the State and El Paso will execute a definitive agreement which shall incorporate the general principles covered by this Memorandum of Agreement and which shall include other terms and conditions as may be required and agreed upon.

DATED this _____ day of _____, 1975.

THE STATE OF ALASKA

By:_____

EL PASO COMPANY

By:_____

(End Quote)

Prompt execution of such an agreement will achieve the following:

A. Express to the Federal Power Commission the State's position on ownership of its royalty gas while being transported within Alaska.

B. Preserve the State's freedom to determine the best uses of its royalty gas within the State, while insuring a ready market for the surplus royalty gas.

C. Insure that the State receives the best price for its surplus royalty gas.

D. Demonstrate by affirmative action the State's support for the Trans-Alaska Gas Pipeline, thereby strengthening the position of El Paso in the current hearings before the Federal Power Commission.

If the Board wishes to revise the agreement, discuss its provisions with El Paso representatives, or requires additional data from El Paso, we are prepared to respond promptly.

Thank you for your consideration of our proposal.

JOHN C. BENNETT

VICE PRESIDENT

EL PASO ALASKA COMPANY

El Paso COMPANY

2727 ALLEN PARKWAY
P.O. BOX 2185
HOUSTON, TEXAS 77001

PHONE 713 524-3911

HOWARD BOYD CHAIRMAN OF THE BOARD

February 11, 1976

Senators Henry M. Jackson
and Warren G. Magnuson
United States Senate
Washington, D. C. 20510

Dear Messrs. Chairmen:

Thank you for the opportunity to contribute to the updating of your respective committees on the vital question of how and when Prudhoe Bay natural gas will reach the consumers of the United States. Enclosed are responses to the questions recently published by your committees. I hope you and your colleagues will find our contribution useful.

Having worked intimately with LNG projects for some thirteen years and having devoted five years of thought and effort to the Alaskan proposal, I hope you will find some general observations concerning El Paso's Trans-Alaska Project worthy of consideration.

There are many questions of fact which cannot be answered with absolute accuracy until a project of this unique magnitude has been undertaken. Costs of materials, wage rates, inflation rates, future taxation policies, reservoir deliverability--none of these facts can be finally determined five to six years before the project will come on-stream. Great effort has been expended to quantify such factors, but they will remain open to argument until actual implementation of the project refines the data once and for all. It is imperative that we focus on those major elements of decision-making which, unlike the details of execution, are now well known and which facilitate a response to the central question: How can Prudhoe Bay natural gas be delivered to American consumers?

There are basically four issues: timing, economics, environmental impact, and security.

First, there is timing. Any delay in bringing the gas to market will increase hardship throughout the country, escalate costs, and erode consumers' confidence in their governmental and industrial institutions. The trans-Alaska project will be completed sooner than the trans-Canadian project (Arctic Gas) for several major reasons:

-- The availability of Alyeska's haul road, work pads, camps, and equipment.

-- Only American approvals are required to launch the El Paso project.

-- Litigation protesting the trans-Canadian project's crossing of the Arctic National Wildlife Range could delay construction for years.

-- Alaskan native claims are settled; agreement even to negotiate Canadian native claims is still in the future.

-- The critical cooperation of the State of Alaska is assured in expediting our project's execution.

-- The cooperation of American Labor is assured (44 national and international unions support our project).

-- The Department of Interior's "Report to the Congress" estimates that the risk of delay in completion of El Paso's project is half that of the trans-Canadian project.

The second issue is economics. The trans-Alaska project will benefit the United States as follows:

-- It will provide 9.3 billion dollars more in taxes to U. S. governmental entities than will be paid by the trans-Canadian project.

-- Were the trans-Canadian project approved, the American consumer would pay (at present tax rates) more than 7 billion dollars in Canadian taxes, versus zero for the trans-Alaska project.

-- It will provide more American jobs than will the trans-Canadian project--by a margin of 345,000 man-years.

-- El Paso has committed to procure all possible goods and services within the American economy, in contrast to billions of dollars to be spent by the trans-Canadian project in Japan, Canada, and Europe.

-- Interstate pipeline systems have not been able to add new supplies of gas sufficient to offset the decline in existing sources. The trans-Alaska project will utilize the idle capacity in these existing systems--presently being paid for by the American consumer--in bringing Alaskan gas to markets served by these systems.

-- If the Arctic Gas project is viewed under realistic assumptions, neither project would enjoy a significant advantage in the cost of transportation. If credit be given to the trans-Alaska project for the huge amount of additional U. S. taxes paid by it, the advantage is tilted in its favor. Construction changes and delays experienced in building across thousands of miles of unpenetrated hostile terrain selected by Arctic Gas could result in a dramatic advantage in favor of the trans-Alaskan route.

-- All of the U. S. consumers' payments for El Paso's transportation of gas will remain in the U. S. economy; under the trans-Canadian project, more than half of such payments would flow into the Canadian economy (for twenty-five years).

-- By redesigning certain of the liquefaction facilities, the "shrinkage" (consumption of natural gas) of the trans-Alaska project is substantially the same as the trans-Canadian project. However, in the trans-Alaska project, that portion of the "shrinkage" attributable to the transformation of gas into a mass of "super cold" will be available for future use in the making of industrial gases and in food processing, as now employed in connection with LNG projects in France and Japan, and for other uses.

-- All aspects of the trans-Alaska project over its entire life will be subject exclusively to the national interest of the United States as expressed from time to time by the U. S. Congress and implemented by the Federal Power Commission.

Third, the widespread support of El Paso's project among environmental groups (both American and Canadian) stems from persuasive facts:

-- While El Paso's pipeline will follow the routing of Alyeska's oil pipeline (in the most exhaustively studied corridor in the world), the trans-Canadian project would lay 5500 miles of pipe, much of it in new corridors in Canada and the United States.

-- The trans-Canadian project would require more than five times as many minor waterway crossings, and six times as many major waterway crossings as will El Paso.

-- Concerning LNG technology, the U. S. Coast Guard has reported that LNG shipment is among the safest seagoing operations being carried on today. LNG has been shipped for more than twelve years--covering more than 1400 deliveries--without a cargo release.

There is also the question of security--not in the sense of a threat of war, but peacetime requirements for pipeline security and the need for future expansion as other supplies of gas and oil in Alaska (e.g., NPR-4 and the Beaufort Sea) are produced:

-- The Department of Defense has concluded that the "Alaska-LNG route permits full U. S. physical control and does not require reliance on a foreign government for defense in war and security in peace."

-- Were the trans-Canadian project approved, future expansion of pipeline capacity in order to market additional increments of Alaskan gas would be subject to Canadian regulatory approval, Canadian corporate control, and Canadian political factors.

-- Failure to obtain timely expansion of a trans-Canadian line could adversely affect production of new Alaskan oil discoveries, with which additional natural gas may be associated, including the oil produced in the Naval Petroleum Reserve contiguous to the Prudhoe Bay field.

-- The recently initialled ad referendum agreement with Canada provides no answer to American concerns regarding the foregoing. In addition, it does not provide guarantees against increased provincial ad valorem taxes, etc. As to this latter aspect, the State Department is on record that "the impact of State and Provincial taxes on an Arctic pipeline and other issues relating to a specific pipeline can most effectively be addressed in the context of a protocol negotiated after the approval of the treaty." (Emphasis added.)

I might add that support in Canada for the Foothills and Polar Gas all-Canadian projects to market Canada's arctic reserves raises serious doubts as to whether the Arctic Gas project will gain Canadian approval. Neither Congress nor the Federal Power Commission can assure that the numerous Canadian approvals will be forthcoming within the critical time frame facing this country, if at all. For example, the ruling National Liberal Party adopted a resolution at its November, 1975 convention giving first priority to northern Canadian pipeline schemes that are all Canadian in ownership and which are designed to serve the Canadian public first.

Again, my thanks for this opportunity to contribute to the record of your deliberations. El Paso is at your service should you feel that we can be of help in your consideration of this vital issue of delivering Prudhoe Bay natural gas to the American people as quickly, economically, and securely as possible with an absolute minimum of adverse environmental effects.

Very truly yours,

Howard Boyd

Enclosures

TESTIMONY OF HOWARD A. SLACK, VICE PRESIDENT
ATLANTIC RICHFIELD COMPANY
BEFORE THE GAS PIPELINE IMPACT COMMITTEE
JUNEAU, ALASKA
FEBRUARY 19, 1976

Mr. Chairman, my name is Howard A. Slack. I am a Vice President of Atlantic Richfield Company and Manager of our North American Producing Division's Alaska Region. I am responsible for Atlantic Richfield's exploration and production activities in the State of Alaska and the adjacent offshore areas.

Atlantic Richfield Company welcomes the opportunity to assist the Committee in its deliberations today. I will address the three topics set forth in your letter of January 30, 1976 - namely, the Rush Moody Report, the State's Reservoir Analysis, and Royalty Gas Options - and I will endeavor to be responsive to the several specific questions raised in your letter.

THE RUSH MOODY REPORT

Mr. Moody's "Legal analysis of issues relating to natural gas transportation" has been studied by Atlantic Richfield's counsel. We do not disagree in any material respect with the principals of

law discussed by Mr. Moody. We do, however, note that Mr. Moody's suggestions concerning State taxation options in his letter to Senator Rader must be read in light of his legal conclusions that taxing schemes that burden interstate commerce or conflict with federal interests are suspect. It should also be noted, that Mr. Moody's legal memorandum and cover letter of January 14, 1976, appear to suggest that the State could, among other things, employ its "as yet unused powers of taxation", including new or increased taxes on producers such as Atlantic Richfield, as a counter to "bargain effectively" with Federal agencies regarding route selection and reservations of gas for State usage. To the extent that Mr. Moody's comments might be construed to advocate such a course of action, we would have contrary views.

As a first step toward a decision concerning natural gas sales, the State should decide whether or not it plans to exercise its option as set forth in its oil and gas leases to take royalty gas in kind and market this production separately from working interest gas. We believe that a prompt decision to permit royalty gas in excess of the State's needs to flow to markets in the South 48 States is essential to both maximize state gas royalty revenues and help insure the viability and early construction of a gas transportation system from the North Slope area. However, to insure that provision will be made for the State's gas needs, we endorse Mr. Moody's view that "the State's power to call upon the gas resource

when needed in the future can, in reasonable probability, be exercised if the State's rights and obligations are fully spelled out, fully presented to the Federal Power Commission (FPC) and accepted by the FPC as an integral part of the transportation system which is certified by the FPC". Once basic agreement has been reached between the State and the FPC, the prospective purchasers of royalty gas can be designated by the State and contracts negotiated which will permit reasonable reservations of gas to meet future Alaskan needs. Atlantic Richfield supports, and believes that Mr. Moody's legal analysis supports, a State policy which would favor:

(1) early construction of a gas transmission system from the North Slope of Alaska to the South 48 States,

(2) the marketing of State royalty gas in the South 48 States coupled with a reasonable reservation of royalty gas volumes to meet future Alaskan needs, and

(3) the adoption of taxation and regulatory policies which would be reasonably calculated to foster such a gas transmission system. To further insure the economic viability of a North Slope gas transmission system, Atlantic Richfield also urges the State to adopt a policy which will include cooperation with Federal regulatory agencies and the oil and gas producing industry to bring about prompt exploration and development of undiscovered Alaskan gas reserves.

In our view, both the national interest and the best interests of the State of Alaska require the earliest possible certification and construction of a viable gas transmission system to permit early gas sales. Design and optimization of such a gas transmission system is dependent upon the proved and potential volume of gas reserves which are estimated to be available for delivery. The State's royalty gas share, even if subject to future Alaskan needs, is a significant factor in determining both economic feasibility and line design. We, therefore, urge an early clarification of the State's intention and a prompt and cooperative resolution of its posture with the FPC. Massive investments will be required to facilitate early gas sales, and we urge the State to adopt and maintain fiscal policies which will facilitate such investments and not handicap an industry already burdened with enormous exploration and development costs.

Atlantic Richfield Company has responded to the Federal Power Commission's interrogatories in connection with the pending FPC proceeding pertaining to transportation of Alaskan natural gas. A copy of the Company's submittal to the FPC is attached to the written copy of my testimony as you have requested.

With regard to the Committee's inquiry pertaining to Atlantic Richfield's commitments for the sale of gas, the company, in accordance with Federal Power Commission Order No. 499, entered into advance payment agreements with Panhandle Eastern Pipeline Company and Texas

Eastern Transmission Corporation committing to each of them a call on 20% of Atlantic Richfield's share of the Prudhoe Bay field gas production. A funding agreement was signed with Pacific Lighting Gas Development Company (PLGD), granting the California company a call on the remaining 60% of Atlantic Richfield's Prudhoe Bay gas. On December 31, 1975, the FPC retroactively terminated the advance payments program for Alaska and the California PUC then scheduled hearings to reconsider its prior approval of the Atlantic Richfield - PLGD funding agreement. As a result of these actions the PLGD funding agreement has been terminated and the advance payment agreements with Panhandle Eastern Pipeline Company and Texas Eastern Transmission Corporation will be terminated if the decision of the FPC becomes final.

While this action on the part of the FPC purports to be in the public interest, in our opinion it is misguided and contra productive where the State of Alaska is concerned in that:

(1) Cancellation of all advance payment agreements will deprive U.S. gas transmission companies and distributors of their former rights to purchase Prudhoe Bay gas and lessen their incentive to invest equity capital in <u>any</u> Alaskan gas transmission facility.

(2) Alaska producers, including the owners of the Prudhoe Bay Field, will be deprived of a source of financing - financing which, in the absence of current Alaskan gas

revenues, is necessary to insure industry capability to find new reserves and develop known reserves at the earliest possible date.

Atlantic Richfield's position as to its gas sale commitments has been clearly set forth in our response to the FPC interrogatories. As we indicated in that response, all of our agreements with prospective purchasers contemplated the ability and willingness of such purchasers to accept deliveries of Prudhoe Bay gas through any gas transmission system which was certificated and constructed. Such an understanding should be an essential ingredient of any other commitment of Prudhoe Bay gas made prior to selection and certification of a gas transmission system. Indeed, both competing route proposals contemplate nationwide delivery capability.

Hence, relative to SCR 66, we can categorically state that our existing commitments to Panhandle Eastern and Texas Eastern are in no way detrimental to the certification of a trans-Alaska natural gas pipeline nor can we conceive of any situation in which we would make a pre-commitment of Prudhoe Bay gas to a market which could not be served by any gas transmission system that might be constructed.

THE STATE'S RESERVOIR ANALYSIS

The Committee has expressed a concern about the effect of the recently published State of Alaska, Department of Natural Resources Study on Sadlerochit Reservoir conservation and specifically whether this study, or the lack of production history, will affect the FPC decision on certification of a gas transmission system. Atlantic Richfield does not believe that the Van Poollen study which was done for the Department of Natural Resources will influence the FPC decision on route selection or certification, nor do we expect it to have any adverse effect upon the financing of the approved gas transmission project. The various points raised in the Van Poollen study had been recognized and incorporated in our studies prior to the time of the Van Poollen report. We have found nothing in the report which will lead us to alter in any way our plans for Prudhoe Bay gas production.

The studies of the Prudhoe Bay Field Sadlerochit Reservoir which have been made by Atlantic Richfield Company and those reported by the state and federal governments differ in a fundamental and important manner. That difference lies in the fact that the various reservoir simulation studies of the Prudhoe Bay Field that have been published were undertaken with different objectives in mind. On the one hand, our studies have as their objective the optimum reservoir management for maximum economic

recovery of oil and gas. On the other hand, we believe the state and federal studies have as their objective the determination of recoveries of either oil or gas for a range of different operating conditions.

The question has been raised concerning the reliability of a model in the absence of production history. It is certainly true that the availability of production history can provide a useful check of a study and a basis for modification. However, Atlantic Richfield has a high degree of confidence in its predictions of Prudhoe Bay reservoir performance. This confidence stems from the fact that in the Prudhoe Bay modeling effort the major elements of the model have been subjected to thorough sensitivity testing. In sensitivity testing the first step is to identify those parameters having the greatest effect on the answer and define those parameters to the fullest extent possible. Our thorough application of this approach and the subsequent follow-up work, both field and laboratory, has given us a high degree of confidence in our current forecast of the Prudhoe Bay Field performance. We are convinced that, although some adjustments may be made to the model as production history is developed, our present studies are adequate to demonstrate that, from a reservoir performance standpoint, early gas sales from the Sadlerochit reservoir would be non-injurious.

As we stated in our response to FPC Question II(5) of the "Interrogatories", Atlantic Richfield believes that the Trans Alaska oil pipeline can be expected to begin operation in Mid-1977 at 600,000 barrels per day, reach a sustained throughput of 1.2 million barrels per day before year's end and have a 1.5 million barrels per day production rate commencing on January 1, 1979. We also believe that at such oil production rates, gas sales of 2.0 to 2.5 billion cubic feet per day would be consistent with good reservoir management.

ROYALTY GAS OPTIONS

We have made no study of the market for State royalty gas inside of Alaska. As to the market for State royalty gas outside of Alaska, in our view the opportunities are virtually unlimited. We are aware that the Department of Natural Resources has solicited offers from potential gas buyers and that many have responded. If the State should decline to separately dispose of its share of the gas, the producers, pursuant to their leases, would be obligated to sell such gas on the same terms that producers' gas would be sold. As noted earlier, prompt State action to resolve the "in kind versus in value" issue and active cooperation with the FPC will expedite early construction of the optimum gas transmission facility.

Thank you again, Mr. Chairman, for affording me the opportunity to testify before your Committee today. Atlantic Richfield's response to your letter of January 15, 1976, is also attached to my statement. If you have any questions concerning my testimony today, I shall be happy to attempt to answer them.

Alaska Region
Post Office Box 360
Anchorage, Alaska 99501
Telephone 907 277 5637

Howard A. Slack
Vice President &
Resident Manager

February 19, 1976

Senator John Rader, Chairman
Gas Pipeline Impact Committee
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Senator Rader:

Thank you for your letter of January 15, 1976, and the opportunity to comment on the recently published study entitled "Prediction of Reservoir Fluid Recovery, Sadlerochit Formation, Prudhoe Bay Field" which was prepared by H. K. Van Poollen and Associates for the State of Alaska. The specific questions set out in your letter and our responses are as follows:

QUESTION NUMBER 1

What effect does the recent study, "Prediction of Reservoir Fluid Recovery, Sadlerochit Formation, Prudhoe Bay Field" have on marketing plans for Prudhoe Bay gas?

ANSWER

We do not expect the referenced study prepared by Van Poollen and Associates to have any effect on our plans for marketing Prudhoe Bay gas. The observations reported in this study were recognized and considered in the studies we have prepared with regard to sale of gas from the Prudhoe Bay Field.

QUESTION NUMBER 2

How does this study differ from industry and federal studies?

ANSWER

The state and federal studies differ from Atlantic Richfield's studies primarily because they were undertaken with different objectives in mind. The stated purpose of the Van Poollen

study prepared for the State of Alaska was to "evaluate the oil recovery potential from the Sadlerochit Reservoir at Prudhoe Bay under a number of different operating conditions." The Aerospace study prepared for the Department of the Interior was designed "to determine estimates for gas reserves and deliverability for a range of reservoir characteristics and operating assumptions." These objectives are much more limited in scope than the objectives of our studies. Over the past five years we have made and are continuing to make reservoir studies oriented toward maximizing economic recovery of both oil and gas reserves. In addition to the broader objectives, our conclusions benefit from the inherent advantages of a more lengthy study time and better analytical resources as well as the fact that we are closer to the source of physical data, and better able to define the key input parameters.

QUESTION NUMBER 3

How accurate can a model be without production history?

ANSWER

In Prudhoe Bay Field, extensive physical data has been gathered on the Sadlerochit Reservoir from well logs, cores, geological studies, laboratory analysis of fluid samples, well tests, etc. These data have been used in preparing mathematical reservoir simulation models. Reservoir performance history associated with field production is very useful in reservoir modeling, but it is not essential. Such data are commonly used to adjust reservoir models so that their calculated performance will match history. As longer periods of performance are compared to the model, confidence in the model's ability to predict future performance is usually increased. However, history matching during the primary stage of production does not necessarily assure a reasonable prediction of secondary recovery performance. Some of the most important parameters in the projection of future performance may not be calibrated during the history match.

Although production history is a valuable source of information for developing reliable reservoir models, sensitivity testing of the model parameters is also important. Without production history, sensitivity testing becomes essential in establishing confidence in the model forecasts. The first step in such testing is to identify those parameters having

the greatest impact on the answer and then concentrate on defining those parameters to the fullest extent possible. We have conducted numerous such sensitivity studies for the Prudhoe Bay Field.

During the past five years, we have made very detailed studies of the Sadlerochit Reservoir for alternative reservoir management programs and we are continuing to make such studies. In view of the extensive physical data available for use in preparing the model and the sensitivity studies that we have made with regard to the key factors influencing reservoir performance, we have a high degree of confidence that the effects of gas production from the Sadlerochit Formation can be predicted with reasonable accuracy.

QUESTION NUMBER 4

Will some production history be necessary before an accurate model is established that will prove feasibility of a gas pipeline for marketing of Sadlerochit gas?

ANSWER

No. As expressed in our answer to question 3, we believe the extensive reservoir data available and the detailed reservoir model studies that have been and are being made based on this data will provide reasonably accurate results that are fully adequate for making decisions with regard to timing and rate of gas sales.

QUESTION NUMBER 5

How critical are the results of this study in obtaining FPC certification and financing for the gas pipeline project?

ANSWER

Conditions leading to the observations made in the Van Poollen study have been recognized and considered by industry in developing plans for marketing of Prudhoe Bay gas. We see no reason for such study to have any impact on the FPC decision on pipeline certification or upon the financing of a gas pipeline project.

I want to thank you for the opportunity to comment on this important study. If you have any additional questions or if we can be of further assistance, please let me know.

Yours very truly,

Howard A. Slack.

Howard A. Slack

HAS/jt

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

EL PASO ALASKA COMPANY, ET AL.) Docket No. CP75-96, et al.

ATLANTIC RICHFIELD COMPANY RESPONSES TO INTERROGATORIES

I. POLICY

QUESTION 1. Were you ever a member of a group investigating the feasibility of bringing gas from Prudhoe Bay and/or the Mackenzie Delta to the Lower 48 states?

ANSWER 1. Yes.

QUESTION 1. a. If yes, please describe your participation in the group.

ANSWER 1. a. Atlantic Richfield Company has participated in two such feasibility studies. Atlantic Richfield joined with El Paso Natural Gas Company in a study to determine the economic feasibility of bringing gas from Prudhoe Bay to the West Coast of the United States by means of a trans-Alaska gas pipeline, gas liquefaction and regasification facilities and LNG tankers. Atlantic Richfield contributed its expertise and financial support to this study from April 23, 1973 to October 23, 1974.

Atlantic Richfield has participated in a study to determine the economic feasibility of bringing gas from Prudhoe Bay and the Mackenzie Delta by means of a trans-Canadian pipeline to markets in Canada and the Lower 48 states. Atlantic Richfield contributed its expertise and financial support to this study from July 14, 1970 to November 30, 1975.

QUESTION 1. b. Are you still a member of such a group; and if not, please explain the reasons for departing.

ANSWER 1. b. No. Atlantic Richfield withdrew from these groups since we felt that the purpose for which we had joined, i.e., to determine the feasibility of transporting arctic gas to the Lower 48 states, had been accomplished and that our further participation was unnecessary. We continue to cooperate with both groups.

QUESTION 2. Why haven't firm gas purchase contracts been executed for Prudhoe Bay?

ANSWER 2. As a result of the FPC's Order of December 31, 1975, in Docket R-411, et al., and subsequent action by the California PUC in, sua

sponte, reopening of CPUC decision #84729, Atlantic Richfield's funding agreement with Pacific Lighting Development Company (PLGD), which gave PLGD a call on 60% of its Prudhoe Bay gas, has been terminated. Our advance payment agreements with Texas Eastern Transmission Corporation and Panhandle Eastern Pipeline Company covering the remaining 40% of Atlantic Richfield's Prudhoe Bay gas will be terminated should the FPC Order become final. Under present circumstances we have no basis for negotiation of a definitive gas purchase contract. Neither unit agreements nor a plan of development for the field have been formally submitted to or approved by the State of Alaska.

Additionally, in light of certain language appearing in the Commission's Order of December 31, 1975, in Docket No. R-411, et al., we are uncertain as to whether any gas purchase contract would be certificated or if the Commission would require a full-blown allocation case for North Slope gas.

QUESTION 3. Please explain the relationship of a unitization and operation agreement for Prudhoe Bay to the execution of gas purchase contracts.

ANSWER 3. The Prudhoe Bay Field consists of a gas cap and an oil rim. The field has a diversity of ownerships in the tracts with differing interests in the gas cap and oil rim. Efforts are underway to unitize the entire field so that it might be developed and operated in the most efficient manner. The plan of development agreed to by the producers must then be approved by the State of Alaska. Until such time as these events occur, it is not known what precise amount of gas production and oil production will be owned in the unit by each party nor is it known to what extent and at what time the State will permit gas sales.

QUESTION 4. Do you have any present intention to provide equity for either the El Paso Alaska project or the Arctic-Canadian gas project should either of them be issued a certificate?

ANSWER 4. No.

QUESTION 5. If the natural gas pipeline and distribution companies are unable to commit the amount of equity required by lendors as necessary for either the Arctic Gas or the El Paso project, would your company be willing to help provide some of the needed equity?

ANSWER 5. A decision on the question would be dependent upon conditions at the time such a need becomes apparent; however, it seems highly unlikely that our other capital requirements would permit such an investment.

QUESTION 6. Will your company bear the cost of gathering and treatment facilities on the North Slope? If no decision has been made on this, what factors would influence a decision and by when would such a decision have to be made?

ANSWER 6. The cost of gathering and treatment facilities on the North Slope will be borne in accordance with gas purchase contracts yet to be negotiated. Under our remaining advance payment agreements (which will be terminated in the event the Commission's Order issued December 31, 1975, in Docket No. R-411, et al., becomes final), Atlantic Richfield would bear the initial cost of installing the gas gathering system but would have the option to require the gas purchaser to purchase all gas handling facilities. A decision relative to exercising such option would have been made at the proper time in light of circumstances existing at the time. It was contemplated that the gas conditioning

plant (treatment facilities) would be installed and operated by or for the gas purchasers.

QUESTION 7. Can your company categorically guarantee that the purchase price of Prudhoe Bay gas under future gas purchase contracts would be no higher than the commodity price of gas in the market area to be served adjusted for applicable cost to market?

ANSWER 7. No. So long as the price of natural gas sold for resale in interstate commerce is subject to Federal Power Commission regulation, producers will receive no more than the regulated price permitted at the wellhead. In the event of price decontrol, Atlantic Richfield hopes to receive fair market value at the wellhead for its gas. The commodity price (which is subject to many variables) of gas in any particular market area to be served, adjusted for applicable delivery cost to that market, may or may not have relevance in determining the regulated rate or fair market value at the wellhead.

QUESTION 8. Would your company oppose any attempt by a potential gas purchaser to place a minimum daily delivery volume provision in a gas

purchase contract for the Alaskan North Slope?

ANSWER 8. Yes. We cannot guarantee to deliver any specific volume of gas at any period of time. As mentioned in answer I, 3., the unitization agreement and State action will have a bearing on the volume of gas that can be sold by each company at Prudhoe Bay. As in all oil or gas fields, it is impossible to preduct with certainty what volume of gas will be available from day to day.

QUESTION 9. How did you choose or how will you choose a purchaser or purchasers for your Prudhoe Bay gas? Explain the steps that will be taken or have been taken in this matter.

ANSWER 9. In July, 1974, Atlantic Richfield sent letters to 17 prospective gas purchasers, requesting bids for its share of the natural gas in the Prudhoe Bay Field. With the FPC's Order No. 499 advance payment program in mind, Atlantic Richfield stated that it was interested in offers which include interest-free loans repayable over time as gas is delivered.

Eleven of the 17 companies responded by making offers for Atlantic Richfield's Prudhoe Bay gas. Interstate pipeline companies generally offered to make advance payments

pursuant to Order No. 499 in the form of interest-free loans. Pacific Lighting Gas Development Company (PLGD) offered to make an advance payment for Prudhoe Bay gas, but stated that it was not feasible for PLGD to raise the funds needed to make an interest-free loan. Instead, it offered to make payments to Atlantic Richfield to cover the interest expense and other costs associated with Atlantic Richfield's raising the money through the sale of a production payment.

The offers made by Pacific Lighting Gas Development Company (PLGD), Panhandle Eastern Transmission Corporation and Texas Eastern Pipeline Company, most nearly fulfilled Atlantic Richfield's needs and we proceeded to conclude agreements with them. As noted in the answer to question I (2), the PLGD agreement has been terminated and if the FPC's Order in Docket R-411, et al., beccmes final, the remaining advance payment agreements will be terminated. All of these agreements expressly recognize that certification and construction of either of the

proposed Alaskan Gas transmission systems would be satisfactory to both seller and buyer.

In light of the confusion brought about by the Commission's Order in Docket No. R-411, et al., and other uncertainties existing at this time, Atlantic Richfield is in the process of reevaluating all options open to it and has made no decision as to its future action.

II. RESERVES

QUESTION 1. Please describe your exploration and development activities on the North Slope of Alaska through 1975 indicating, among other things, the following:

a. Total amount of acreage held in Prudhoe Bay Field as defined by the Alaska Oil and Gas Conservation Committee;

ANSWER 1. a. Atlantic Richfield Company holds interests in 181,689 gross acres or 94,490 net leasehold acres in the Prudhoe Bay Field as defined by the Alaska Oil and Gas Conservation Committee.

QUESTION 1. b. Number of wells presently drilled in the Prudhoe Bay Field and the success ratio of well completions;

ANSWER 1. b. Fifty-three wells have been drilled on the Atlantic Richfield Company/Exxon Company, U.S.A. acreage in the Prudhoe Bay Oil Pool limits. Six of these wells are not commercial.

QUESTION 1. c. An estimation of the total amount of gas reserves in Prudhoe Bay held by your company and an estimate of its deliverability;

ANSWER 1. c. DeGolyer and MacNaughton, our reserve consultant, has estimated that the proved gas reserves in the Prudhoe Bay Field total 24 Tcf of hydrocarbon gas, with Atlantic Richfield Company's net share calculated to be in excess of 7.08 Tcf. Atlantic Richfield's share of the gas deliverability from Prudhoe Bay Field will depend on the outcome of unitization. Insofar as the total field is concerned, gas production will begin with the start of oil production; but gas sales cannot begin until the gas transportation system is built, gas conditioning facilities constructed and a plan of operation which includes gas

sales is approved by the working interest owners and by the Alaska Oil and Gas Conservation Committee.

QUESTION 1. d. Total amount of acreage held on the North Slope including the offshore area outside of Prudhoe Bay and location of such leases;

ANSWER 1. d. Atlantic Richfield holds interests in 817,734 gross acres or 417,016.41 net leasehold acres on the North Slope of Alaska including the offshore portion and the interest set out in answer II, 1., a., above.

QUESTION 1. e. Number of wells drilled outside of the Prudhoe Bay Field on the North Slope, including offshore areas, their location and an indication whether they were successful; and

ANSWER 1. e. Atlantic Richfield Company has participated in the drilling of 31 wells outside of the Prudhoe Bay Field on the North Slope through 1975. These wells, their location and results are as follows:

ARCO No. 1 Colville, 25-12N-7E, Dry and Abondoned (D and A)

ARCO No. 1 Itkillik, 10-8N-5E, D and A

ARCO No. 2 Kavik, 11-3N-22E, D and A

ARCO No. 3 Kavik, 8-3N-23E, gas

ARCO No. 1 Little Twist, 34-3S-4W, D and A

ARCO No. 1 Nora Federal, 5-2N-14E, D and A

ARCO No. 1 North Franklin Bluffs, 20-8N-14E, D and A

ARCO No. 1 Schrader Unit, 18-3S-5E, D and A

ARCO No. 1 Susie Federal, 22-2N-13E, D and A

ARCO No. 1 Toolik Federal, 4-8N-15E, D and A

ARCO No. 2 Toolik Federal, 5-8N-12E, D and A

ARCO No. 3 Toolik Federal, 4-8N-9E, D and A

ARCO No. 1 Ugnu, 22-12N-9E, oil

ARCO No. 1 West Sak River, 2-11N-10E, oil

ARCO No. 2 West Sak River, 22-11N-10E, oil

ARCO No. 3 West Sak River, 26-11N-9E, oil

ARCO No. 5 West Sak River, 11-10N-10E (confidential)

ARCO No. 6 West Sak River, 29-11N-11E (confidential)

Pan Am Kavik No. 1, 7-3N-23E, gas

BP East Ugnu No. 1, 17-2N-10E, oil

BP East Umiat No. 1, 19-1S-2E, gas

BP Kemik Unit No. 2, 6-1S-21E, D and A

BP Itkillik Unit No. 1, 11-1N-6E, D and A

BP Shale Wall Unit No. 1, 2-5S-5E, D and A

Exxon East Mikkelsen No. 1, 17-9N-21E, D and A

Forest Kemik Unit No. 1, 17-1N-20E, gas

Mobil Beli Unit No. 1, 8-4N-23E, D and A

Mobil Echooka Unit No. 1, 32-1N-16E, D and A

Mobil West Kadleroshilik No. 1, 14-5N-14E, D and A

Texaco East Kuparuk Unit No. 1, 10-2S-8E, D and A

Texaco West Kavik Unit No. 1, 20-5N-20E, D and A

QUESTION 1. f. Total amount of gas reserves estimated to be held on non-Prudhoe Bay field lease and their deliverability.

ANSWER 1. f. DeGolyer and MacNaughton, our reserve consultant, has not assigned any proved reserves on the North Slope outside the Prudhoe Bay Field.

QUESTION (cont'd.) 1. Explain the method and data used in determining any reserve estimates.

ANSWER 1. DeGolyer and MacNaughton has said that "since Prudhoe oil pool is essentially a shut-in field with no reservoir performance data, we have based our reserve estimates on the volumetric method. By volumetric method we mean that we have used individual well data -

logs, cores, fluid samples, and flow tests - to determine the sand thickness in each well and to determine certain average reservoir properties. We then used standard mapping techniques to determine the oil and gas in place throughout the field, including the Atlantic Richfield acreage. Then we have estimated an overall recovery factor based on our experience with other fields of similar reservoir characteristics."

QUESTION 2. Has your company made an independent estimate of the amount of potential reserves on the North Slope of Alaska? If yes, please describe your findings.

ANSWER 2. Yes. Atlantic Richfield has estimated the potential reserves yet to be discovered on the North Slope of Alaska using a method based on recovery factors times the cubic miles of sediment capable of containing hydrocarbons. The area included extends northward from the Brooks Range to the 300 foot water depth at the edge of the Continental platform in the Chukchi and Beaufort Seas. A large part of this area lies under the Polar ice cap. We estimate that recoverable reserves

could range up to 45 billion barrels of oil and 135 Tcf of gas. Estimates of potential reserves derived by this method for untested frontier areas are generally regarded as being optimistic.

QUESTION 3. Based upon your company's drilling experience to date, does it appear that the areal extent of the Prudhoe Bay Field as defined by the Alaska Oil and Gas Conservation Committee is larger than anticipated?

ANSWER 3. No. However, additional wells drilled on either Atlantic Richfield or other companies' acreage may allow the boundary to be moved.

QUESTION 4. Has your company studied the possibility of drilling in the Yukon-Kandik Basin, Middle Tanana Basin and Copper River Basin areas of Alaska? If yes, what do your studies indicate, what has been your past experience in such areas, if any, and what are your company's current and future plans with respect to such areas?

ANSWER 4. Yes, Atlantic Richfield has made evaluations of the Yukon-Kandik, Middle Tanana and Copper River Basins. Atlantic Richfield's experience in these basins has been as follows:

a. Yukon-Kandik Basin

Atlantic Richfield conducted a field program in the basin in 1962. Several areas of interest were found, however, the

structural fabric was complex and was accompanied with a very limited sedimentary section with good reservoir characteristics.

b. Middle Tanana Basin

No meaningful rocks are exposed in the basin for examination. A well drilled in the basin in 1962 revealed a thin, non-marine tertiary cover.

c. Copper River Basin

Atlantic Richfield drilled two of the eight wells in the Copper River Basin. We did not find significant shows of hydrocarbons in these wells, nor adequate amounts of reservoir quality rock. In addition, the presence of perma-frost and surficial volcanic rocks make it difficult to obtain the quality geophysical data necessary for pinpointing new drill site possibilities.

We have no current plans for additional evaluation of these areas.

QUESTION 5. **With respect to oil production from the Prudhoe Bay Field, what are the anticipated deliverability rates for the first 12 years? Will this affect the deliverability of your gas? What effect would a 2.25 Bcf deliverability capacity pipeline have on oil production during this period?**

ANSWER 5. **The production rate for the early years in the Prudhoe Bay oil field will be limited by the completion, expansion and operation of the Trans-Alaska Oil Pipeline. In later years the oil production rate (as well as gas deliverability) will be determined by field performance. It is not possible to predict with certainty either of these events. Thus, the oil production rates which can be forecast today must be viewed only as reasonable estimates.**

The Trans-Alaska Oil Pipeline is expected to begin operation in mid-1977 at 600 thousand barrels per day and reach a sustained throughput of 1.2 million barrels per day before the year's end. As yet, no agreement has been reached on pipeline expansion; however, this expansion could take place by the first of 1979. We have assumed that this expansion will take place as early as possible and have

projected a 1.5 million barrels per day production rate from the Prudhoe Bay Field commencing on January 1, 1979, and continuing until field performance can no longer sustain that rate. The field performance predictions used in this production forecast are based on numerical simulation studies conducted during the past five years. These studies have been conducted for several alternative methods of reservoir management. The studies have also considered the sensitivity to many of the reservoir unknowns. Based on these studies, Atlantic Richfield believes that the following is a reasonable projection for the oil production rate from the Jurassic-Triassic formation and is consistent with 2.0 to 2.5 BCF/D gas sales:

Prudhoe Oil Pool Production[1/] 1977-1988

Year	Rate, MB/D
1977	900[2/]
1978	1,200

(cont'd.)

1/ Production forecast for the Jurassic-Triassic crude oil only, does not include condensate or crude oil from other zones, such as Lisburne or Cretaceous formations.

2/ Average for the last six months of 1977.

(cont'd.)

Year	Rate, MB/D
1979	1,500
1980	1,500
1981	1,500
1982	1,500
1983	1,500
1984	1,500
1985	1,485
1986	1,280
1987	1,020
1988	900

QUESTION 6. Please describe your proposed exploration and development activities for the North Slope, if any, for 1976.

ANSWER 6. A. Exploration

Atlantic Richfield will continue its geological studies on the North Slope during 1976. The Company plans to drill four exploratory wells in search of oil. We have no plans for geophysical work on the North Slope this year.

B. Development

Atlantic Richfield will be drilling development wells with two rigs through-

out 1976. This activity should result in the completion of 20 to 22 wells. In addition, eight to 10 gas injection wells will be drilled and existing wells will be completed and perforated for production.

III. FACILITIES AND COSTS

QUESTION 1. What is the type of gas that will be produced from your Prudhoe Bay leases?

ANSWER 1. Solution gas and gas cap gas will be produced.

QUESTION 2. What type of facilities would be needed to process and/or treat each type of gas?

ANSWER 2. Gas handling and conditioning facilities will be required. The gas handling facilities include the gas compression and treating facilities at the flow stations as well as the gas gathering pipelines, compression facilities, gas injection pipelines and injection wells. The gas conditioning facilities will include equipment to achieve dehydration and removal of excess liquids and carbon dioxide from the gas.

QUESTION 3. Which facilities mentioned in interrogatory 2 will be constructed and operated by the producer and which will be required to be purchased entirely or partly by pipeline purchaser? Who will operate those owned by the pipeline?

ANSWER 3. Our advance payment agreements contemplated that the producer would construct and the gas purchaser would acquire, at Atlantic Richfield's option, those gas handling facilities from the outlet of the oil and gas separators and flash tanks at each flow station or separation center to the gas conditioning plant. No decision was made and no discussions were held as to who would operate these facilities. The gas conditioning plant (at the entrance of the gas pipeline system) would have been constructed and operated at the expense of the gas purchaser or the gas pipeline system.

These agreements have been or will be terminated if the FPC Order becomes final. 3/

QUESTION 4. What is the quality of the gas at the wellhead and what will be the acceptable quality for pipeline delivery?

ANSWER 4. The gas at the wellhead, in addition to containing the basic hydrocarbon constituents, also contains approximately 12% CO_2 and will

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3/ See Answer I, 2.

be saturated with water. Although this gas could be delivered to a pipeline specifically designed to handle this quality of gas, gas purchasers (or transporters) will probably condition the gas to meet such requirements as the gas transportation system may determine.

QUESTION 5. It is noted that certain agreements between various producers on the North Slope and pipeline purchasers reserve the right of the producer to process Prudhoe Bay gas in the Lower 48 states. What type of processing is contemplated by your company, where, when and how much? What type of transportation arrangements would be necessary to implement this provision?

ANSWER 5. At the present time, Atlantic Richfield does not have in mind any specific plans for processing in the Lower 48 states. Any transportation arrangement would have to be made with the gas purchaser and gas transporter and presumably approved by the FPC.

QUESTION 6. What would be the cost of each separate facility mentioned in interrogatory 2 ?

ANSWER 6. The current estimates of costs of the gas handling and conditioning facilities are $1.333 billion and $877 million respectively. It should be noted that it is extremely difficult to estimate these costs at this

time due to the uncertainties of the timing of these facilities and the cost inflation which will occur prior to installation of the facilities.

QUESTION 7. How would you allocate the cost between oil and gas production with the facilities which would be either owned by the pipeline or jointly with your company? Please explain your rationale for such allocation.

ANSWER 7. We do not anticipate the joint ownership by a pipeline company and Atlantic Richfield of any facility handling oil and gas production.[4/] If we were to utilize any facilities owned by the pipeline for such purpose, we would expect to negotiate a charge for such use.

QUESTION 8. If the Prudhoe Bay gas is to be processed through facilities owned by the pipeline or jointly by the producer, who will have benefit of the liquid products and how will the operation and maintenance costs be allocated and on what basis?

ANSWER 8. If your word "processed" is intended to mean conditioned or treated, then under the present argreements[5/] on our Prudhoe Bay gas, Atlantic

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4/ See Answer I, 6.

5/ See Answer I, 2.

Richfield would have the option to take in kind any liquid hydrocarbons incidentally recovered therein. Details were never negotiated but, since it was contemplated that the gas would be sold on a BTU basis the purchaser would have been compensated for the heating value of any liquids extracted and redelivered to the producer.

QUESTION 9. Provide the (a) length and size of the gathering facilities for your operation, (b) estimated cost of such line, (c) ownership of such lines, and for those lines to be owned by the pipeline purchaser or jointly with the producer how will costs be allocated for that portion of the facilities attributable to the transportation of gas?

ANSWER 9. (a) Assuming that your question pertains to natural gas gathering facilities, the natural gas gathering facilities consist of lines connecting the six separation centers to a conditioning facility. These lines are expected to be as follows: 30" diameter, 7 miles; 34" diameter, 5-1/2 miles; 38" diameter, 5-3/4 miles; 42" diameter, 5-1/2 miles. These data are for the entire field.

(b) The cost for these lines is currently estimated to be slightly in excess of

$60 million.

(c) See Answer to I, 6.

QUESTION 10. What type of design would be required for the gas gathering system, i.e., buried, above group pipe, chilling facilities, etc.?

ANSWER 10. The gathering system will be installed on supports above ground and insulated.

QUESTION 11. Would your cost estimates vary depending upon whether the Arctic Gas or El Paso project were certificated?

ANSWER 11. No. We assume that the pipeline delivery specifications, both as to gas quality and pressure, would be identical for either project.

QUESTION 12. What percentage of gas available at the wellhead will be lost in treatment and/or processing?

ANSWER 12. We anticipate that approximately 6% of the hydrocarbon gas could be consumed in conditioning the gas to pipeline requirements. This estimate does not include fuel for operation of the Prudhoe Bay Field.

QUESTION 13. What state approvals will have to be obtained in relation to Alaskan North Slope gas production and when will your company make the necessary filings to obtain such approvals?

ANSWER 13. The lease owners of the Prudhoe Bay Field are actively engaged in discussions to

unitize the field. The Prudhoe Bay Field should be unitized prior to commencement of oil production and the agreement must be approved by the Alaska Oil and Gas Conservation Committee. The unitization agreement should contain a plan for the development and operation of the Prudhoe Bay Field, including gas sales timing and volumes, as well as facilities, wells and liquid production rates. The Prudhoe Bay Field owners expect to request approval of these documents during the last half of 1976.

Respectfully submitted,

ATLANTIC RICHFIELD COMPANY

By P.T. Davis ERK

P. T. Davis

AFFIDAVIT

DISTRICT OF COLUMBIA)

EDWARD R. LEAHY, being duly sworn, deposes and says that he is an attorney for Atlantic Richfield Company; that he is authorized to verify and file this document; that he has examined the statements contained in the submittal and that all such statements are true and correct to the best of his knowledge, information and belief.

Edward R. Leahy
EDWARD R. LEAHY

Subscribed and sworn to before me this 13th day of February, 1976.

Sandra M Pagel
NOTARY PUBLIC

(SEAL) My Commission Expires: expired 12, 1977

Testimony of
Exxon Company, U.S.A.
To
Joint Gas Pipeline Impact Committee
Juneau, Alaska
February 20, 1976

Mr. Chairman, Members of the Joint Gas Pipeline Impact Committee, Mr. Moody. My name is W. Ray Booth, Assistant General Manager of the Natural Gas Department of Exxon Company, U.S.A., P. O. Box 2180, Houston, Texas 77001. I am appearing on behalf of Exxon Company, U.S.A. (A division of Exxon Corporation) pursuant to your letter, Mr. Chairman, dated January 30, 1976 addressed to W. Monte Taylor.

You have requested that Exxon testify with respect to a number of matters contained in the January 30 letter. We have filed separately with the Committee a document containing our full answers thereto. My comments will summarize these answers. The principal questions relate to the State's policy with respect to the sale of royalty gas as discussed in the Rush Moody report, routing of a gas pipeline, and the effect of the gas production on reservoir behavior in the Prudhoe Bay field as reflected in the Van Poollen study.

Rush Moody, Jr. Report

Question 1 of your letter requested comments on the report prepared by Rush Moody, Jr. The legal and policy advice in the report is so extensive that it would not be appropriate to agree or comment fully. Our counsel advises

that he would generally agree with Mr. Moody's legal analysis of the effect of the Natural Gas Act on the shipments of the State's royalty gas in interstate commerce, since once it begins its path in interstate commerce, control thereof will be in the hands of the FPC.

Let me state here at the outset that we have always been aware of the right that the State has preserved in its leases to take its royalty gas in kind. We agree that the State must assess its risks in this matter and act in its best interest. Whether the State takes its royalty gas in kind, or whether it permits its gas to be sold under the producer contracts will not unduly affect Exxon's ability to market its gas.

With respect to the question of "banking" which has been raised in these hearings, we are not opposed to exploring with with state the concepts of a banking arrangement. We would observe that lease owners at Prudhoe Bay will be selling gas to different purchasers and that short term balancing provisions are the norm for the situation where multiple sellers and purchasers exist in the same field. If a balancing concept is extended to include banking of gas for the State on some basis other than for temporary operating purposes, additional operating costs and risks to the banking parties must be considered. Further, some delivery problems could be created for the gas purchasers - i.e., the purchasers would have difficulties in determining their respective future allowable gas takes. Since the lease does not provide for banking, we would have to

consider the State's banking its royalty gas in the light of any specific proposal made by the State.

Mr. Moody indicates the commitment of the state's royalty gas to either of the proposed pipeline projects is of critical significance to their economic viability. The state royalty gas will amount to 250-300 MMcf/d under the 2-2.5 Bcf/d gas production plan. We do not feel that this amount of gas removed from viable systems which are designed for a capacity of 2.4 to 4.5 Bcf/d will affect such viability.

Our counsel advises that he is not in agreement with some other portions of Mr. Moody's letter and particularly the portions which speculate as to the power of the State to take certain actions as lessor which would otherwise be beyond its power as a governing body. I am not sure that this necessarily differs with Mr. Moody's opinion, as he stated affirmatively that he does not offer an unqualified opinion that such legislation would withstand court challenge. From Exxon's point of view, the state has leased certain lands for a valuable consideration. There are equities to the lessees that should be considered, and the State should not continue to reduce the value of what it has leased, appropriating those values to itself.

FPC Interrogatories

We have supplied a copy of Exxon Company, U.S.A.'s answers to the FPC interrogatories which were requested and

believe them to be self-explanatory. These answers generally reflect information which has previously been provided to various Alaska State agencies.

Commitments for Sale of Prudhoe Gas

Regarding commitments for the sale of Prudhoe gas, Exxon Corporation, as of February 27, 1976, will have no agreements with any potential purchaser for its share of Prudhoe Bay gas reserves. Prior agreements between Exxon and potential purchasers providing for negotiating rights in exchange for advance payments have been terminated by mutual agreement of the parties due to the action of the Federal Power Commission on December 31, 1975, which eliminated, retroactively, rate base treatment for advances made by these pipelines for Alaskan gas reserves.

Senate Concurrent Resolution 66

With regard to Senate concurrent resolution 66, we can fully understand why many people in Alaska feel it is to the best interest of the State to have a gas pipeline built through Alaska rather than principally through Canada. However, our involvement in the implementation of this resolution gives us some concern. First, Exxon Company, U.S.A. is not engaged in the transportation of natural gas in interstate commerce, nor does it intend to invest in either one of the competing gas pipeline proposals. Exxon Company, U.S.A. intends to sell its gas in the field as a conventional producer

sale. As a seller of gas in the field, Exxon cannot legally commit its purchasers as a condition of sale to transport the gas over a designated route. Our recently terminated agreements with prospective purchasers included a provision recognizing the right of the prospective purchaser to enter into any transportation arrangement suitable to it.

Second, we have in mind the fundamental principal of gas economics that where transportation costs are minimized, the wellhead value is more likely to approach its consumer price. Based on information filed with the FPC the transportation costs of gas from the North Slope to markets in the lower 48 states are less when transported by pipeline through Canada than through Alaska by pipeline and then by tanker as LNG. Such lower transportation costs could benefit the Prudhoe Bay gas owners, including the State of Alaska.

We recognize that there are other counter-balancing factors which the State of Alaska may consider, the primary one being that the trans-Alaska route of the pipeline would make the gas more available to Alaska markets should these markets later develop. On the other hand, if the State would adopt an orderly schedule of oil and gas development and maintain a stable investment climate, gas for later developing markets could be available.

From a practical standpoint, however, it must be recognized that the final decision on the gas pipeline certifica-

tion will be made by the FPC, or perhaps even the U.S. Congress. If available information indicates that the Alaska route is in the national interest, giving full consideration to construction costs and environmental impact, then it may be expected that the Alaska route will be certified. In any event, all of the factors which Alaska deems to be of importance in developing the best route will no doubt be presented so that the proper decision will be made. Therefore, it is not proper for Exxon to make commitments in support of a trans-Alaska natural gas pipeline routing, or for that matter, for any particular routing.

Sadlerochit Reservoir Study

Question 1(a) refers to questions in Senator Rader's letter of January 15, 1976. Exxon's answers to these questions on the Van Poolen study are contained in Exhibit "B" to the written response which has been submitted to you. Please note that our answers are based only on a preliminary review of the report prepared by Van Poollen. We expect that when economics of the total field production are considered the results of the Van Poollen study will be consistent with other studies which indicate that the optimum producing plan for the Prudhoe Bay field will involve gas deliveries of 2 to 2.5 Bcf/d beginning as soon as a gas pipeline is available. Aou are aware that the field working interest owners advised the Division of Oil and Gas that they plan a technical review of the field operating plans in July of this year, at which

time the Van Poollen reservoir study can be discussed in more detail.

Royalty Gas Options

Prospective Purchasers for State Royalty Gas - In Exxon's opinion, the prospective purchasers of the State of Alaska's royalty gas are the same firms which are prospective purchasers of portions of Exxon's share of the gas. Most of the large gas transmission and distribution companies with markets in the lower 48 states have demonstrated substantial interest in purchasing some Prudhoe Bay gas.

Household or Industrial Use Within Alaska - Exxon has no detailed independent study relative to the possibilities of household or industrial use of natural gas within Alaska. We are aware of Mr. Ward's report of the Arctic Gas study of prospective Fairbanks area gas demand, prepared about two years ago. That study concluded that substantial use of natural gas in Fairbanks was unlikely even if gas were available.

Conclusion

In conclusion, I would refer you to the testimony of Judd Miller, Jr. presented to this Committee on December 10, 1975 on behalf of Exxon Company, U.S.A. We reiterate that the State's interest and the interest of the leaseholders are generally the same. An optimum producing plan for the Prudhoe field will provide maximum economic benefits for all con-

cerned. This will include producing the large gas reserves simultaneously with the oil after a minimum delay of only 3-5 years as required for pipeline approval and construction. These conclusions appear to be supported by the Van Poollen study. Not only does a gas pipeline provide an opportunity to produce gas from Prudhoe Bay, it will also provide the opportunity to sell gas from other fields. This will enhance the overall attractiveness of future exploration in Alaska and increase the value of the State's acreage. Finally, I would like to emphasize the importance associated with the support of all concerned parties and the early approval and construction of a gas pipeline from the Arctic Slope.

EXXON COMPANY, U.S.A.
POST OFFICE BOX 2180 · HOUSTON, TEXAS 77001

NATURAL GAS DEPARTMENT

W. RAY BOOTH
ASSISTANT GENERAL MANAGER

February 18, 1976

Joint Gas Pipeline Impact Committee
Alaska State Legislature
425 G Street, Suite 750
Pouch V
Juneau, Alaska 99801

Attention: Senator John H. Rader, Chairman

Gentlemen:

There are enclosed for the Committee's information, the response of Exxon Company, U.S.A. to the questions submitted with your letter of January 30, 1976 to Mr. W. Monte Taylor of this company.

I plan to make a statement on behalf of our company during the hearing on February 19, 1976 in Juneau.

Very truly yours,

W. Ray Booth
Assistant General Manager
Natural Gas Department

WRB/bl
Enclosures

Questions Relating to Topics To Be Discussed At Hearings of The State of Alaska Legislative Gas Pipeline Impact Committee On February 17-18-19, 1976

Q.1. The Committee solicits your review and comments on the report prepared by Rush Moody, Jr.

a) Are you in agreement with Mr. Moody's legal analysis?

A.1.(a) We are in agreement with a part of Mr. Moody's analysis and in disagreement with other parts as we will briefly comment on in answer to question 1.(b).

Q.1. b) How should this analysis effect state policy with regards to royalty gas, taxation, or state leasing powers?

A.1. b) With respect to state royalty gas, our counsel advises that in general he would agree with Mr. Moody's analysis of the effect of the Natural Gas Act on the shipments of the state's royalty gas in interstate commerce and that, therefore, the state should decide what it proposes to do with its royalty gas, since once it begins its path in interstate commerce, control thereof will be in the hands of the FPC.

With respect to state policy concerning taxation, it is understood that this subject will be considered in extensive legislative hearings in connection with particular statutes that have been introduced. Further, concerning state leasing powers, our counsel advises that he cannot agree with Mr. Moody; this subject has been before this legislature on numerous occasions and has been the subject of extensive litigation in this State. Therefore we have no comment upon either of these topics.

Q.1. c) Could you please supply the Committee with the answers to the FPC "Interrogatories"?

A.1. c) The answers to the FPC "Interrogatories" are attached as Exhibit "A" hereto, entitled "Response Of Exxon Corporation To FPC Interrogatories Dated December 12, 1975, El Paso Alaska Company, et al., Docket No. CP75-96, et al."

Q.1. d) If you are or plan to be a gas producer, what commitments have you made for sale of gas? Are you prepared to support the State's efforts relative to SCR 66?

A.1. d) Regarding commitments, Exxon Corporation, as of February 27, 1976, will have no effective agreements with any potential purchaser for its share of Prudhoe Bay gas reserves. Prior agreements between Exxon and potential purchasers providing for negotiating rights in exchange for advance payments have been terminated by mutual agreement of the parties due to the action of the Federal Power Commission on December 31, 1975 which eliminated rate base treatment retroactively for advances made by these pipelines for Alaskan gas reserves.

Regarding SCR 66, Exxon expects to sell its North Slope gas at the well or in the field. This would be in conformity with usual practice in the United States.

Because of legal and regulatory restraints, a seller may not control transportation modes of any commodity, including natural gas, after delivery, or attempt to control transportation methods as a condition of sale. The public interest is best served when buyers and sellers compete unfettered by ancillary restraints as to transportation mode. The buyer must be free to choose the transportation mode for the commodity he has purchased. Neither producing nor gas purchasing companies will select the pipeline route. The Federal Power Commission has been holding extensive hearings on the competitive routes. Exxon believes the transportation mode will be chosen not on the basis of which companies have signed gas purchase contracts, but on the determination of the most practical and efficient mode.

Q.2. Testimony regarding the Sadelrochit Reservoir study recently completed by the Department of Natural Resources:

a) Reference questions in letter of January 15.

A.2. a) Our responses are enclosed as Exhibit "B" hereto, entitled "Response of Exxon Company, U.S.A. to Questions Posed By Senator John H. Rader By Letter Dated January 15, 1976".

Q.2. b) Reference FPC "Interrogatories", Part II.

A.2. b) The answers to FPC "Interrogatories", Part II are included in Exhibit "A".

Q.3. Royalty Gas Options

a) What prospective purchasers exist for state royalty gas, inside or outside of Alaska?

b) What is the possibility of household or industrial use of natural gas within Alaska?

A.3. Roy. ty Gas Options

a) Prospective Purchasers for State Royalty Gas

In Exxon's opinion, the prospective purchasers of the State of Alaska's royalty gas are the same firms which are prospective purchasers of portions of Exxon's share of the gas. Most of the large gas transmission and distribution companies with markets in the lower 48 states have demonstrated substantial interest in purchasing some Prudhoe Bay gas. So far, however, potential purchasers with markets inside Alaska have failed to express interest to Exxon.

b) Household or Industrial Use Within Alaska

Exxon has no independent detailed study relative to the possibilities of household or industrial use of natural gas within Alaska. The most recent study within Exxon's knowledge is an Arctic Gas study of prospective Fairbanks area gas demand, prepared about two years ago. That study concluded that substantial use of natural gas in Fairbanks was unlikely even if gas were available. No doubt, similar studies have been made of the possibilities of increased natural gas utilization in South Alaska.

Possibly useful information regarding the prospects for such gas usage would be found in the responses received to last year's solicitations of interest by the Alaska Royalty Oil and Gas Development Advisory Board.

EXHIBIT "A"

TO

RESPONSE OF EXXON COMPANY, U.S.A.

STATE OF ALASKA

LEGISLATIVE GAS PIPELINE IMPACT COMMITTEE

February 17-18-19, 1976

EXXON COMPANY, U.S.A.
POST OFFICE BOX 2180 · HOUSTON, TEXAS 77001

PAUL W. WRIGHT
COUNSEL

February 13, 1976

OGC
El Paso Alaska Company, et al.
Docket No. CP75-96, et al.

Interrogatories

Mr. Kenneth F. Plumb, Secretary
Federal Power Commission
825 N. Capitol St N.W.
Washington DC 20426

Dear Sir:

By letter dated December 12, 1975, Commission Staff Counsel Allan W. Anderson, Jr. transmitted to Exxon Corporation a series of written interrogatories in connection with the above-referenced proceeding.

Attached hereto for filing are the original and three conformed copies of the "Response of Exxon Corporation To FPC Interrogatories Dated December 12, 1975". Please direct any inquiries with respect to this Response to one of the following:

Martin N. Erck
Paul W. Wright
Larry W. Lindeen
Exxon Corporation
PO Box 2180
Houston TX 77001
AC713 656-4705

Copies of this filing have been served upon all parties to the restricted service list compiled in this proceeding in accordance with Commission regulations. Please acknowledge receipt of this document by placing your file mark on the enclosed extra copy and return same to the undersigned in the enclosed self-addressed envelope.

Very truly yours,

Paul W. Wright

Paul W. Wright

PWW/bl
Attachments

cc: Hon. Nahum Litt
Presiding Adm. Law Judge

Allan W. Anderson, Jr., Esq.
Commission Staff Counsel

RESPONSE OF

EXXON CORPORATION

TO FPC INTERROGATORIES DATED DECEMBER 12, 1975

El Paso Alaska Company, et al.

Docket No. CP75-96, et al.

February 13, 1976

I. POLICY

Q.1. Were you ever a member of a group investigating the feasibility of bringing gas from Prudhoe Bay and/or the Mackenzie Delta to the lower forty-eight states?

A.1. Yes.

Q.1.a. If yes, please describe your participation in the group.

A.1.a. Exxon Company, U.S.A., (a division of Exxon Corporation) was one of the six initial participants in the Northwest Project Study Group. Exxon continued its participation from June, 1970 through the merger with the Gas Arctic Study Group in 1972 and numerous additions to the membership of the Gas Arctic-Northwest Project Study Group (Arctic Gas), while feasibility studies were in progress.

Q.1.b. Are you still a member of such a group; and if not, please explain the reasons for departing.

A.1.b. Exxon Company, U.S.A. withdrew as a participant in Arctic Gas in January, 1975. Our public announcement at that time was as follows:

> "Exxon, USA joined a predecessor study group in 1970 because it was interested in the development of a project that would be capable of moving Prudhoe Bay gas to market. The company believes these initial project development objectives have been accomplished.
>
> "Exxon, USA is not in the interstate gas transmission business. The company has decided to withdraw from the study group now that the Arctic gas pipeline project is nearing an implementation stage."

Q.2. Why haven't firm gas purchase contracts been executed for your Prudhoe Bay gas?

A.2. As explained by Exxon Counsel on the record in this proceeding on several occasions and in the "Response Of Exxon Corporation To Oral Motions To Certify" dated December 15, 1975, definitive gas purchase contracts must await a decision on the competitive aspects of the two transportation proposals before the Commission and the completion (and approval by the State of Alaska) of a unitization agreement and operating plan for the Prudhoe Bay field by the working interest owners of

the field.

Q.3. Please explain the relationship of a unitization and operation agreement for Prudhoe Bay to the execution of gas purchase contracts.

A.3. We anticipate that the Prudhoe Bay field will be unitized prior to initiation of oil production scheduled for mid-1977. The Prudhoe Bay Unitization and Operating Agreements will provide among other things for the allocation of oil and gas production between owners of leases in the field. Upon unitization Exxon will own an agreed upon percentage share of gas produced in the field whether such gas is produced from the gas cap, from the oil zone, from an Exxon interest lease or from a lease in which Exxon has no current interest. Until such agreements have been executed by the working interest owners and the unit plan is approved by the State of Alaska, there exists uncertainty as to both Exxon's share and the total quantity of the gas available for sale. For these reasons, the execution of a gas purchase contract prior to unitization would be premature.

Q.4. Do you have any present intention to provide equity for either the El Paso Alaska project or the Arctic-Canadian gas project should either of them be issued a certificate?

A.4. There is no intention for Exxon Company, U.S.A. (a division of Exxon Corporation) to provide equity for either project. Imperial Oil Ltd. in which Exxon Corporation has approximately a 70% interest, is a member of the Arctic Gas consortium and has made a tentative equity commitment.

Q.5. If the natural gas pipeline and distribution companies are unable to commit the amount of equity required by lenders as necessary for either the Arctic gas or El Paso project, would your company be willing to help provide some of the needed equity?

A.5. Only as noted in response to interrogatory 4.

Q.6. Will your company bear the cost of gathering and treatment facilities on the North Slope? If no decision has been made on this, what factors would influence any decision and by when would such a decision have to be made?

A.6. Exxon plans to sell its gas in the field and thus plans that the purchaser(s) of its gas will own those facilities required for handling, gathering and treating the gas to pipeline quality specifications downstream of field separation facilities. Exxon expects to have the right to use a portion of these facilities subject possibly to Exxon paying a charge for such usage during periods of required gas injection.

Q.7. Can your company categorically guarantee that the purchase price of Prudhoe Bay gas under future gas purchase contracts would be no higher than the commodity price of gas in the market area to be served adjusted for applicable costs to market?

A.7. No.

Q.8. Would your company oppose any attempt by a potential gas purchaser to place a minimum daily delivery volume provision in a gas purchase contract for the Alaskan North Slope?

A.8. Yes, Exxon certainly would oppose any attempt by a potential gas purchaser (or the Commission, for that matter) to impose minimum daily delivery volume provisions. The several valid reasons for this position have been stated in the following documents which are in the public files of the Commission and which are incorporated herein by reference:

1. Application For Rehearing And Motion For Reconsideration, filed by indicated producers, Docket No. RM76-8, dated November 11, 1975.

2. Motion For Oral Argument, Docket No. RM76-8, dated December 19, 1975.

3. Application Of Exxon Corporation For Rehearing, Docket No. CI74-528, dated December 3, 1975.

Q.9. How did you choose or how will you choose a purchaser or purchasers for your Prudhoe Bay gas? Explain the steps that will be taken or have been taken in this matter.

A.9. Exxon independently will choose the party or parties with whom it will negotiate gas sales contract(s) utilizing criteria which are proprietary to it. Exxon's marketing strategy is completely confidential, recognizing however that under present law sales in

interstate commerce for resale must be the subject of Certificates of Public Convenience and Necessity issued by the Commission.

II. RESERVES

Q.1. Please describe your exploration and development activities on the North Slope of Alaska through 1975 indicating among other things the following:

Q.1.a. total amount of acreage held in Prudhoe Bay field as defined by the Alaska Oil and Gas Conservation Committee;

A.1.a. The Prudhoe Bay Oil Pool limits shown on the attached map are taken from the Alaska Division of Oil and Gas Report dated June, 1974 entitled "In Place Volumetric Determination of Reservoir Fluids Sadlerochit Formation Prudhoe Bay Field". Exxon holds leases on 70,756 net acres within these geographic limits. That acreage shown as Exxon-ARCO is owned on a 50-50 basis with the Atlantic Richfield Company.

Q.1.b. number of wells presently drilled in the Prudhoe Bay field and the success ratio of well completions;

A.1.b. A total of 53 wells have been drilled on Exxon interest acreage within the limits of the Prudhoe Bay Oil Pool, of which 47 were successful, five were dry, and one suspended (as defined in the answer to 1.e.).

Q.1.c. an estimation of the total amount of gas reserves in Prudhoe Bay held by your company and an estimate of its deliverability.

A.1.c. Based on current estimates, Exxon's share of proved Prudhoe Oil Pool gas reserves is 8.7 Tscf.

Based on Exxon's operational, economic and reservoir studies, we believe the optimum producing plan will include the production (when sales commence, currently estimated to be 3 to 5 years after the start of oil production) of an amount of gas sufficient to allow the purchaser(s) to deliver 2 to 2.5 Bcf/day of pipeline quality gas to a gas pipeline. Exxon's working interest share of gas deliveries to purchaser(s) is expected to be in the range of 0.7 Bcf/day and 0.95 Bcf/day.

Q.1.d. total amount of acreage held on the North Slope including the offshore area outside of Prudhoe Bay and location of such leases;

A.1.d. Exxon currently holds 167,425 net acres. The location of these leases is shown on the attached map.

Q.1.e. number of wells drilled outside of the Prudhoe Bay field on the North Slope including offshore areas, their location and an indication whether they were successful;

A.1.e. Exxon has participated, on a working interest basis, in eleven wells on the North Slope outside of the Prudhoe Oil Pool Limits. The location of these wells and their status are shown on the attached map. Additional information regarding the status of these wells is included on the attached tabulation. Exxon has participated in three wells classified as suspended. The classification of suspended applies to those wells adjacent to unleased acreage. To maintain the competitive nature of exploration, information on such wells is not released pending the disposition of adjacent acreage.

Q.1.f. total amount of gas reserves estimated to be held on non-Prudhoe Bay field leases and their deliverability.

A.1.f. Of the wells not classified as "suspended", seven were dry holes and one (the Kemik Unit #1) is a marginal gas discovery. This discovery will require further drilling before any determination of either reserves or deliverability is possible.

Q.2. Has your company made an independent estimate of the amount of potential reserves on the North Slope of Alaska? If yes, please describe your findings.

A.2. The USGS estimates* of undiscovered gas resources on the North Slope range from 14 to 49 Tcf, with a statistical mean of 28 Tcf. Exxon feels these estimates establish a good base for further analyses by the FPC. Equally important as the amount of potential reserves are such factors as the timing of discovery and development, the size and location of fields found, plus when and at what rate the gas can be transported to market.

Q.3. Based upon your company's drilling experience to date, does it appear that the areal limit of the Prudhoe Bay field as defined by the Alaska Oil and Gas Conservation Committee is larger than anticipated?

A.3. No.

Q.4. Has your company studied the possibility of drilling

*Geological Survey Circular 725

in the Yukon-Kandix Basin, Middle Tanana Basin and Copper River Basin areas of Alaska? If yes, what do your studies indicate, what has been your past experience in such areas, if any, and what are your company's current and future plans with respect to such areas?

A.4. Exxon has conducted exploration studies in the Yukon-Kandix, Middle Tanana and Copper River basins and at one time did hold several leases or lease applications. Exploration data developed did not provide sufficient encouragement for additional exploratory effort and the leases were cancelled. Exxon has no immediate plans for lease acquisitions or drilling in these three basins.

Q.5. With respect to oil production from the Prudhoe Bay field, (a) what are the anticipated deliverability rates for the first twelve years? (b) will this affect the deliverability of your gas? (c) what effect would a 2.25 billion cubic feet deliverability capacity pipeline have on oil production during this period?

A.5.(a) It is not possible to make precise forecasts of future oil production, especially for such a long period into the future, but the following represents our best current estimate of crude oil production from the Prudhoe Bay field.

The Trans Alaska Pipeline is expected to begin operation in mid-1977 and sustained throughput of 1.2 million barrels of oil per day should be achieved by January 1, 1978. Although decisions on future expansions of the pipeline have not been firmly established at this time, the Prudhoe Bay Field is expected to produce 1.5 million barrels of oil per day by January 1, 1979, and it is anticipated that the pipeline will be expanded accordingly. If an early expansion to 1.5 million barrels per day is accomplished, a rate decline during the latter part of the first twelve years of operation would be expected, unless reserves are substantially in excess of those currently recognized.

A.5.(b) No.

A.5.(c) None, based on current studies.

Q.6. Please describe your proposed exploration and development activities for the North Slope, if any, for 1976.

A.6. Exxon is continuing its geological and geophysical studies for the North Slope and is contemplating seismic programs during the winter and summer of 1976. Exxon does not plan to drill any wells during 1976 on Exxon operated acreage.

Planned development activity jointly with ARCO within the Prudhoe Oil Pool Limits in 1976 is expected to consist of the continued development drilling of approximately 30 wells and the continuation of the installation of field facilities associated with anticipated oil production startup by mid-1977.

III. FACILITIES AND COSTS

Q.1. What is the type of gas that will be produced from your Prudhoe Bay leases?

A.1. The natural gas produced at Prudhoe Bay will be associated with oil production and will consist of a mixture of solution gas evolved from oil and gas from the gas cap.

Q.2. What type of facilities would be needed to process and/or treat each type of gas?

A.2. Processing of Prudhoe Bay gas will not be required, although it may be found to be economic, as discussed in 5. below. Treatment of the gas, however, will be required. Based on current planning, the facilities required to handle the produced gas from the gas-oil separators to the inlet of the gas pipeline are:

(a) Gas Facilities At Gas-Oil Separation Centers

Compression for low pressure gas and conditioning to make the gas suitable for gathering from the gas-oil separation centers to the central location. This conditioning will include cooling and dehydration for hydrocarbon and water dew point control.

(b) Gas Gathering Facilities

Gas gathering lines to gather the gas from the gas-oil separation centers to a central location in the field.

(c) Gas Conditioning Plant Facilities

Gas conditioning to bring the gas to pipeline quality including carbon dioxide removal, hydrocarbon dew point control, dehydration, and compression and cooling to pipeline pressure and temperature.

Q.3. Which facilities mentioned in interrogatory 2 would be constructed and operated by the producer and which will be required to be purchased entirely or partly by a pipeline purchaser? Who will operate those owned by the pipeline?

A.3. See response to question I.6. Exxon intends to act as the purchaser's representative in the construction and operation of those facilities.

Q.4. What is the quality of the gas at the wellhead and what will be the acceptable quality for pipeline delivery?

A.4. The gas will not be available at the wellhead since it will be mixed with oil and condensate. It will be delivered to the purchaser after separation from the oil and condensate. It is anticipated that the separation will be done in three stages which during initial production of the field will be approximately 650 psig and 170° F. for the first stage, 80 psig and 150° F. for the second stage, and a slight positive pressure (approximately 0.5 psig) and 150° F. for the third stage. Based on our current engineering calculations, the estimated composition and quality of the combined gases from all three stages of separation are as follows:

Composition, Mol Percent	
Methane	72.92
Ethane	6.91
Propane	3.72
Iso Butane	0.58
Normal Butane	1.23
Pentanes plus	1.42
Carbon Dioxide	12.71
Nitrogen	0.51
Total	100.00
Heating Value (Gross, Wet, Actual @ 14.73 psia and 60° F.), Btu/cu.ft.	1063
Water Content, Lbs/MMcf	820
H_2S Content, grs./100 cu.ft.	*

*Not precisely known at this time, but is less than 1 grain per 100 cubic feet.

The low pressure portions of the above gas stream will be compressed to about 650 psig and the combined stream, cooled, dehydrated, and reheated before delivery into the field gas gathering system at approximately 620 psig and 100° F. After this treatment, the gas is expected to have the following composition and quality:

Composition, Mol Percent	
Methane	73.34
Ethane	6.91
Propane	3.67
Iso Butane	0.56
Normal Butane	1.18
Pentanes plus	1.08
Carbon Dioxide	12.74
Nitrogen	0.52
Total	100.00

Heating Value (Gross, Wet, Actual @ 14.73 psia and 60° F.), Btu/cu.ft.	1046
Water Content, Lbs/MMcf	1 (approx.)
H_2S Content, grs./100 cu.ft.	*

*Not precisely known at this time, but is less than 1 grain per 100 cubic feet.

It is Exxon's opinion that the Prudhoe Bay gas composition and quality used by Arctic Gas in the design of their pipeline facilities will be suitable for transmission through the pipeline (or any other pipeline operating at the same pressure [1680 psig] and temperature [less than 30° F.] conditions). The composition was furnished to Arctic Gas by the Prudhoe Bay producers and is our best current engineering estimate of the quality of the gas after treatment to make it suitable for pipeline operations, pending detail design of the gas treating facilities. The treated gas composition is recorded on page 12 of Section 8.b.2. of the Arctic Gas filing and is shown below for comparison with the above compositions along with Exxon's estimates of other characteristics which describe the gas "quality":

Composition, Mol Percent	
Methane	85.11
Ethane	7.70
Propane	3.99
Iso Butane	0.50
Normal Butane	0.73
Pentane plus	0.22
Carbon Dioxide	1.00
Nitrogen	0.75
Total	100.00

Heating Value (Gross, Wet, Actual @ 14.73 psia and 60° F.), Btu/cu.ft.	1130
Water Content, Lbs/MMcf	0.2**
H_2S Content, grs./100 cu.ft.	*

*Not precisely known at this time, but is less than 1 grain per 100 cubic feet.

**Tentative, pending results of research work in progress to determine whether a water content this low will actually be required.

Q.5. It is noted that certain agreements between various producers on the North Slope and pipeline purchasers reserve the right of the producer to process Prudhoe Bay gas in the lower forty-eight states. What type of processing is contemplated by your company, where, when and how much? What type of transportation arrangements would be necessary to implement this provision?

A.5. Exxon plans to reserve the right to process its Prudhoe Bay gas. An adequate evaluation of an operation to exercise such a right is not possible at this time, because of many uncertainties, such as the location of the gas transportation facilities. This will probably not be possible prior to the early 1980's, at which time it should be possible to define clearly and negotiate, if appropriate, the type of arrangement which would be mutually satisfactory to the parties involved.

Q.6. What would be the cost of each separate facility mentioned in interrogatory #2?

A.6. Estimated costs of the facilities are as follows:

Facility	Estimated Cost, $MM 7/1/75 Basis	Escalated Basis
Gas Facilities at Gas-Oil Separation Centers	527	634
(including IDC of)	(98)	(118)
Gas Gathering Facilities	57	63
(including IDC of)	(8)	(8)
Gas Conditioning Plant Facilities	1252	1590
(including IDC of)	(286)	(360)
TOTAL	1836	2287
(including IDC of)	(392)	(486)

Q.7. How would you allocate the costs between oil and gas production for the facilities which would be either owned by the pipeline or jointly with your company. Please explain your rationale for such allocation.

A.7. We do not envision that an allocation of costs will be necessary. All the facilities enumerated in III.A.2. and A.6. will be required for the handling, gathering and conditioning of the gas by the purchaser prior to delivery to a gas pipeline.

Q.8. If the Prudhoe Bay gas is to be processed, through facilities owned by the pipeline or jointly by the producer, who will have benefit of the liquid products and how will the operation and maintenance costs be allocated and on what basis?

A.8. The removal of hydrocarbon liquids which will be required at Prudhoe Bay will be a treating, not a processing, operation. Excess liquid hydrocarbons removed in treating will not be sold to the gas purchaser(s). Although firm plans have yet to be made concerning disposition of these liquids, Exxon expects that they will either be used as fuel or transported in the oil pipeline. Exxon expects to bear the costs, if any, to store and transport its

share of these liquids. If processing should be found to be economic, it would be conducted under arrangements yet to be negotiated.

Q.9. Provide the (a) length and size of the gathering facilities for your operations (b) estimated costs of such lines (c) ownership of such lines, and for those lines to be owned by the pipeline purchaser or jointly with the producer how will costs be allocated for that portion of the facilities attributable to the transportation of gas?

A.9. (a) The gas will be gathered from the six gas-oil separation centers to the central gas conditioning plant in the following lines:

Diameter, inches	Length, miles
30	7.0
34	5.6
38	5.7
42	5.4

(b) See cost estimate table in response to III.6.

(c) Exxon's plans are that the portion of these facilities which is necessary for gathering Exxon's gas will be owned by the purchaser(s) of its gas. The matter of allocation is dealt with in the response to III.7.

Q.10. What type of design will be required for the gathering system, i.e. buried, above ground pipe, chilling facilities, etc.?

A.10. The pipelines will be insulated and will be laid above ground on supports.

Q.11. Would your costs estimates vary depending upon whether the Arctic gas or El Paso project was certificated?

A.11. No, assuming pipeline quality and pressure specifications are the same.

Q.12. What percentage of the gas available at the wellhead will be lost in treatment and/or processing?

A.12. Of the gas available for sale at the separator outlets, approximately 12% will be removed as

carbon dioxide and approximately 6% will be consumed as fuel. The gas available for sale at the separator outlets does not include field fuel requirements.

Q.13. What state approvals will have to be obtained in relation to Alaskan North Slope gas production and when will your company make the necessary filings to obtain such approval?

A.13. The Prudhoe Bay Field Working Interest Owners plan to unitize the field prior to initiation of oil production. The Alaska Department of Natural Resources must approve this unitization plan. Associated with this approval will be approval of a unit operating plan including a plan for gas sales.

Negotiations are underway by the Prudhoe Bay Working Interest Owners and the request for State approvals will be made as soon as possible.

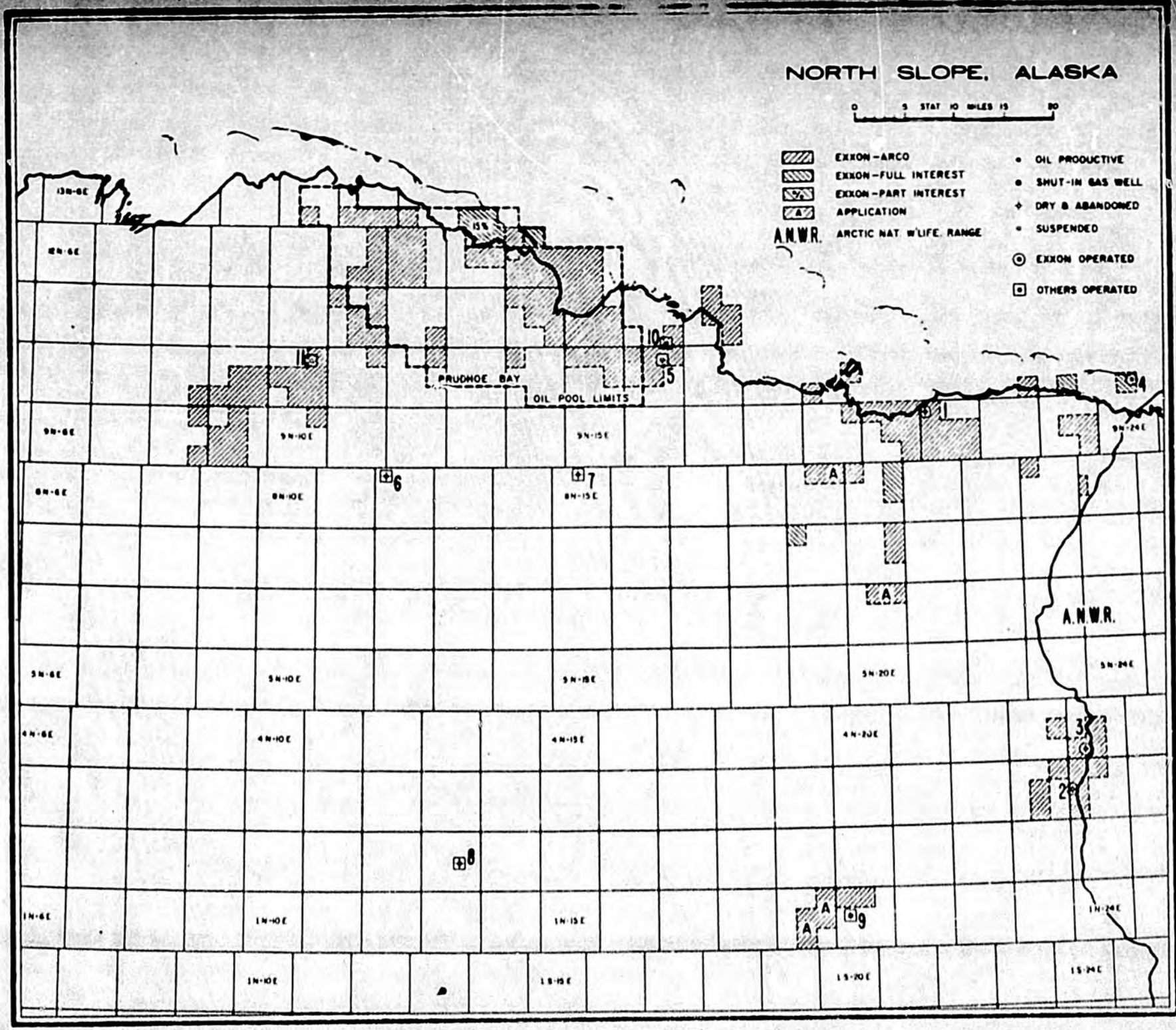
EXXON COMPANY, U.S.A. WORKING INTEREST WELLS DRILLED ON NORTH SLOPE OUTSIDE OF THE PRUDHOE OIL POOL LIMITS

EXXON OPERATED

Map Code	Well Name	Completion Date	Status
1	E. Mikkelsen Bay State #1	6/16/71	D & A
2	Canning River Unit A #1	7/10/74	D & A
3	Canning River Unit B #1	4/22/75	D & A
4	Alaska State A #1	9/21/75	Suspended

OTHER OPERATED

Map Code	Operator	Well Name	Completion Date	Status
5	Atlantic Richfield	Delta State #1	2/27/69	D & A
6	Atlantic Richfield	Toolik Federal #2	9/14/69	D & A
7	Atlantic Richfield	Toolik Federal #1	4/15/69	D & A
8	Atlantic Richfield	Susie Unit #1	1/9/67	D & A
9	Forest	Kemik Unit #1	6/17/72	Shut-in gas well
10	Atlantic Richfield	Delta State #2	5/17/75	Suspended
11	Atlantic Richfield	West Sak River #5	2/27/75	Suspended


NORTH SLOPE, ALASKA
0 5 STAT 10 MILES 15 20
EXXON-ARCO
EXXON-FULL INTEREST
EXXON-PART INTEREST
APPLICATION
A.N.W.R. ARCTIC NAT W'LIFE. RANGE
OIL PRODUCTIVE
SHUT-IN GAS WELL
DRY & ABANDONED
SUSPENDED
EXXON OPERATED
OTHERS OPERATED
PRUDHOE BAY
OIL POOL LIMITS
A.N.W.R.
13N-6E
12N-6E
9N-6E
9N-10E
9N-15E
9N-20E
8N-6E
8N-10E
8N-15E
5N-6E
5N-10E
5N-15E
5N-20E
5N-24E
4N-6E
4N-10E
4N-15E
4N-20E
1N-6E
1N-10E
1N-15E
1N-24E
1S-10E
1S-15E
1S-20E
1S-24E

VERIFICATION

W. Ray Booth, being duly sworn, deposes and says that he is Assistant General Manager of the Natural Gas Department of Exxon Company, U.S.A. (a division of Exxon Corporation); that he is authorized to verify and file this document, that he has examined the statements contained in the submittal and that all such statements are true and correct to the best of his knowledge, information and belief.

W. Ray Booth

Subscribed and sworn to before me by the said W. Ray Booth, this 13th day of February, 1976.

Kathryn S. Foulks
Notary Public in and for
Harris County, Texas

KATHRYN S. FOULKS
Notary Public in and for Harris County, Texas
My Commission Expires June 1, 1977

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon the restricted service list in these proceedings, in accordance with the Commission's Rules of Practice and Procedure.

Dated at Houston, Texas, this 13th day of February, 1976.

Paul W. Wright

Of counsel for
Exxon Corporation

EXHIBIT "B"

TO

RESPONSE OF EXXON COMPANY, U.S.A.

STATE OF ALASKA

LEGISLATIVE GAS PIPELINE IMPACT COMMITTEE

February 17-18-19, 1976

TO QUESTIONS POSED BY
SENATOR JOHN H. RADER
BY LETTER DATED JANUARY 15, 1976

The letter of Senator Rader contained a list of five questions relating to the potential impact of a recent Prudhoe Bay reservoir performance study conducted by H.K. Van Poollen and Associates, under contract to the State of Alaska. Exxon has received only a brief summary report on the Van Poollen Study. It is understood that a more detailed report will be issued within the next few weeks. The summary report does not provide adequate information to allow Exxon to evaluate the technical methods employed in the study; therefore, the enclosed responses to the Senator's questions are based only on the study results as presented in the summary report and the results of studies that Exxon has conducted.

Q.1. **What effect does the recent study, "Predictions of Reservoir Fluid Recovery Sadlerochit Formation Prudhoe Bay Field", have on marketing plans for Prudhoe Bay gas?**

A.1. None. The major Prudhoe Bay leaseholders have indicated that it is desirable to commence gas deliveries at a rate of 2 to 2.5 Bcf/D as soon as a gas pipeline can be approved and constructed (estimated to be 3-5 years after the start of oil production). The results presented in the Van Poollen summary report do not conflict with this basic plan.

The Van Poollen study indicates that a reduction in ultimate oil recovery could occur with increasing gas delivery volumes under certain conditions wherein reservoir management plans were not optimized. However, the Van Poollen results demonstrate that there is potential for minimizing, or eliminating completely, such reductions by modifying the reservoir management plan. For example, by modifying certain operating conditions in a 2 Bcf/D gas delivery case (Case 21), Van Poollen was able to eliminate a potential reduction in oil recovery and, in fact, obtain slightly higher oil recovery with gas delivery than in a similar oil rate no gas delivery case (Case 11).

Q.2. How does this study differ from industry and Federal studies?

A.2. The summary report does not provide adequate technical information to permit a detailed comparison of the Van Poollen study technique with other studies. When the results of the Van Poollen study become available and have been analyzed with appropriate consideration given to cost and other relevant factors, we expect that the conclusions will indicate that the optimum producing plan for the field will involve gas deliveries at a rate of at least 2 Bcf/D beginning as soon as a pipeline is available. This finding would be consistent with our studies, other operators' studies, and the Gruy study for the Department of Interior, all of which have concluded that deliveries of 2 to 2.5 Bcf/D are desirable early in the producing life of the field.

Q.3. How accurate can a model be without production history?

A.3. The accuracy of reservoir simulator model studies depends primarily on the validity of the description of reservoir rock and fluid properties, and, to a lesser degree, on the refinement of the modelling program. Based on Exxon's experience and technical judgment, if reservoir properties are accurately described and a technically sound program is utilized, model predictions can be accurate enough without production history to develop reasonable reservoir management plans.

Prior to fieldwide production, reservoir description is based principally on fluid samples, rock samples, production tests, pressure data, and log analysis from wells which have been drilled in the field. Once production commences, it is possible to add information to the reservoir description. It is often the case that development of new fields proceeds such that the reservoir data obtained prior to production is limited. However, at Prudhoe Bay ample reservoir data has been collected and thoroughly analyzed. Consequently, model studies prior to production at Prudhoe Bay are considered to be more accurate than is typical of other new fields where less data are available.

Q.4. Will some production history be necessary before an accurate model is established that will prove feasibility of a gas pipeline for marketing of Sadlerochit gas?

A.3. No. We believe that model predictions prior to production can be reasonably accurate and demonstrate the feasibility of early gas deliveries in the range of 2.0-2.5 Bcf/D. Exxon model studies have shown that reservoir management plans developed prior to production which include early gas deliveries can be modified, if necessary, during the producing life of the field to adapt to variations in actual reservoir performance that may be encountered.

Q.5. How critical are the results of this study in obtaining FPC certification and financing for the gas pipeline projects?

A.5. It is our opinion that the FPC and potential investors as well as interested regulatory bodies, particularly the Alaska Division of Oil and Gas, will consider the results of several studies before making decisions which would affect the gas pipeline project. Studies of Prudhoe Bay reservoir performance have been conducted by the major leaseholders and we expect that these studies will receive due consideration.

As indicated in our response to question 2, we expect the results of the Van Poollen study will be consistent with other studies, which indicate that the optimum producing plan for Prudhoe Bay will involve gas deliveries of at least 2 Bcf/D beginning as soon as a pipeline is available.

Alaska Conservation Society
Box 80192
Fairbanks, Alaska
February 18, 1976

Honorable Senator Rader
Chairman Royalty Gas Utilization

Senator Rader and members of the Committee;

I am Sharron Lobaugh, representing the Alaska Conservation Society.

The Board of Directors of our organization have informed me that it is their position that a reasonable state allotment of royalty gas should be requested from the FPC which would provide for the highest and best use of this valuable natural resource.

The first consideration, we feel should be given to using the gas by reinjection to produce oil as economically as possible.

Other considerations must be made which are both economic and environmental for the State's portion, but the overriding concern should be that decisions of this kind must be made with a regard for the total growth policy of the state.

Demands of petrochemical industries in the lower'48 are great and these industries produce products of importance to Alaskans. It seems inappropriate economically, politically, and environmentally to force industry to relocate in Alaska. Petrochemical industries already in existence have invested heavily in their facilities, are supporting a number of communities in the U.S., and have addressed themselves to the environmental constraints of those communities.

One important Alaskan use that should be encouraged is the possibility of using natural gas for domestic and commercial purposes in the Fairbanks area. This should be encouraged because it is a cleaner source of energy which will have an effect on the air quality problems of that area. Future use of natural gas for domestic purposes in Alaska where other possible power sources are not available must also be provided for.

Thank you for the opportunity to appear before your committee on this issue.

Sincerely,

Sharron Lobaugh

Mrs. Sharron Lobaugh

February 27, 1976

Senator Chancy Croft
President of the Senate
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

Representative Mike Bradner
Speaker of the House
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

RE: Interim Report of the Joint Gas Pipeline Impact Committee

Dear Mr. President and Mr. Speaker:

Please consider this to be a letter of transmittal of the Interim Report of the Joint Gas Pipeline Impact Committee existing pursuant to H.B. 258 "The Gas Pipeline Impact Committee", Chapter 170 SLA 75. I request that this letter of transmittal, together with the report, be read into the appropriate Journal in each house.

As an aid to the interpretation of the Interim Report, I submit the following as being my understanding of the sense of the Committee:

1. The Committee does not intend to suggest that the Commissioner of Natural Resources or the Royalty Board enter into unreasonable agreements with prospective purchasers. It is the sense of the Committee that Alaska should indicate that it is a "willing seller" of a portion of it's gas and is seeking a "willing buyer" on terms which will reserve as much gas as possible for future use to meet Alaska's internal domestic and other needs. The Committee would expect the executive to negotiate the best possible agreement. Understanding, that when such an agreement is negotiated, it may or may not be acceptable to the Legislature. It may be that the executive will negotiate the best possible agreement, at the same time recommending against its implementation on the basis that too little is received by the State and too much given by the State. We believe that it is imperative, however, in the conduct of the people's business, that such a tentative agreement be made public and its merits debated.

2. We do not wish to tie our negotiator's hands by quantifying the word "substantial" as used in paragraph #7 in the Committee's findings, and paragraph #1 of the Committee's recommendations.

3. The Committee does not suggest an arbitrary time deadline for our executive negotiators. We do point out, however, for the agreement to be finalized, legislative approval is necessary and a special session should be avoided if possible.

4. We do not intend in any manner to preclude negotiations for use of royalty gas within the State of Alaska and the further exploration of petrochemical and domestic uses. The major thrust of the Committee's recommendations is based on the belief that a Trans-Alaska pipeline is essential for future domestic and petrochemical in-state use options of North Slope gas.

5. Pursuant to other action by the Committee, the following have been introduced by the respective Rules Committee by request:

SCR 85/HCR 107	"Relating to the Impact on Alaska of a Trans-Canada Gas Transportation System"
SB 685/HB 848	"An Act Making a Special Appropriation to the Department of Natural Resources for the Purpose of Conducting Negotiations with Prospective Purchasers of North Slope Natural Gas and Providing for an Effective Date"
SB 686/HB 850	"An Act Relating to Waste of Oil and Gas and Providing for an Effective Date"
SB 687/HB 849	"An Act Relating to the Leases of State Land for Oil and Gas into taking of Royalty Gas from them and Providing for an Effective Date"

6. Finally, and most importantly, our recommendations are based on the facts and circumstances as they exist today.

   The situation may change at any time rendering the presently recommended strategy inappropriate. For example, it has been suggested that the Federal Power Commission may conduct allocation proceedings nullifying contractual sales commitments. Gas may be more or less deregulated. The recent request of the President for authority to make the final route decision subsequent to January 1, 1977 may effect the political climate. It may be determined, as has been suggested by some, that neither the Trans-Alaska nor the Trans-Canada line are economically feasible at this time.

The recommendations of the Committee rely strongly on the advice of our consultant, Mr. Rush Moody, recently Vice-Chairman of the Federal Power Commission. The strategy may only be appropriate if the Federal Power Commission closes the certification hearings in May according to it's present schedule and further certifies one route based on the precedents, principles, and considerations customarily employed in past certification proceedings admittedly more limited in scope and of much less national significance.

The opportunity to use royalty gas to accomplish our public purposes as we perceive them may be lost unless we have substantially negotiated possible sale terms and are ready to move if and when the time arrives - which may be very soon.

Respectfully submitted,

Senator John Rader, Chairman
Gas Pipeline Impact Committee

JR/kb

INTERIM REPORT
OF THE
JOINT GAS PIPELINE IMPACT COMMITTEE

This Committee, through public hearings and staff investigation, has become convinced that immediate action by the State of Alaska is essential if the citizens of this State are to receive maximum benefit from the State's natural gas resource.

The Committee will issue a full and complete report on its findings and recommendations at a later date, but is impelled to submit this interim report to the Legislature and the people of the State of Alaska because of the urgency of the present situation.

The Committee finds and concludes the following:

1. A federal decision authorizing the transportation of North Slope natural gas across Canada would be inimical to the interests of the State of Alaska. The State's resource would be drained, its people denied access to a premium fuel and raw material, its work force deprived of employment opportunities, and productive economic growth would be thwarted.
2. A federal decision authorizing the transportation of North Slope natural gas across the State of Alaska to an open port will serve the best interests of the State.
3. The level of benefits, and burdens reasonably to be expected by the State as a consequence of any decision on a North Slope gas transportation system are of such magnitude that the routing decision must be regarded as critical to the future of the State. Action to secure a Trans-Alaska routing must be pursued as expeditiously as possible; no reasonable step should be left untaken.
4. The position of the state as owner of a one-eighth royalty in natural gas and natural gas liquids produced from State-owned lands on the North Slope creates an immediate opportunity for effective State action which can assist in securing a Trans-Alaska transportation system.

5. Affirmative, agressive action by the Governor, the Commissioner of Natural Resources, the State Royalty Board, and the Legislature with respect to the State's royalty gas is imperative.
6. Effective use of the State's royalty gas, to serve the best interests of the State, requires:
   a. The State must elect to take its royalty share of natural gas and natural gas liquids in kind.
   b. The State must commit a portion of its royalty gas to purchasers who will assist in securing approval of a Trans-Alaska transportation system, and who will thereafter utilize such a Trans-Alaska system.
7. Present levels of natural gas demand in Alaska permit a commitment of a portion of the State's royalty gas to purchasers outside the State; while every effort must be made to retain a substantial part of Alaska's gas for present and future in-state needs, it is in the overall best interests of the State to offer for sale outside the State, a substantial portion of the State's royalty gas to purchasers who can, and will, assist in securing authorization of a Trans-Alaska transportation system.
8. Those persons and firms interested in the construction and operation of a Trans-Alaska transportation system can materially alleviate State unemployment problems, and the State should, in striking a bargain for the commitment of State resources to a Trans-Alaska system, secure appropriate commitments for the hire and training of Alaska residents in the construction and operation of such a system.
9. Finally, the risk that non-action by the State, or delayed action by the State, will cause the selection of a Trans-Canadian routing, and the risk that the State will lose substantial benefit of its natural gas resource are so great, it is the sense of this Committee that State action must not be delayed.

BY REASON OF THE FOREGOING, IT IS THE RECOMMENDATION OF THIS COMMITTEE THAT:

1. The commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with interested out-of-state purchasers to reach definitive sales and/or exchange agreements covering disposition of substantial portions of the State's royalty gas on the best obtainable terms.
2. The Commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with natural gas transporters involved in the proposal for a Trans-Alaska system to reach definitive transportation agreements covering the State's royalty gas sold for out-of-state use, and the State's withdrawal of the unsold portion of its royalty gas from the system for in-state use; appropriate commitments should be obtained with respect to hire and training of Alaska residents.
3. The arrangements and agreements so negotiated should be presented to the Legislature for ratification prior to the end of the Second Session of the Ninth Legislature to avoid, if possible, a special session.
4. The Legislature should hold itself ready for immediate consideration of and prompt action on, the recommendations of the Commissioner and Board.
5. Such arrangements, contracts, and agreements as are negotiated by the Commissioner and Board and approved by the Legislature should be incorporated into the pending applications for a Trans-Alaska transportation system, presented to the Federal Power Commission by the appropriate transporter-applicant, and approval thereof obtained in the pending Federal Power Commission proceedings.
6. The Legislature should adopt SCR 66 and further seek the active cooperation of all owners of North Slope gas in support of the Trans-Alaska pipeline route.

February 27, 1976

Senator Chancy Croft
President of the Senate
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

Representative Mike Bradner
Speaker of the House
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

RE: Interim Report of the Joint Gas Pipeline Impact Committee

Dear Mr. President and Mr. Speaker:

Please consider this to be a letter of transmittal of the Interim Report of the Joint Gas Pipeline Impact Committee existing pursuant to H.B. 258 "The Gas Pipeline Impact Committee", Chapter 170 SLA 75. I request that this letter of transmittal, together with the report, be read into the appropriate Journal in each house.

As an aid to the interpretation of the Interim Report, I submit the following as being my understanding of the sense of the Committee:

1. The Committee does not intend to suggest that the Commissioner of Natural Resources or the Royalty Board enter into unreasonable agreements with prospective purchasers. It is the sense of the Committee that Alaska should indicate that it is a "willing seller" of a portion of it's gas and is seeking a "willing buyer" on terms which will reserve as much gas as possible for future use to meet Alaska's internal domestic and other needs. The Committee would expect the executive to negotiate the best possible agreement. Understanding, that when such an agreement is negotiated, it may or may not be acceptable to the Legislature. It may be that the executive will negotiate the best possible agreement, at the same time recommending against its implementation on the basis that too little is received by the State and too much given by the State. We believe that it is imperative, however, in the conduct of the people's business, that such a tentative agreement be made public and its merits debated.

2. We do not wish to tie our negotiator's hands by quantifying the word "substantial" as used in paragraph #7 in the Committee's findings, and paragraph #1 of the Committee's recommendations.

3. The Committee does not suggest an arbitrary time deadline for our executive negotiators. We do point out, however, for the agreement to be finalized, legislative approval is necessary and a special session should be avoided if possible.

4. We do not intend in any manner to preclude negotiations for use of royalty gas within the State of Alaska and the further exploration of petrochemical and domestic uses. The major thrust of the Committee's recommendations is based on the belief that a Trans-Alaska pipeline is essential for future domestic and petrochemical in-state use options of North Slope gas.

5. Pursuant to other action by the Committee, the following have been introduced by the respective Rules Committee by request:

SCR 85/HCR 107	"Relating to the Impact on Alaska of a Trans-Canada Gas Transportation System"
SB 695/HB 848	"An Act Making a Special Appropriation to the Department of Natural Resources for the Purpose of Conducting Negotiations with Prospective Purchasers of North Slope Natural Gas and Providing for an Effective Date"
SB 686/HB 850	"An Act Relating to Waste of Oil and Gas and Providing for an Effective Date"
SB 687/HB 849	"An Act Relating to the Leases of State Land for Oil and Gas into taking of Royalty Gas from them and Providing for an Effective Date"

6. Finally, and most importantly, our recommendations are based on the facts and circumstances as they exist today.

   The situation may change at any time rendering the presently recommended strategy inappropriate. For example, it has been suggested that the Federal Power Commission may conduct allocation proceedings nullifying contractual sales commitments. Gas may be more or less deregulated. The recent request of the President for authority to make the final route decision subsequent to January 1, 1977 may effect the political climate. It may be determined, as has been suggested by some, that neither the Trans-Alaska nor the Trans-Canada line are economically feasible at this time.

The recommendations of the Committee rely strongly on the advice of our consultant, Mr. Rush Moody, recently Vice-Chairman of the Federal Power Commission. The strategy may only be appropriate if the Federal Power Commission closes the certification hearings in May according to it's present schedule and further certifies one route based on the precedents, principles, and considerations customarily employed in past certification proceedings admittedly more limited in scope and of much less national significance.

The opportunity to use royalty gas to accomplish our public purposes as we perceive them may be lost unless we have substantially negotiated possible sale terms and are ready to move if and when the time arrives - which may be very soon.

Respectfully submitted,

Senator John Rader, Chairman
Gas Pipeline Impact Committee

JR/kb

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3. The arrangements and agreements so negotiated should be presented to the Legislature for ratification prior to the end of the Second Session of the Ninth Legislature to avoid, if possible, a special session.
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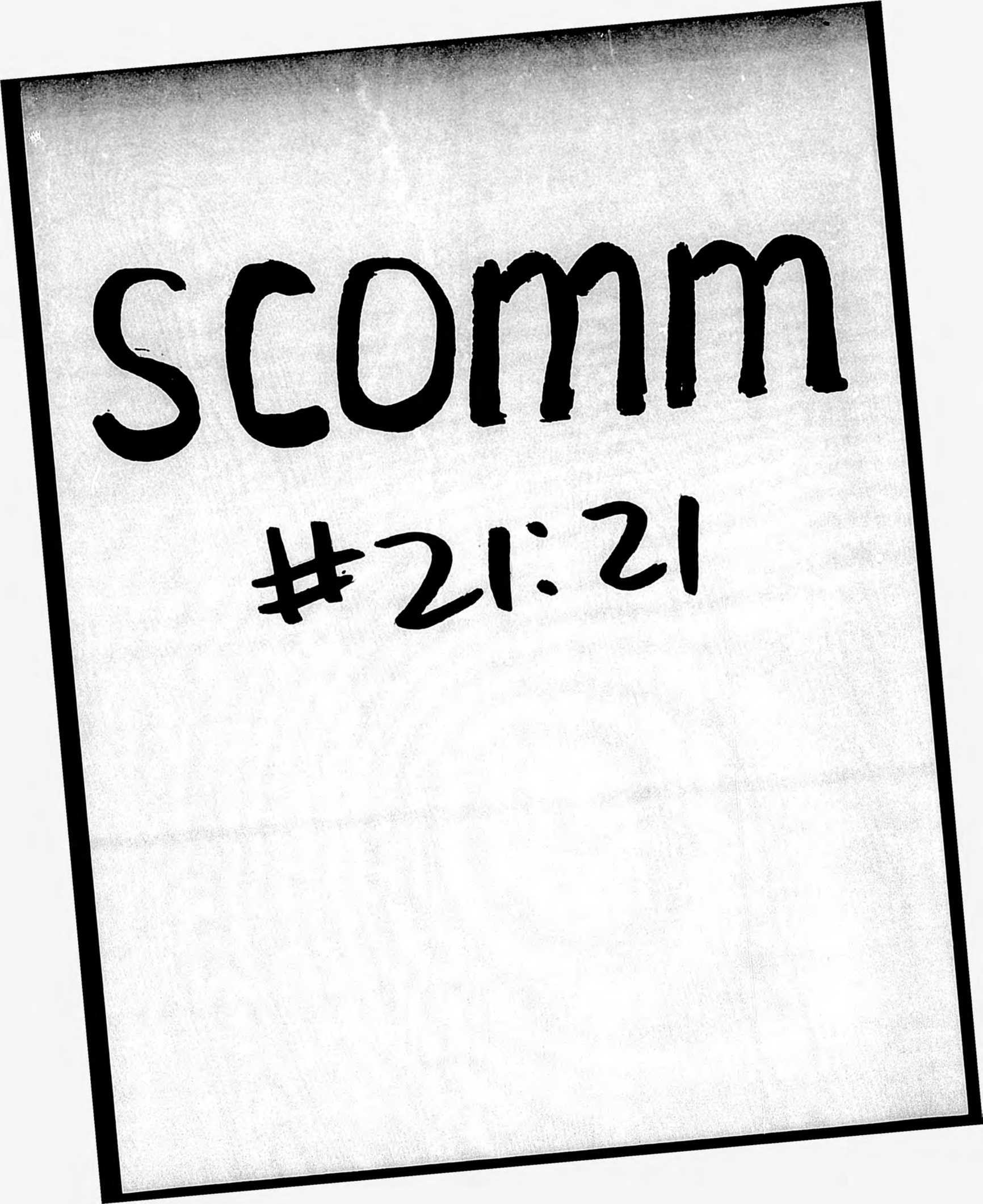
6. The Legislature should adopt SCR 66 and further seek the active cooperation of all owners of North Slope gas in support of the Trans-Alaska pipeline route.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Tennessee Gas Transmission
A Tenneco Company

Tenneco Building
P.O. Box 2511
Houston, Texas 77001
(713) 229-2131

January 18, 1977

Mr. Richard Maullin
Chairman
California Energy Resources Conservation
and Development Commission
1111 Howe Avenue
Sacramento, California 95825

Dear Mr. Chairman and Members of the Commission:

The purpose of this letter is to provide comments directed essentially toward Volume IV of your draft Biennial Report: "Alaskan Natural Gas: Criteria for Selection of a Transportation System."

Tennessee Gas Transmission and its sister company Tenneco Alaska, Inc. have not been an active participant in hearings leading to publication of your draft Biennial Report. We have, however, communicated with your staff concerning some issues discussed in the Report.

Recently Tenneco Alaska, Inc. signed an agreement with the State of Alaska to purchase a portion of the State's Prudhoe Bay royalty natural gas; a copy of that agreement is attached at Tab A. One term of that contract, which is presently being considered by the Alaska legislature, provides that we will support a transportation system for Prudhoe Bay gas involving a Trans-Alaska pipeline, a liquefaction facility in Southern Alaska, and trans-shipment to the lower 48 by LNG tanker. As provided in the agreement, we may lose the right to purchase Alaska's gas if that system is not selected.

Prior to signing that agreement, we were not committed to any of the three competing systems for transporting Alaskan natural gas to the lower 48 states. Before agreeing to support the Trans-Alaska transportation system our Company analyzed many of the same issues discussed in your draft Biennial Report for we risk the loss of our investment made in supporting the route if that route is not selected. We agreed to support that delivery system because we have concluded that it is more in the national interest of the United States than the two competing delivery systems and, for this reason, is more likely than either of them to be designated by the President pursuant to Section 7 of the Alaska Natural Gas Transportation Act of 1976.

In the following portions of this letter I will set forth, though necessarily in somewhat summary fashion, many of the considerations behind our conclusion that the Trans-Alaska delivery system has national interest advantages over the competing systems. I am hopeful these

comments will be useful to you not only in preparing your final Biennial Report but also in preparing comments to the President pursuant to Section 6 of the Alaska Natural Gas Transportation Act of 1976.

The criteria we applied in reaching our decision were essentially the same as those outlined on pages 9-10 of Part IV of your Biennial Report. Since we do not have customers in California, we were not directly concerned with your criteria 8 and 10; however, we recognize that these issues are appropriate for consideration by the State.

In addition to the criteria listed in your report, we also considered the following specific criteria:

--- Future expansibility of the delivery system to accommodate new discoveries of Alaskan natural gas;

--- Consistency of the delivery system with probable future U.S. energy policy.

To a degree we agree with the statement at page 9, Part IV, of the draft report that:

> Given the difficulties in siting and regulating operations of liquefied natural gas (LNG) terminal facilities, El Paso's proposal to transport North Slope gas by pipeline to Southern Alaska and then to liquefy it and transport by ship in the form of LNG would place California in a position of unnecessarily high reliance on a form of gas delivery more appropriate for import projects for which there is no overland pipeline alternative.

The degree to which we agree is that if the proposed pipeline projects crossed only U.S. territory thereby eliminating the additional levels of governmental controls and regulations and if they did not give rise to serious native claims issues, we believe the pipeline delivery system proposed by Arctic Gas would be preferable to an LNG delivery system from a "national interest"--as opposed to a California or an Alaskan point of view, even though the Arctic Gas Route presents some very difficult environmental problems and some unique Arctic construction problems. For reasons discussed below, we do not have the same view of the Alcan route.

We believe, however, that it is not possible to ignore or minimize the significance of the fact that both of the competing pipeline proposals must transit a very significant portion of Canadian territory and that this fact gives rise to many serious questions concerning financability, timely completion, operating costs, and the expansibility of these projects. In fact, under the test quoted above, we seriously doubt that, as a practical matter, there is an available "over-land pipeline" alternative to the Trans-Alaska delivery system because legitimate and foreseeable Canadian interests

will preclude approval and completion of a trans-Canada pipeline within the time frame within which Alaska gas must reach our lower 48 states if our national interests are to be served.

Our assessment of these issues has been made from the perspective of a company that is by no means anti-Canadian. We have substantial business interests in Canada, and we intend to maintain and, to the extent possible, further those interests. Moreover, we have the highest respect for the ability of Canadian leaders to reach and implement decisions that are in the interest of the Canadian people. It is precisely for these reasons, however, that we believe the Canadian government will not reach a decision within the near future (i.e., the next two years) to grant necessary permits for, and to allow the actual construction of either the proposed Arctic Gas pipeline (with or without a Western Leg) or the proposed Alcan pipeline.

The salient points of our analysis are as follows:

a. Neither of these projects is necessary to assure that projected Canadian demand for natural gas can be met by Canadian supply within the next five to seven years.

--- As recent testimony before the NEB reveals, there are substantial unconnected supplies of natural gas now available in Canada other than discoveries in the Mackenzie Delta. These supplies could be connected and delivered through existing delivery systems to markets in Canada.

--- Demand in Canada has not been increasing at previously projected rates. Prices have increased more in that country than in this country, which has had a dampening affect upon demand.

--- If interim supplemental supplies are necessary within approximately five to seven years, there are other alternatives available to Canadians. As an example, Tenneco LNG Inc. has contracted to land the equivalent of a billion cubic feet per day of Algerian LNG in New Brunswick of which up to 17% is available for Canadian consumption.

b. Available evidence indicates that reserves sufficient to sustain Canadian participation in a major pipeline project are likely to be proven in the Canadian Arctic Islands before they are proven in the Mackenzie Delta.

--- Current reserves discovered in the Arctic Islands total 15-16 Tcf. Threshold volumes sufficient to justify a pipeline market outlet range from 20 to 30 Tcf depending upon pipeline size and desired deliverability.

--- Two new ventures have recently been consummated which will commit sufficient exploratory funds in the Arctic Islands to insure the discovery of threshold reserves. In the fall of 1976, Home Oil Company agreed to purchase $30.5 million of Panarctic common stock with the funds to be allocated to exploration over a three-year period. The second venture involves a commitment by a consortium composed of Imperial, Gulf, Petro-Canada and Panarctic to spend $80 million for Arctic Island exploration over the next five years. These new funds, combined with other monies destined for Arctic exploration, will support the activity level necessary to discover the reserves required to meet future Canadian demand plus the possibility of additional future exports to the U.S.

c. Approval and implementation of either the Arctic Gas or the Alcan project would have negative economic impacts in Canada which would not be off-set by economic advantages, at least in the absence of a strong Canadian demand for Mackenzie Delta gas. In any event there are insufficient proven reserves in the Mackenzie Delta to provide the daily deliverability required to justify the project.

--- Canadian law and regulations require majority equity ownership of facilities located in Canada and that, to the extent possible, such facilities be built by Canadian materials and labor. Fulfillment of these requirements will preclude the implementation of any other substantial gas pipeline project in Canada for the next several years and could deny financing to other substantial public works, or energy-related projects in other parts of Canada during this same time period.

--- Implementation of either of these projects will have an inflationary impact in Canada that will be nationwide.

--- The primary benefits to be derived from these projects will be jobs and tax base in Western Canada, where unemployment is lower than in other parts of Canada and where per capita income is higher.

--- The negative economic impacts of these projects will be felt primarily in Eastern Canada where there is higher unemployment, lower per capita income, a greater population,

political division, and where a substantial portion of economic activity is devoted towards the manufacture of products for export, which activity is very directly and negatively impacted by inflation.

d. Legitimate native claims, socio-economic and environmental concerns expressed by many Canadian citizens will be voiced in the forthcoming Berger Commission report. The existence of this report, regardless of its conclusions, will make it difficult for the Canadian government to override these concerns and approve and allow the prompt implementation of either the Gas Arctic or Alcan projects without an extended period of debate.

--- All indications we see from Canadian news reports are to the effect that there is substantial opposition by the native peoples and by environmental and other groups in Canada to either the Arctic Gas or the Alcan projects.

--- While opposition to the Alcan project appears to be less than opposition to the Arctic Gas project, the benefits to Canada are much less from the Alcan project than from the Arctic Gas project because Alcan will supply no Canadian gas to Canadian markets.

e. The facts under paragraphs a through d provide the Canadian government an opportunity and sound reasons to delay at least two years the decision whether Mackenzie Delta gas or Canadian Arctic Island gas should be the next source of Canadian gas to bring to Canadian markets. Proposals that do not depend upon approval of the Arctic Gas or the Alcan project are on the drawing boards for both such projects--i.e., the Foothills project for Mackenzie Delta gas and the Polar Gas project for Canadian Arctic Island gas. Many complicated considerations will bear upon a Canadian decision as to which project should proceed first. It would not be in the Canadian government's interest to make a precipitous decision on that issue, which would be the case if they were to approve the Arctic Gas project or the Alcan project within the next year or two.

f. Other, more fruitful avenues of U.S.-Canadian cooperation are available than the Arctic Gas or Alcan projects.

--- Success in any jointly-approved and supported major energy project will be important to both the U.S. and the Canadian governments. For reasons discussed in this letter, both the Arctic Gas and the Alcan projects involve substantial risks of delay, financial difficulties, and of disputes over future expansibility and provincial taxes. Both the U.S. and Canadian federal governments will want to avoid disputes over these issues.

--- The most immediate prospect for successful cooperation is the Tenneco-Algerian LNG project which is the subject of filings before the NEB and FPC on December 20, 1976.

--- The Polar Gas Project is also a possible avenue of successful U.S.-Canadian cooperation in the energy area. We expect that project to be the subject of a filing before the NEB in the last quarter of 1977.

--- U.S.-Canadian cooperation may be required to implement a delivery system to take surplus West Coast oil to our Midwest.

A review of the submittals to the National Energy Board concerning the proposed Arctic pipelines reveals some divergence of opinion as to which route or if any proposed route is in the best interests of Canada. In the near future we will consider commissioning a study by a neutral, respected Canadian expert to assess the validity of the points made under paragraphs a through d above and to determine the probable net economic benefits to the Canadian economy and the various geographical areas of Canada of the various alternatives available to Canada. If such a study should reveal that it is not in the national interest of Canada to grant the necessary approvals and allow implementation to begin for either the Arctic Gas or the Alcan projects within the next two years, we believe that these projects should not be considered by U.S. authorities as practical alternatives to a Trans-Alaska LNG system for delivering Prudhoe Bay gas to the lower 48 consistent with United States' national interest. The supply/demand picture in the lower 48 states requires the promptest practical delivery of Prudhoe Bay gas to our markets. The critical shortage of domestic natural gas supply existing today due to the extremely cold and prolonged weather east of the Rockies has highlighted these requirements.

We believe the following considerations also support the conclusion that the Trans-Alaska delivery system is in the national interest and will be approved by the President.

i. Once construction starts, timely completion of the Trans-Alaska system is more reliable than timely completion of either of the other projects. Risks of construction delays for the Arctic Gas project are substantially greater than they are for the Trans-Alaska project, as revealed by Department of Interior reports. Both Arctic Gas and Alcan face purely internal Canadian issues, such as native claims. As your report so appropriately points out beginning at page II of Part IV, decision makers must consider the probable completion date, rather than the date when permits are granted, in determining what project is in the national interest.

ii. The Trans-Alaska project will create more U.S. jobs and generate more U.S. taxes than either of the competing systems.

iii. The Trans-Alaska system can much more readily be financed for the reasons cogently set forth in the December 16, 1976, summary brief of El Paso filed in the FPC proceedings (CP76-96, et al) at pages 13 to 16. This is a matter of extremely great practical and political significance as reflected by Section 7 of the Alaska Natural Gas Transportation Act. It would be a serious mistake to believe that these financing problems will not materially delay both the Alcan and Arctic Gas pipeline routes after necessary governmental approvals for the project have been obtained.

iv. Present information indicates to us that the Canadian government may not reach a decision on this issue prior to the end of 1978, while the Alaska Natural Gas Transportation Act requires a decision from the President no later than the end of 1977. Arctic Gas Pipeline indicated in mid-December, 1976, that final government approval of the project could not be expected before April 15, 1978.

v. If the U.S. government takes action to reject as a practical matter the Trans-Alaska delivery system before the government of Canada has taken all necessary steps to assure that it will grant permits for and allow the promptest practicable completion of one of the competing pipeline alternatives, the United States will be subject to a serious bargaining disadvantage vis-a-vis the Canadian government. The Canadian government's responsibility is to its citizens, and this responsibility will require it to take advantage of its bargaining position.

vi. Because onshore and offshore Alaska will be the most prolific area of exploration for energy in the lower 48 states during the next 20 to 30 years, national policy should favor the development of delivery systems to take that energy (oil and gas) from the West Coast to other parts of the United States. (Existing delivery systems from the Gulf Coast to the West, East and Midwest reflect the fact that the Gulf Coast has been our major source of energy supply.) Natural gas will probably be found in substantial quantities in various parts of Alaska, onshore and offshore. West Coast LNG facilities will facilitate delivery of this gas to the Eastern part of our nation. They will also facilitate the importation of LNG from Indonesia and Latin America as natural gas in those areas becomes available for our markets.

vii. There will be substantial U.S. opposition to the Arctic Gas proposal because of its impact upon the Arctic Natural Wildlife Range. This opposition can take many forms and can delay timely completion of that project, even if it is approved. The prospect of such delay will be a major factor in any decision looking toward the promptest practicable implementation of a delivery system from Prudhoe Bay gas.

viii. Close scrutiny reveals, as reflected in the Staff report of the FPC, that the Alcan project offers no substantial economic or environmental benefits to the U.S. compared to the Trans-Alaska project. In fact, it is economically inferior to the Trans-Alaskan route and involves serious environmental and conservation problems that are avoided by that route. It requires many more miles of pipeline and, therefore, many more real, non-renewable resources than either of the other projects. It also involves substantial risks that the project will not be able to be expanded to accommodate future discoveries of Alaskan gas. Moreover, as mentioned, since the project offers very few benefits to the Canadian nation and several detriments, its approval and implementation is highly improbable. Its apparent attractiveness is that it is a "compromise" between two vigorously competing projects. But the real interests involved in the selection of a delivery system for Alaska gas are so important that it is unlikely that this quality alone will justify approval of the Alcan route.

We hope these comments are useful to you. We would be happy to meet with you or your staff to discuss them in more detail.

Very truly yours,

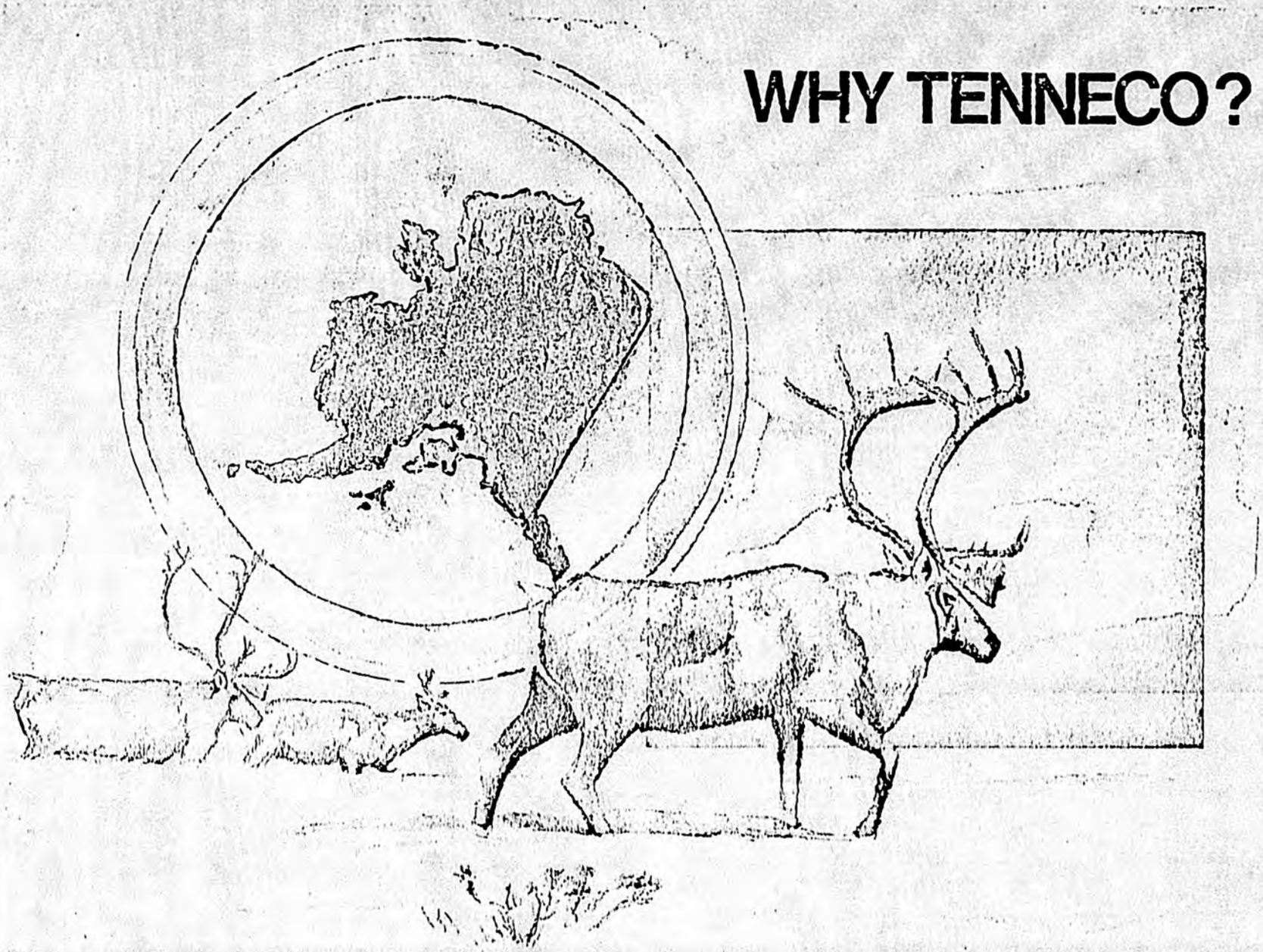
TENNESSEE GAS TRANSMISSION COMPANY

Robert C. Thomas
Senior Vice President

RCT:kl

Attachment

WHY TENNECO?



AGO 667900

BECAUSE TENNECO CAN....

. . . give strong and effective support in the effort to gain approval of the trans-Alaska gas pipeline, considering that Tenneco . . .

- ☐ is previously uncommitted to any of the three proposed pipeline routes
- ☐ is thoroughly experienced in governmental affairs concerning energy and pipelines
- ☐ is broadly diversified and financially sound
- ☐ offers a ready means to market Alaskan gas
- ☐ has widely recognized expertise in natural gas pipeline operations, in that it . . .
  - . . . *is one of the nation's largest gas transmission systems*
  - . . . *serves 25 states (22 directly and three others indirectly)*
  - . . . *is knowledgeable in all aspects of liquefied natural gas (LNG)*

AGO 667901

TENNECO RECOGNIZES....

. . . that a decision on the Alaskan pipeline route will be made only after a thorough review of the merits of the issues.

. . . that the trans-Alaska route will enable Alaskan gas to reach the Lower 48 states faster than alternative proposals; that it is economically beneficial, particularly to Alaska; and that it is environmentally acceptable.

TENNECO OFFERS....

. . . experience in handling environmentally sensitive matters; the company has a full-time, professional industrial ecology department.

. . . coordination of support activities with the State of Alaska, as well as other supporters of the trans-Alaska route.

. . . an internal and external organization for presenting its views to

- ☐ The Federal Power Commission
- ☐ The Federal Executive Branch
- ☐ The Congress
- ☐ The public in its service area
- ☐ The news media
- ☐ Environmental groups
- ☐ Other interested groups, both within and outside its service area

AGO 667902

TENNECO IS....

- ☐ a widely and carefully diversified company which employs 78,300 people and has major operations in manufacturing, integrated oil, chemicals, packaging, land management and agriculture, in addition to natural gas pipelines.

- ☐ a company which had assets of $6.58 billion at year-end 1975, ranking 15th largest among U.S. industrial corporations.

- ☐ a company which earned $342.9 million in net income in 1975, ranking 18th largest among U.S. industrial corporations.

- ☐ a company which had operating revenues of $5.63 billion in 1975, ranking 22nd largest among U.S. industrial corporations.

AGO 667903

TENNECO'S NATURAL GAS PIPELINES....

- include three interstate systems with 15,279 miles of pipe and nearly 1.4 million compressor horsepower at year-end 1975.

- sold and transported 1.6 trillion cubic feet of gas in 1975, the energy equivalent of approximately 267 million barrels of oil.

- together with the systems of the other companies supporting the trans-Alaska route, could, with minor modifications, deliver Alaskan gas to 41 states in the "Lower 48."

- have a management team that believes strongly that contracting for Alaskan royalty gas and supporting the trans-Alaska pipeline route show our determination to satisfy the long-term needs of our customers, despite a growing shortage from our traditional sources of supply.

- were described as follows by Wilton E. Scott, chairman and president of Tenneco Inc., in a speech to security analysts on November 9, 1976:

"We believe that our interstate pipeline operations will continue to be in the forefront to supply the vital gas needs to consumers in the decade ahead."

AGO 667904

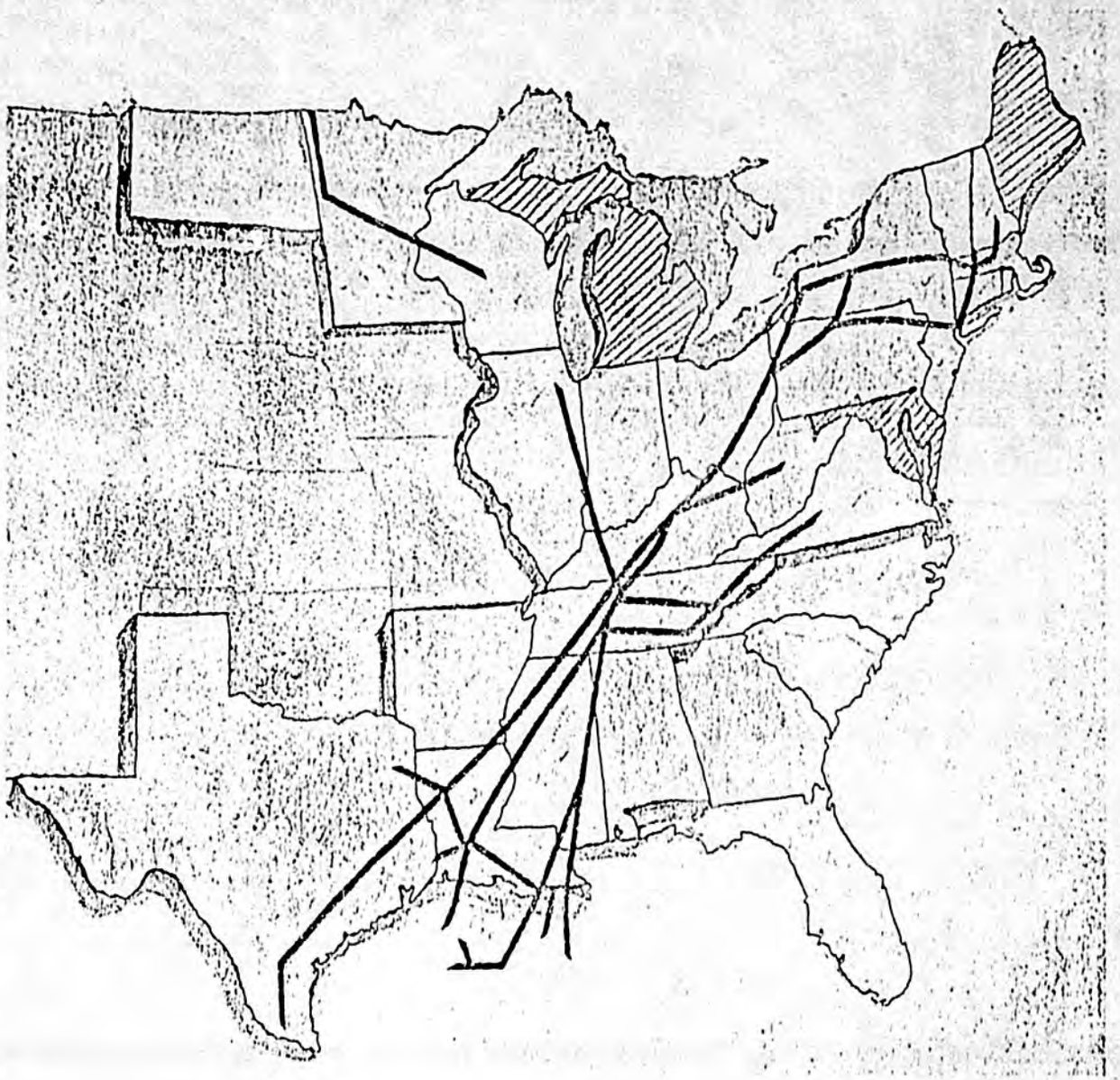
TENNECO'S INTERSTATE NATURAL GAS PIPELINES

MARKET AREA

Market Impact

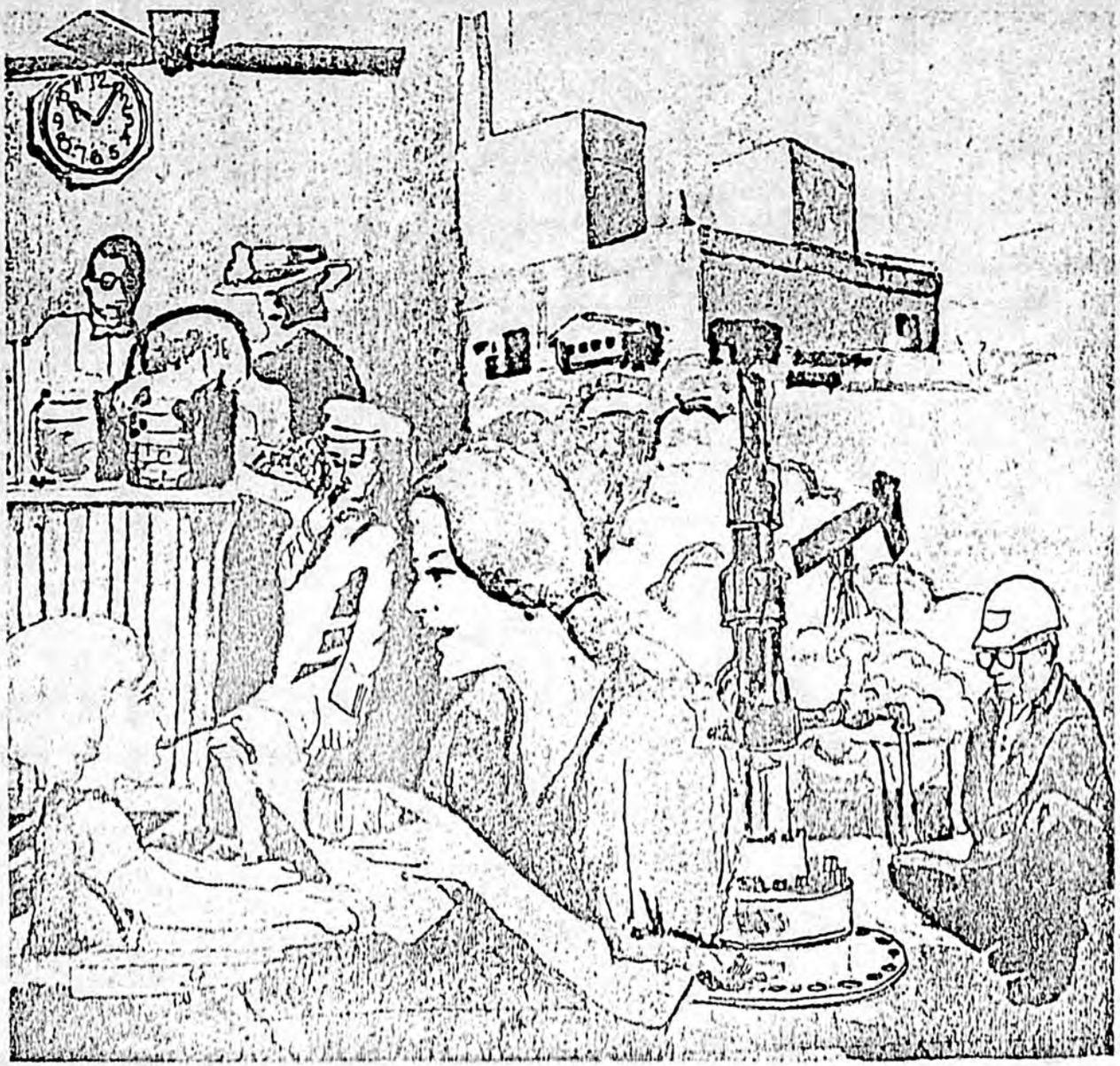
State	1975[1] Natural Gas Consumption (Bcf)	Tenneco's Share of Total State Gas Market	Population[1]
Alabama	260	10%	3,577,000
Arkansas	270	<1	2,062,000
Connecticut	64	46	3,088,000
Illinois	1,130	16	11,131,000
Indiana	488	<1	5,330,000
Kentucky	208	13	3,357,000
Louisiana[3]	1,376	<1	3,764,000
Maine[2]	2	91	1,047,000
Maryland[2]	147	20	4,094,000
Massachusetts	153	53	5,800,000
Michigan[2]	902	6	9,098,000
Minnesota	318	2	3,917,000
Mississippi	208	4	2,324,000
New Hampshire	8	72	808,000
New Jersey	279	6	7,330,000
New York	571	27	18,111,000
North Dakota	26	21	637,000
Ohio	951	21	10,737,000
Pennsylvania	698	27	11,835,000
Rhode Island	22	23	937,000
Tennessee	225	39	4,129,000
Texas[3]	3,911	<1	12,050,000
Virginia	123	20	4,908,000
West Virginia	172	19	1,791,000
Wisconsin	367	14	4,566,000
TOTAL	12,879		136,428,000
% of United States	68%		65%

[1]Gas consumption based on Gas Requirements Committee, September, 1976 Report. Population data based on 1975 Statistical Abstract of the United States.
[2]Served indirectly through another wholesaler.
[3]Louisiana provides 75% of Tenneco's gas. Texas provides 16%.



AGO 667905

WHO ARE THE END-USERS OF TENNECO'S GAS?



FPC PRIORITY I 44%
(Residential and Small Commercial[1])

FPC PRIORITY II 42%
(Large Commercial[2], Firm Industrial for Plant Protection, Feedstock, Process Needs, and Customer Storage Injection)

FPC PRIORITIES III through IX 14%

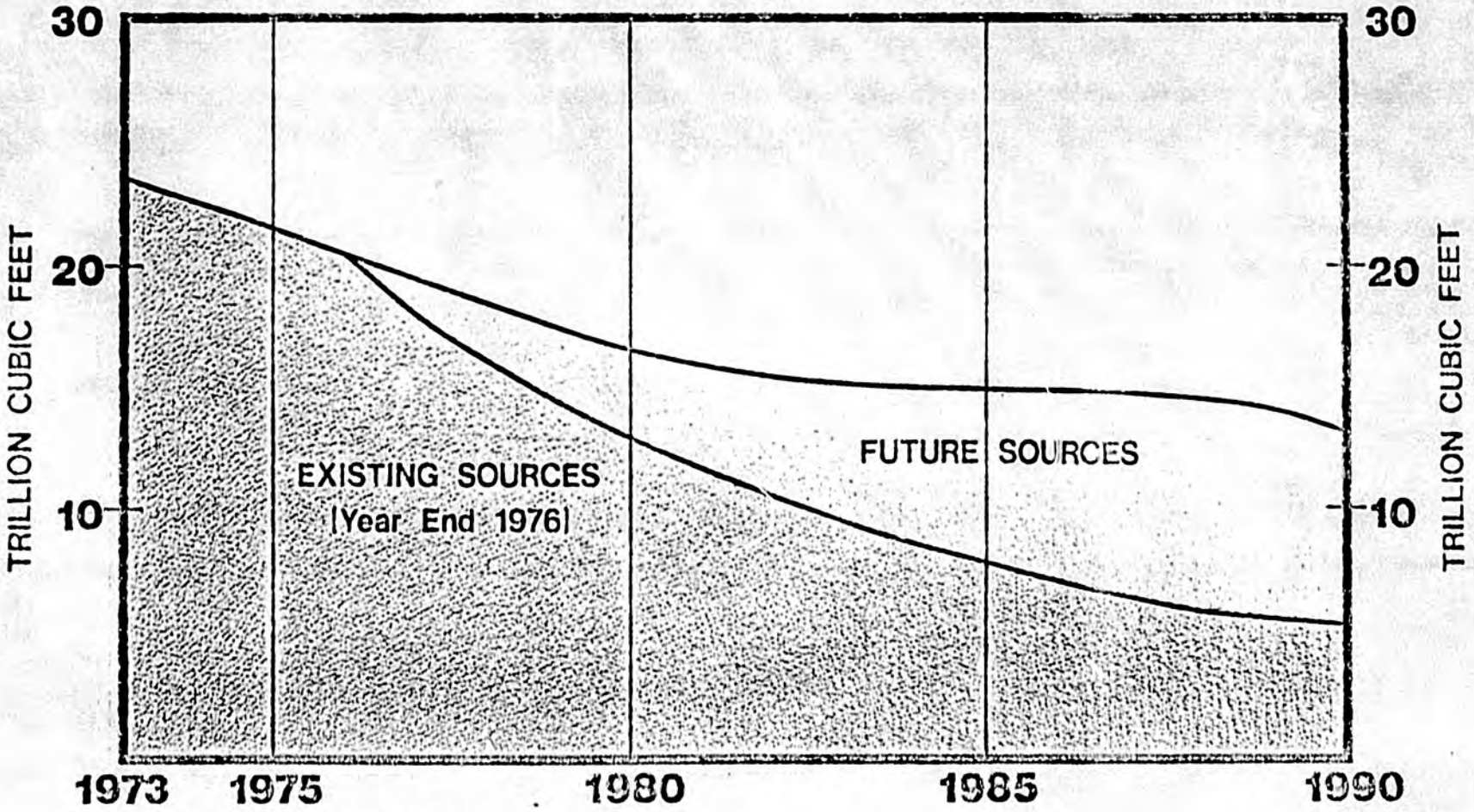
[1]Less than 50 Mcf on a peak day.
[2]50 Mcf or more on a peak day.

ACO 667906

PROJECTED GAS SUPPLY*

U.S. "LOWER 48" SOURCES

☐ The inadequacy of existing and projected "Lower 48" gas supplies emphasizes the urgent need for delivery of Alaskan gas as early as possible. Alaska offers the greatest potential for future domestic gas reserves.



*Assumes continued regulation

AGO 667907

STATEMENT

By

ROBERT C. THOMAS

BEFORE THE

JOINT SPECIAL ROYALTY GAS REVIEW COMMITTEE

My name is Robert C. Thomas. I am a Senior Vice President of Tennessee Gas Transmission Company with responsibility for energy supply for all of Tenneco's Interstate Transmission Companies. I am also a Vice President of Tenneco Alaska, an Alaskan Corporation, which has entered into a royalty gas agreement with the State on behalf of Tenneco.

My purposes today are to urge your early approval of the Royalty Gas Sales Agreements, to explain why we believe these agreements are in the best interests of Tenneco and the State, and to answer your questions.

The State has presented to you the terms of this agreement and the benefits accruing to the State. I would like to start with the reasons Tenneco has signed this agreement.

Each day, Tenneco's interstate system supplies an average of 3.2 billion cubic feet of natural gas to their customers. This volume is insufficient to meet demands. As their demands are growing, our reserves in our traditional supply area of the Gulf Coast are declining.

To meet this demand, Tenneco is working in many different areas to secure energy supply from non-traditional sources. These sources include liquefied natural gas from Algeria, Trinidad, Nigeria, the USSR and other countries. We are also pursuing synthetic natural gas to be manufactured from domestic coal deposits and additional natural gas from the Canadian Arctic Islands.

We are vitally interested in purchasing natural gas in Alaska, not only because of the large volume of currently proven reserves, but because we feel Alaska will be the most active area in the U. S. for the exploration for major new energy supplies for the next 20-30 years. We want to be a part of this future activity. We also believe there are substantial advantages in purchasing domestic, as opposed to foreign, gas.

These facts explain our needs. The fulfillment of needs, however, inevitably encounters obstacles. The securing of natural gas supply from Alaska was no exception.

Tenneco looked at these obstacles from the viewpoint of the largest natural gas transmission system in the United States that was uncommitted to any of the competing proposals for delivery of Prudhoe Bay gas to market. The State also made it very clear that the primary condition in any sales agreement would be support for the Trans-Alaska delivery systems.

We considered carefully three fundamental questions before determining we could undertake such a commitment:

1. Would there be sufficient reserves available, either now or in the future, to justify our efforts;
2. If we committed our resources of time, money, and people to the project, was there a substantial likelihood it would succeed;
3. Would such an effort adversely affect substantial business interests in Canada which we intend to maintain and to further.

AGO 667910

Our analysis concluded that we could not only agree to support the Trans-Alaska route but could also agree to condition our right to purchase the royalty gas upon the eventual designation of that route by the Federal Government. These terms are in the agreements before you.

Our conclusion was based upon the belief that with a strong, responsible team supporting the Trans-Alaska project and making objective arguments in its behalf, the Federal decision makers, after extensive and careful analysis, would conclude the Trans-Alaska system would get the North Slope gas to the lower 48 States at the earliest possible date. While early delivery is the most important element of national interest, other issues such as jobs and taxes clearly favor the Trans-Alaska route.

It has always been our firm opinion, however, that Federal acceptance of the Trans-Alaska delivery system and therefore the benefits to the parties, depends upon prompt approval of the royalty sales agreement by this Legislature.

Another major factor crucial to your deliberations is the strength that Tenneco can add to the team dedicated to the securing of a Trans-Alaska route. Let me give you a brief summary of our technical capabilities:

1. Tenneco maintains a staff of approximately 140 engineers in it's pipeline headquarters in Houston. This department not only supervised the construction of our 15,000 plus miles of interstate pipeline, but was also involved in the construction of the existing Trans-Canada pipeline of which we were a part at that time. Our operations people routinely run an interstate system transporting up to five BCF on peak days.

2. Tenneco is dedicated to the conduct of its operations within the proper environmental framework. The Corporation maintains a staff of approximately 60 environmentalists.

3. Tenneco maintains a staff of cryogenic, process, and LNG systems engineers plus the services of numerous consultants with expertise in LNG projects. We have had much experience in the planning of major LNG programs.

4. As a corporation, Tenneco has annual capital expenditures in the range of $500 million. In the 34 years of our existence, our assets have grown from zero to approximately $7 billion. The strength and the financial experience gained through this evolution is invaluable in the planning and execution of multi-billion dollar energy projects.

All of these areas of expertise are now being readied in preparation for our participation in the Trans-Alaska project.

There has been a great deal of reference during the negotiation of these agreements to the "political influence" to be contributed by each party. It is unfortunate that this gives some people the impression that the purchasers control votes in the Congress or in the Executive Branch to be used on behalf of the Trans-Alaska project as soon as this agreement is ratified. This, of course, is not true.

No amount of so-called political clout or pressure is going to determine the federal decision on this matter. We are convinced that the decision will be

AGO 667913

made on the merits of the issues. Neither we nor the new Administration have incentive to proceed in any other way. This approach is also assured by the detailed and comprehensive provisions of the Alaska Natural Gas Transportation Act of 1976.

For these reasons, it is essential that all the issues involved be thoroughly discussed at both regional and national levels with all parties having input into the final decision. This will present a monumental job of planning and coordination to insure that knowledgeable staff, both technical and non-technical, be made available to discuss the issues with people needing this information.

From a regional standpoint, it is essential that the issues be reviewed and discussed as they affect different parts of the lower 48 states and Canada. The perspective and needs of these different regions vary and their views must be analyzed and effectively answered.

We feel we are best qualified to present the Trans-Alaska merits in our market area. Our market area covers 25 states in New England, New York-New Jersey, Appalachia and the Upper Midwest. These states

AGO 667914

embrace 65% of the U. S. population and much of its industrial capacity.

We feel that Southern and El Paso will be most effective in their market areas. All three companies will be effective on the national scene.

The combined facilities of Tenneco, El Paso and Southern with minor modifications could deliver Alaskan gas to at least 42 states. It is improbable, perhaps impossible, that any other group of three or more companies presently uncommitted to any pipeline route could equal this coverage.

El Paso has made and is continuing to make a tremendous effort on behalf of the Trans-Alaska project. More help is needed and we are prepared to provide this help.

We believe it essential that the Legislature act promptly to approve these agreements. The time available to make all the necessary contacts is becoming short. The U.S.-Canadian pipeline treaty was signed last Friday. The Presiding Administrative Law Judge of the FPC will issue his decision tomorrow. We expect his decision to favor the Arctic Gas proposal. All the participants

AGO 667915

before the FPC, of which we are one, will be permitted to file comments on this decision by March 1.

The Alaskan Transportation Act provides that the FPC must submit its recommendation to the President by May 1. Federal agencies are now preparing their comments to the FPC and Federal and State officers and agencies may submit their comments to the President by July 1. Our views must be made known to all of these people as soon as possible in order to ahve any effect on their comments. The President's decision is due September 1 and the Congress has 60 days in which to approve this decision.

There is much to be done and the Federal timetable leaves no time for delay.

In anticipation of your approval, Tenneco has already taken substantial steps in preparation for the support of this project.

1. We have had many meetings with representatives of the State, El Paso and Southern to insure maximum cooperation, coordination and effectiveness in this combined effort.

AGO 667916

2. El Paso has given our engineering, environmental, LNG and financial experts a detailed review of their plans. We will work closely with them toward assuring the best possible project and to answer the questions that will be raised in Washington, California, Canada and elsewhere concerning the physical, environmental and financial integrity of this project.
3. We have designated a project manager within Tenneco with authority to call upon and coordinate activities of all our involved departments.
4. We have retained counsel in Alaska and in Washington to assist in the planning and the execution of our overall plan to insure adoption of the Trans-Alaska delivery system.
5. We have communicated to the State of California our reasons for supporting the Trans-Alaska project. I will be happy to make a copy of this letter available for your record.

These efforts are only a beginning. However, further efforts to implement a detailed plan to secure adoption of a Trans-Alaska route will not be credible if the State of Alaska does not act promptly to approve the agreement which provides the reason for our support.

In summary, Mr. Chairman, Tenneco is prepared to invest their time, money and people in a maximum effort to secure a Trans-Alaska route. We are prepared to begin as soon as our agreement with the State is approved by the Legislature.

The State has retained the ultimate assurance of our performance. If the Trans-Alaska route is not approved, the State has the right to terminate this agreement. Should that happen, we will have wasted our money, manpower and time.

The State has assembled a strong team, the contest is in progress and we are ready to participate when we receive your approval.

Tennessee Gas Transmission
A Tenneco Company

Robert C. Thomas
Senior Vice President

1100 Milam Building
Suite 4387
P. O. Box 2511
Houston, Texas 77001
(713) 757-2275

February 4, 1977

Mr. Richard Maullin
Chairman
California Energy Resources Conservation
and Development Commission
1111 Howe Avenue
Sacramento, California 95825

Dear Mr. Chairman and Members of the Commission:

We have been advised that your Commission will meet on February 9, 1977, to act on resolutions affecting the Alaska natural gas transportation issue. By letter of January 18, 1977, we provided our comments directed toward Volume IV of your draft Biennial Report: "Alaskan Natural Gas: Criteria for Selection of a Transportation System."

We feel that the events of the past few days have accentuated the importance of a Trans-Alaska system for the delivering of North Slope natural gas. On February 3, the FPC, acting under new emergency natural gas law, ordered a transfer of gas from the Western to the Eastern portion of the U.S. This early assistance was possible because:

1. Gas can be allocated to different parts of the country either through displacement or direct movement.

2. The U.S. has an efficient nationwide natural gas transportation system that has the capacity to move additional volumes.

3. Since only U.S. regulatory and legislative requirements must be met, such transfer can secure rapid authorization.

AGO 667919

The primary solution to the natural gas situation in the U.S. is to secure additional supply at the earliest possible date. We firmly believe the Trans-Alaska pipeline route can supply North Slope natural gas at least two years earlier than any overland route for the reasons outlined in our earlier letter. As indicated by the recent emergency allocations, the effect of LNG landed on the West Coast of the U.S. will be quickly and efficiently felt in all other regions of the country.

We appreciate the opportunity of communicating our views to you.

Sincerely,

kl

1/30/77

EFFECT OF ALASKA'S ROYALTY GAS ON NATURAL GAS SUPPLY:

TENNECO MARKET AREA (25 states)

Prudhoe Bay natural gas production rate is assumed to be
2.0 Bcf/day

Yearly Prudhoe Bay natural gas production 730 Bcf.

Royalty Share of Prudhoe Bay production = 1/8 of 730 Bcf = 91.25 Bcf/Year.

Tenneco Share of Royalty Gas = 50 % of 91.25 Bcf = 45.625 Bcf/year.

Tenneco Summary of Operating Data (from "Tenneco Statistics 1975")

Volume of Gas sold and transported: 1,634 Bcf
Volume of Gas purchased: 1,459 Bcf

Tenneco's share of 25-state gas market:
1,284 Bcf
9.9 %

Tenneco's share of royalty gas as a per cent of Tenneco's share of 25-state gas market:

(45.625 Bcf/year / 1,284 Bcf/year) = 3.55 %

Tenneco's share of royalty gas as a per cent of total 25-state gas consumption:

(45.625 Bcf/year / 12,879 Bcf/year) = 0.35 %

Total U.S. Consumption of Natural Gas in 1975 (rounded): 19,000 Bcf

Yearly Royalty Gas Production as a percent of total U.S. Consumption:

(91.25 Bcf/year / 19,000 Bcf/year) = 0.48 %

Yearly Prudhoe Bay gas production as a percent of total U.S. Consumption:

(730 Bcf/year / 19,000 Bcf/year) =3.84 %

Note: Above calculations do not take into account shrinkage of natural gas through transportation (e.g. 6% loss in liquefication and deliquification).

TABLE I

EFFECT OF ALASKA'S ROYALTY GAS ON NATURAL GAS SUPPLY:
TENNECO MARKET AREA

STATE	1975 Consumption (Bcf)	Tenneco % Share of Market	Tenneco Share of Market (Bcf)**	Tenneco Royalty Gas Share of Market (%)**
*Alabama	260	10	26	.36
Arkansas	270	<1	<2	<.03
Connecticut	64	46	29	1.63
Illinois	1130	16	181	.57
Indiana	488	<1	<4	<.03
Kentucky	208	13	27	.46
Louisiana	1376	<1	<13	<.03
Maine	2	91	2	3.23
Maryland	147	20	29	.71
Massachusetts	153	53	81	1.88
Michigan	902	6	54	.21
Minnesota	318	2	6	.07
*Mississippi	208	4	8	.14
N. Hampshire	8	72	6	2.55
New Jersey	279	6	17	.21
New York	571	27	154	.96
No. Dakota	26	21	5	.75
Ohio	951	21	200	.75
Pennsylvania	698	27	188	.96
Rhode Island	22	23	5	.82
*Tennessee	255	39	99	1.39
*Texas	3911	<1	<39	<.03
Virginia	123	20	25	.71
W. Virginia	172	19	33	.68
Wisconsin	367	14	51	.50
TOTAL 25 STATES	12,879	9.9	1284	.35

Notes to Table I:

* indicates state will receive additional royalty gas supplies from Southern Natural Gas:

Alabama receives 66% of supply from Southern
Mississippi receives 13% of supply from Southern
Tennessee receives 8 % of supply from Southern

** Tenneco share of market expressed in Bcf was calculated by multiplying each state's 1975 consumption by Tenneco's percentage share of market (Source of these figures was Table II from "Why Tenneco", published by Tenneco). Minor inaccuracies may have occurred due to rounding.

*** Figures for Tenneco Royalty Gas share of market assume equal distribution among states by relative share of consumption

Tenneco was chosen as an example of the impact of royalty gas commitment because original data was readily accessible. Figures for 1976 consumption among the states served by Southern Natural Gas indicate similar results. El Paso service area figures were not available.

The calculations indicate that the addition of Alaska's royalty gas to U.S. supply will increase total U.S. supply by less than 1/2 of one percent.

Prepared for House Special Committee on the Sale of Royalty Gas

TENNECO'S INTERSTATE NATURAL GAS PIPELINES

MARKET AREA

Market Impact

State	1975[1] Natural Gas Consumption (Bcf)	Tenneco's Share of Total State Gas Market	Population[1]
Alabama	260	10%	3,577,000
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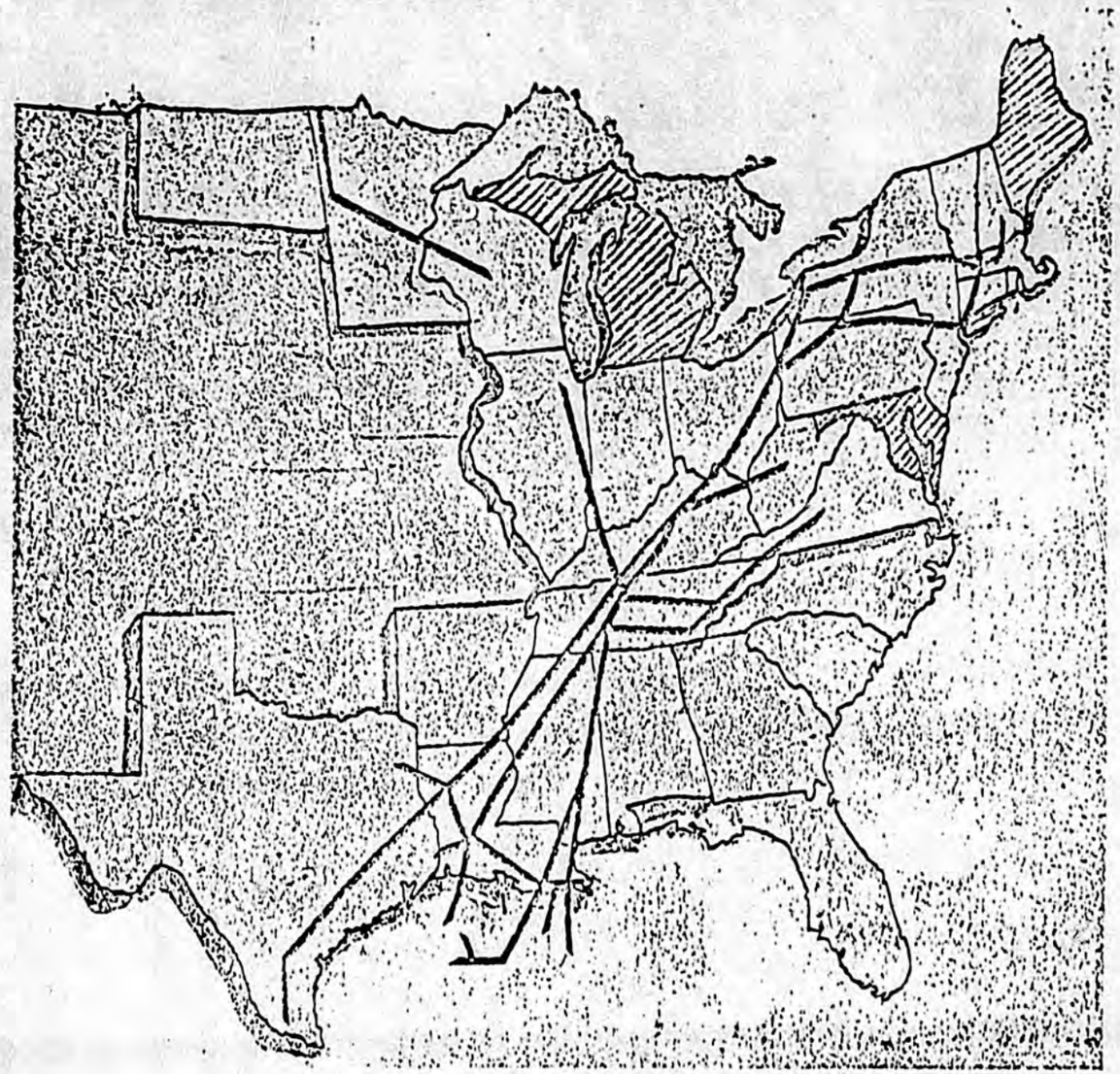


Source: "Why Tenneco" published by Tenneco
1976

AGD 667924

SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

FORM 8

AMENDMENT TO APPLICATION OR REPORT

Filed pursuant to Section 12, 13 or 15(d)

of

THE SECURITIES EXCHANGE ACT OF 1934

TENNECO INC.
(Exact name of registrant as specified in charter)

AMENDMENT NO. 1

The undersigned registrant hereby amends its Current Report on Form 8-K for the month of January 1976 by providing information for the following item as set forth in the pages attached hereto:

ITEM 13

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this amendment to be signed on its behalf by the undersigned, thereunto duly authorized.

TENNECO INC.

By EDWARD J. HARRISON
Edward J. Harrison
Senior Vice President and
General Counsel

Date: February 13, 1976

SEC 667925

Item 13. Other Materially Important Events

In March 1975 the management and the Audit Committee (composed of four ouside directors) of Tenneco Inc. reviewed certain payments to foreign business consultants during 1974 in connection with the acquisition or proposed acquisition of properties or materials from foreign governments or agencies thereof. It was concluded at such time that the payments were for valid business purposes and that there was no indication the payments were illegal or improper. Accordingly, no action was taken. Later in 1975, however, the matter was reconsidered by management because of the publicity concerning the new and emerging concept of "sensitive payments" and the concern expressed by various Securities and Exchange Commission (the "Commission") representatives with respect thereto. At a meeting in October 1975 the Audit Committee, with the concurrence of the full Board of Directors, determined that in light of the information presented at the meeting concerning such 1974 payments and the recent publicity concerning foreign and domestic bribes and political activities of an illegal or questionable nature by other corporations, management should undertake at once a full and complete review of the Company's foreign and domestic operations. Tenneco Inc. and its subsidiaries are hereinafter referred to as the "Company" unless otherwise indicated. The Audit Committee authorized Arthur Andersen & Co., the Company's independent public accountants, and Baker & Botts, the Company's outside legal counsel, to assist in such review. The Commission was promptly advised that, in compliance with the Commission's publicly enunciated and recommended voluntary disclosure program, the review was being made for the period beginning January 1, 1970 and that a report to the Audit Committee and to the Commission would be made as promptly as practicable.

The review has been conducted by representatives of Arthur Andersen & Co. and Baker & Botts, with the active assistance and cooperation of the Company's management. Interim reports by such representatives to the staff of the Commission were made on October 30, and December 18, 1975 and January 20, 1976. Reports to the Audit Committee, and to the full Board of Directors, were made on December 10, 1975 and January 7, 1976.

Information was obtained through written inquiries and personal interviews of executive personnel and other employees of the Company and of certain foreign consultants. Approximately seventy-five such persons have been contracted in one manner or the other, or both. Although no pattern of improper or questionable conduct was revealed either in foreign or domestic operations reviewed at the direction of the Audit Committee, there have been reports of apparently improper or questionable practices in certain instances.

The Company uses numerous local attorneys, advisers, consultants and agents in connection with certain of its foreign operations in approximately 24 countries. These individuals are independent businessmen, many of whom have written contracts with the Company relating to specific countries or areas or to specific projects. During the period January 1, 1970 through September 30, 1975, the Company made or accrued payments aggregating approximately $12 million to such persons (or entities designated by them). Although it is not feasible to state with substantial certainty that none of the payments during such period, other than those described in the following paragraph, were indirectly for the

use or benefit of employees of foreign governments or agencies thereof, the investigation did not reveal the existence of any other payments to foreign government employees or military personnel or that any such payments were being "kicked back" to the Company or its employees or used to create a "slush fund" of any kind. However, in some cases the payments are made to the consultant or his nominee outside the country of his residence and verification of the end use of the payments is not feasible. The question of whether local laws of the countries involved are being violated by making such payments to the consultant or his nominee outside the country of his residence is being reviewed and will be reported to the Audit Committee.

Of the payments reviewed for such period, (i) $10,000 is known to have been paid to a foreign government employee, (ii) $25,000 is known to have been invested in a U.S. concern in which one or more foreign government employees probably have a beneficial interest, (iii) approximately $500,000 was paid to the military and to certain military personnel in a foreign country for protection of a subsidiary's employees working in remote, dangerous locations and for rental of military aircraft and related equipment and (iv) a local sales manager of a subsidiary purchased in 1975 out of the subsidiary's petty cash fund merchandise valued at approximately $480 and gave same to three employees or officials of a foreign government purchasing office or agency to which the subsidiary was selling equipment. The two payments totaling $10,000 were improperly described on the books of the Company and may have been improperly deducted for U.S. income tax purposes. The $25,000 investment is properly described on the books of the Company. The payments totaling $500,000 for military protection and equipment were properly described on the Company's books and are considered properly deductible for U.S. income tax purposes because of the absolute necessity of military protection in that particular country. The $480 payment was not correctly described on the Company's books.

In connection with negotiations involving proposed long-term, multi-billion dollar purchases of raw materials from certain countries, consultants have contractual commitments to receive from the Company additional sums aggregating up to approximately $12.0 million (subject to adjustments, not presently subject to determination, under certain circumstances because of fluctuating currency exchange rates) plus out-of-pocket expenses upon successful conclusion of all phases of such arrangements.

Under contractual arrangements in four countries, the Company has made scholarship payments from time to time aggregating $330,000 for the five years and nine months ended September 30, 1975.

In connection with certain sales of products through independent dealers in foreign countries, the Company follows the practice, where requested by such dealers, of withholding all or a portion of the dealer's commission as an account payable to the dealer or of paying all or a portion of the dealer's commission to a bank account outside the country in which the dealer resides. Such deposits are made by check directly to the dealer's designated bank account. Commissions not paid by check are either disbursed in cash or by credit

against amounts due the Company. The payments are properly described on the Company's books and the Company's tax returns. The question of whether local laws of the countries involved are being violated is being reviewed and will be reported to the Audit Committee.

The Audit Committee of the Board of Directors has directed management of the Company to formulate procedures and policies to eliminate possible irregularities in connection with foreign operations and to present such procedures and policies to the Audit Committee and the Board of Directors for review, comment and approval. Thereafter, management will be charged with the responsibility, through internal audit procedures and such other techniques as may be deemed reasonably necessary (including disciplinary action, and, where appropriate, dismissal for violations), of insuring compliance with such procedures and policies on a company-wide basis. In this connection, and in addition to broader policy statements to be enunciated with respect to U.S. and foreign business operations in general, management intends to recommend the affirmation of substantially the following policy regarding payments which may be made in any country in connection with the purchases of products or raw materials or the sale of products or services:

> "The Board of Directors and management of Tenneco Inc., having due regard for and recognition of the responsibilities arising from and attendant to international operations, hereby affirm the corporate policy of Tenneco Inc., its subsidiaries and divisions to the effect that all employees and agents are to comply with the ethical standards and legal requirements of each foreign country in which business is conducted."

Commencing in 1966 or 1967 many high-level executives of the Company made annual cash contributions of $2,000 each to a fund to be used for political contributions. It is reported that approximately twenty executives made contributions each year and that the fund did not exceed $40,000 in any one year. It is reported that this fund was discontinued after 1973. Under applicable Federal law, the legality of the fund turns primarily on "voluntariness". If there was direct or indirect coercion or inducement, whether in terms of advancement or company cars or other job perquisites, the fund would probably be deemed illegal. "Voluntariness" is a subjective determination by each individual participant, and most participants would probably state that their contributions were made voluntarily. For this reason, it is believed that the establishment of the fund did not violate Federal law.

Another employee fund was established at the Newport News Shipbuilding subsidiary before it was acquired by the Company in 1968. Cash contributions were made to the fund by high-level executives of the subsidiary. It is believed that contributions were made only once in the aggregate amount of approximately $10,000. The fund presently has a balance of $2,370 and is in the custody of the subsidiary's general counsel. Disbursements from the fund were made at the direction of the President of the subsidiary. The establishment of the fund is considered to comply with applicable Federal law on the basis that contributions were made voluntarily.

Recipients of campaign contributions from the Company's executive fund are believed to have been generally

determined by the chief executive officer of the Company. During the fund's existence from 1966 or 1967 until 1973, campaign contributions were made in Federal elections and in state and local elections. It is believed that contributions in state and local elections were made primarily in Texas and Louisiana. Contributions from a voluntary employee fund are specifically permitted by Federal election law and the Supreme Court has held that such voluntary employee funds were permissible prior to enactment of such election law. It is believed that such contributions are also permissible under Texas and Louisiana law, although no specific statutory authority exists, because of analogous Federal judicial precedent exempting voluntary employee funds and the intent of the law to prohibit only contributions of corporate money.

Contributions were made from the Newport News Shipbuilding employee fund in one Federal election and various state and local elections in Virginia. The contribution to the Federal election is believed to comply with Federal election law on the basis that the contribution was made from a voluntary employee fund. The state and local contributions are likewise believed to be permissible. In any event, state and local corporate contributions are permitted by Virginia law.

During the period from January 1, 1970 through December 1, 1975, three subsidiaries, Tenneco West, Inc., Heggblade-Marguleas-Tenneco Inc. and Stockdale Development Corporation, made campaign contributions in California elections aggregating approximately $180,000. State and local corporate campaign contributions are permissible under California law.

It has been reported that since 1970 two corporate campaign contributions of $100 each were made by local sales managers of a subsidiary, J. I. Case, in connection with state or local elections in Rhode Island and Florida, in both of which states corporate campaign contributions in state and local elections are believed to be permissible. In one or, perhaps, both of such cases, the contribution was not correctly described on the subsidiary's books and/or was improperly deducted for tax purposes.

Beginning prior to 1970 and continuing until August 1972, it is reported that cash amounts ranging from $200 to $2,000 were given on several occasions by the President of a subsidiary, Midwestern Gas Transmission Company, to state public utility commission chairmen in Indiana, Illinois, Kentucky and Wisconsin. The subsidiary officer states that the money was understood to be given in turn by the recipients to various charitable projects of their choice. In 1972 the same subsidiary officer gave $2,000 in cash to the chairman of the Pennsylvania Public Utility Commission. The officer states that the Pennsylvania chairman requested the money for use as a contribution to a chairtable dinner in Washington, D.C., honoring a U.S. Senator from Pennsylvania. The money was given to the Pennsylvania chairman several months after the dinner, and the Pennsylvania chairman states that the money was applied as a reimbursement of his contribution to the dinner. Two other employees of the Company state that they believe or had heard that the money was given to the Pennsylvania chairman to obtain his influence with the head of the General Services Administration, which was participating as an

intervenor in a Federal Power Commission regulatory proceeding, Rate Proceeding 71-6, to which a Company division, Tennessee Gas Pipeline, was a party. The subsidiary officer who delivered the payment and the Pennsylvania chairman deny that this payment had any connection with such proceeding. The money was given to the Pennsylvania chairman several months after the regulatory proceeding had been ultimately resolved in a manner favorable to the division. The Company's executive fund may have been the source of these payments, although this has not been clearly determined since there are no records of disbursements from the fund and the recollections of the subsidiary President and the administrator of the fund differ.

Beginning on October 27, 1970, and continuing until September 1975, a subsidiary, Tenneco Oil Company, made payments of $2,000 per month to the sheriff of a Lousisana parish who is also an attorney. There are conflicting statements regarding the reason or reasons for the payments. The payments were approved by senior management of the subsidiary, but there is no evidence that the Board of Directors or high-level management of Tenneco Inc. were aware of the arrangement. The sheriff is presently under investigation by officials of the U.S. Department of Justice, and the Company does not believe that it would be appropriate to comment further about the matter pending resolution of such Federal investigation.

In June 1970, a $2,000 cash campaign contribution was made to a State District Judge in Louisiana for use in his race for a Louisiana appellate court seat. Approximately eighteen months prior to the contribution, the Judge had granted an injunction against violence on the picket line in connection with a union strike at the plant of a Company subsidiary, Tenneco Oil Company. Approximately two months after the contribution was made, the union filed a motion to dissolve the injunction, which was denied by the Judge in late 1970. The $2,000 was given to the Judge by a local employee of the subsidiary. The payment was approved by senior management of the subsidiary, but there is no evidence that the Board of Directors or high-level management of Tenneco Inc. were aware of this payment. The money probably came from either the personal funds of an officer of the subsidiary or the Company's executive fund, and not from corporate funds. It is believed that the campaign contribution did not violate the Louisiana prohibition against corporate contributions which was then in effect because the money probably did not come from corporate funds.

In 1972 contributions of $1,000 each were made by a subsidiary, Tenneco Oil Company, to two Louisiana District Judges and a Louisiana District Attorney who were running for re-election, all in the same parish. The contributions were made in cash by an employee from the subsidiary's working fund account. The payments were incorrectly described on the subsidiary's books and improperly deducted for tax purposes. The contributions were approved by senior management of the subsidiary, but there is no evidence that the Board of Directors or high-level management of Tenneco Inc. were aware of the payments. The contributions violated the then existing Louisiana prohibition against corporate campaign contributions.

Tenneco proposes to turn over to the Internal Revenue Service the relevant information relating to the foregoing matters and to amend tax returns and make additional payments where appropriate. It is not considered at this time that material income tax deficiencies will result.

At its meeting in October 1975 the Audit Committee of the Board of Directors approved and adopted the following policy statements:

1. The use of assets of the Company or any subsidiary for any unlawful or improper purpose is strictly prohibited;

2. No undisclosed or unrecorded fund or asset of the Company or any subsidiary shall be established for any purpose;

3. No false or artificial entries shall be made in the books and records of the Company or its subsidiaries for any reason, and no employee shall engage in any arrangement that results in such prohibited act;

4. No payment on behalf of the Company or any of its subsidiaries shall be approved or made with the intention or understanding that any part of such payment is to be used for any purpose other than that described by the documents supporting the payment;

5. Any employee having information or knowledge of any unrecorded fund or asset or any prohibited act shall promptly report such matter to the chief executive officer or general counsel of Tenneco Inc.;

6. All executive officers of the Company shall be responsible for the enforcement of and compliance with this policy including necessary distribution to ensure employee knowledge and compliance;

7. Appropriate officers and employees will periodically be required to certify compliance with this policy; and

8. This policy is applicable to Tenneco Inc. and all its domestic and foreign subsidiaries.

The Audit Committee has also directed management to implement procedures for insuring compliance with such policies and to report to the Audit Committee and to the Board of Directors with respect thereto. Following such report and review thereof by the Board of Directors of the Company, a definitive statement of such policies and procedures will be distributed on a company-wide basis.

The matters described herein have been voluntarily disclosed by the Company, and the Company has advised the staff of the Commission that its documents, books and records relating to the investigation ordered by the Audit Committee will be made available at the Company's offices for examination by the staff of the Commission upon request.

In keeping with the practice of other companies reporting matters of the type described herein, the Company

is reporting same on a Current Report on Form 8-K under the caption "Other Materially Important Events". The Company does not deem such matters material and the disclosure thereof shall not be deemed an admission of materiality.

EFFECT OF ALASKA'S ROYALTY GAS ON NATURAL GAS SUPPLY:

TENNECO MARKET AREA (25 states)

Prudhoe Bay natural gas production rate is assumed to be
2.0 Bcf/day

Yearly Prudhoe Bay natural gas production 730 Bcf.

Royalty Share of Prudhoe Bay production = 1/8 of 730 Bcf = 91.25 Bcf/Year.

Tenneco Share of Royalty Gas = 50 % of 91.25 Bcf = 45.625 Bcf/year.

Tenneco Summary of Operating Data (from "Tenneco Statistics 1975")

Volume of Gas sold and transported: 1,634 Bcf
Volume of Gas purchased: 1,459 Bcf

Tenneco's share of 25-state gas market:
1,284 Bcf
9.9 %

Tenneco's share of royalty gas as a per cent of Tenneco's share of 25-state gas market:

(45.625 Bcf/year / 1,284 Bcf/year) = 3.55 %

Tenneco's share of royalty gas as a per cent of total 25-state gas consumption:

(45.625 Bcf/year / 12,879 Bcf/year) = 0.35 %

Total U.S. Consumption of Natural Gas in 1975 (rounded): 19,000 Bcf

Yearly Royalty Gas Production as a percent of total U.S. Consumption:

(91.25 Bcf/year / 19,000 Bcf/year) = 0.48 %

Yearly Prudhoe Bay gas production as a percent of total U.S. Consumption:

(730 Bcf/year / 19,000 Bcf/year) =3.84 %

Note: Above calculations do not take into account shrinkage of natural gas through transportation (e.g. 6% loss in liquefication and delliquification).

TABLE I

EFFECT OF ALASKA'S ROYALTY GAS ON NATURAL GAS SUPPLY:
TENNECO MARKET AREA

STATE	1975 Consumption (Bcf)	Tenneco % Share of Market	Tenneco Share of Market (Bcf)**	Tenneco Royalty Gas Share of Market (%)***
*Alabama	260	10	26	.36
Arkansas	270	<1	<2	<.03
Connecticut	64	46	29	1.63
Illinois	1130	16	181	.57
Indiana	488	<1	<4	<.03
Kentucky	208	13	27	.46
Louisiana	1376	<1	<13	<.03
Maine	2	91	2	3.23
Maryland	147	20	29	.71
Massachusetts	153	53	81	1.88
Michigan	902	6	54	.21
Minnesota	318	2	6	.07
*Mississippi	208	4	8	.14
N. Hampshire	8	72	6	2.55
New Jersey	279	6	17	.21
New York	571	27	154	.96
No. Dakota	26	21	5	.75
Ohio	951	21	200	.75
Pennsylvania	698	27	188	.96
Rhode Island	22	23	5	.82
*Tennessee	255	39	99	1.39
*Texas	3911	<1	<39	<.03
Virginia	123	20	25	.71
W. Virginia	172	19	33	.68
Wisconsin	367	14	51	.50
TOTAL 25 STATES	12,879	9.9	1284	

AGO 667934

Notes to Table I:

* indicates state will receive additional royalty gas supplies from Southern Natural Gas:

Alabama receives 66% of supply from Southern
Mississippi receives 13% of supply from Southern
Tennessee receives 8 % of supply from Southern

** Tenneco share of market expressed in Bcf was calculated by multiplying each state's 1975 consumption by Tenneco's percentage share of market (Source of these figures was Table II from "Why Tenneco", published by Tenneco). Minor inaccuracies may have occurred due to rounding.

*** Figures for Tenneco Royalty Gas share of market assume equal distribution among states by relative share of consumption

Tenneco was chosen as an example of the impact of royalty gas commitment because original data was readily accessible. Figures for 1976 consumption among the states served by Southern Natural Gas indicate similar results. El Paso service area figures were not available.

The calculations indicate that the addition of Alaska's royalty gas to U.S. supply will increase total U.S. supply by less than 1/2 of one percent.

Prepared for House Special Committee on the Sale of Royalty Gas

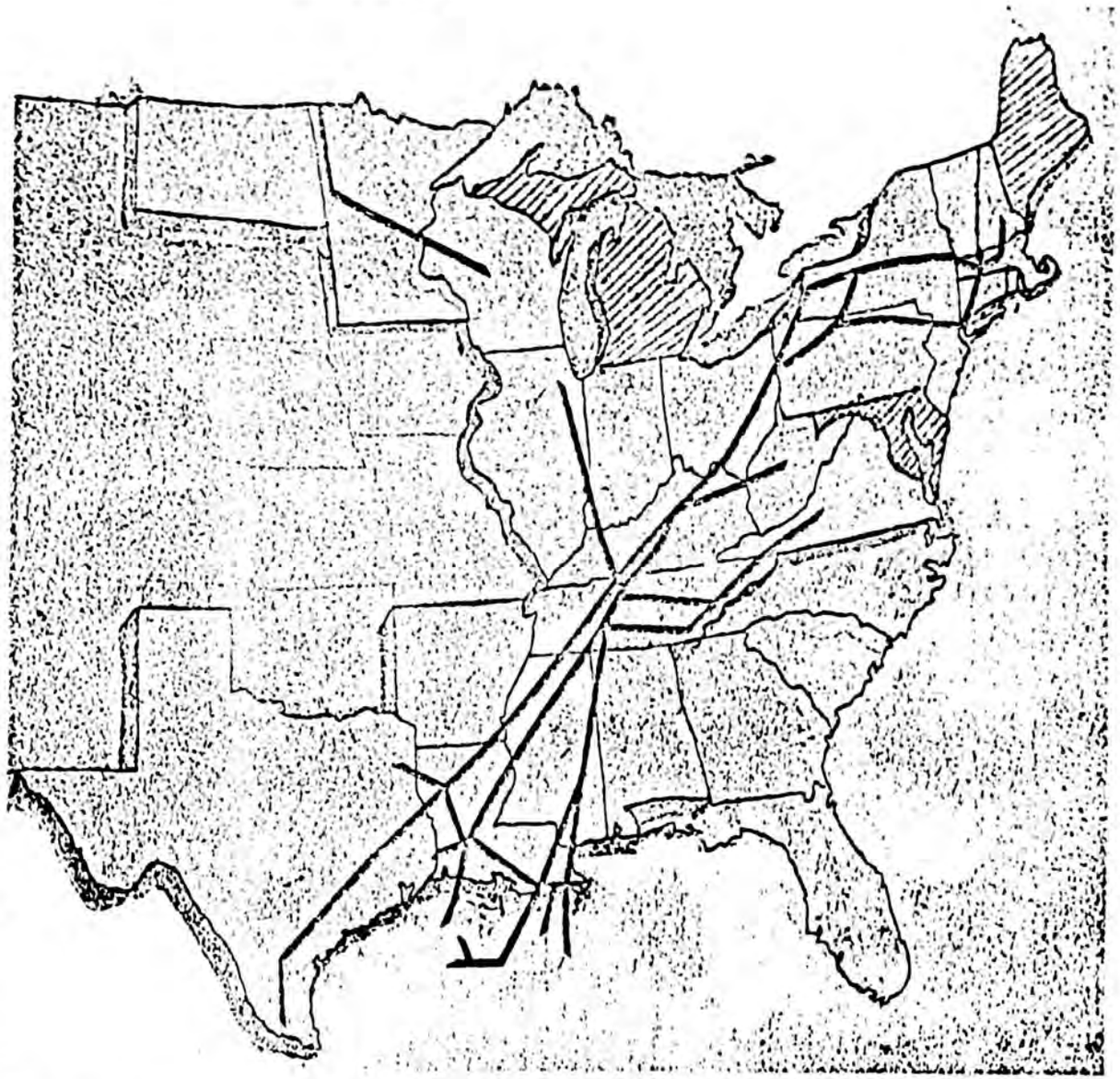
TENNECO'S INTERSTATE NATURAL GAS PIPELINES

MARKET AREA

Market Impact

State	1975[1] Natural Gas Consumption (Bcf)	Tenneco's Share of Total State Gas Market	Population[1]
Alabama	260	10%	3,577,000
Arkansas	270	<1	2,002,000
Connecticut	64	46	3,088,000
Illinois	1,130	16	11,131,000
Indiana	488	<1	5,330,000
Kentucky	208	13	3,357,000
Louisiana[3]	1,376	<1	3,764,000
Maine[2]	2	91	1,047,000
Maryland[2]	147	20	4,094,000
Massachusetts	153	53	5,800,000
Michigan[2]	902	6	9,098,000
Minnesota	318	2	3,917,000
Mississippi	208	4	2,324,000
New Hampshire	8	72	808,000
New Jersey	279	6	7,330,000
New York	571	27	18,111,000
North Dakota	25	21	637,000
Ohio	951	21	10,737,000
Pennsylvania	698	27	11,835,000
Rhode Island	22	23	937,000
Tennessee	225	39	4,129,000
Texas[3]	3,911	<1	12,050,000
Virginia	123	20	4,908,000
West Virginia	172	19	1,791,000
Wisconsin	367	14	4,566,000
TOTAL	12,879		136,428,000
% of United States	68%		65%

[1]Gas consumption based on Gas Requirements Committee, September, 1976 Report. Population data based on 1975 Statistical Abstract of the United States.
[2]Served indirectly through another wholesaler.
[3]Louisiana provides 75% of Tenneco's gas. Texas provides 16%.



Source: "Why Tenneco" published by Tenneco 1976

AGO 667936

Exhibit 1

SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

Form 8

AMENDMENT TO APPLICATION OR REPORT

Filed pursuant to Section 12, 13 or 15(d) of the
Securities Exchange Act of 1934

For the Month of January 1976

Tenneco Inc.
P. O. Box 2511
Houston, Texas 77001

AGO 667937

SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

FORM 8

AMENDMENT TO APPLICATION OR REPORT

Filed pursuant to Section 12, 13 or 15(d)

of

THE SECURITIES EXCHANGE ACT OF 1934

TENNECO INC.
(Exact name of registrant as specified in charter)

AMENDMENT NO. 1

The undersigned registrant hereby amends its Current Report on Form 8-K for the month of January 1976 by providing information for the following item as set forth in the pages attached hereto:

ITEM 13

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this amendment to be signed on its behalf by the undersigned, thereunto duly authorized.

TENNECO INC.

By EDWARD J. HARRISON
Edward J. Harrison
Senior Vice President and
General Counsel

Date: February 13, 1976

Item 13. Other Materially Important Events

In March 1975 the management and the Audit Committee (composed of four ouside directors) of Tenneco Inc. reviewed certain payments to foreign business consultants during 1974 in connection with the acquisition or proposed acquisition of properties or materials from foreign governments or agencies thereof. It was concluded at such time that the payments were for valid business purposes and that there was no indication the payments were illegal or improper. Accordingly, no action was taken. Later in 1975, however, the matter was reconsidered by management because of the publicity concerning the new and emerging concept of "sensitive payments" and the concern expressed by various Securities and Exchange Commission (the "Commission") representatives with respect thereto. At a meeting in October 1975 the Audit Committee, with the concurrence of the full Board of Directors, determined that in light of the information presented at the meeting concerning such 1974 payments and the recent publicity concerning foreign and domestic bribes and political activities of an illegal or questionable nature by other corporations, management should undertake at once a full and complete review of the Company's foreign and domestic operations. Tenneco Inc. and its subsidiaries are hereinafter referred to as the "Company" unless otherwise indicated. The Audit Committee authorized Arthur Andersen & Co., the Company's independent public accountants, and Baker & Botts, the Company's outside legal counsel, to assist in such review. The Commission was promptly advised that, in compliance with the Commission's publicly enunciated and recommended voluntary disclosure program, the review was being made for the period beginning January 1, 1970 and that a report to the Audit Committee and to the Commission would be made as promptly as practicable.

The review has been conducted by representatives of Arthur Andersen & Co. and Baker & Botts, with the active assistance and cooperation of the Company's management. Interim reports by such representatives to the staff of the Commission were made on October 30, and December 18, 1975 and January 20, 1976. Reports to the Audit Committee, and to the full Board of Directors, were made on December 10, 1975 and January 7, 1976.

Information was obtained through written inquiries and personal interviews of executive personnel and other employees of the Company and of certain foreign consultants. Approximately seventy-five such persons have been contracted in one manner or the other, or both. Although no pattern of improper or questionable conduct was revealed either in foreign or domestic operations reviewed at the direction of the Audit Committee, there have been reports of apparently improper or questionable practices in certain instances.

The Company uses numerous local attorneys, advisers, consultants and agents in connection with certain of its foreign operations in approximately 24 countries. These individuals are independent businessmen, many of whom have written contracts with the Company relating to specific countries or areas or to specific projects. During the period January 1, 1970 through September 30, 1975, the Company made or accrued payments aggregating approximately $12 million to such persons (or entities designated by them). Although it is not feasible to state with substantial certainty that none of the payments during such period, other than those described in the following paragraph, were indirectly for the

use or benefit of employees of foreign governments or agencies thereof, the investigation did not reveal the existence of any other payments to foreign government employees or military personnel or that any such payments were being "kicked back" to the Company or its employees or used to create a "slush fund" of any kind. However, in some cases the payments are made to the consultant or his nominee outside the country of his residence and verification of the end use of the payments is not feasible. The question of whether local laws of the countries involved are being violated by making such payments to the consultant or his nominee outside the country of his residence is being reviewed and will be reported to the Audit Committee.

Of the payments reviewed for such period, (i) $10,000 is known to have been paid to a foreign government employee, (ii) $25,000 is known to have been invested in a U.S. concern in which one or more foreign government employees probably have a beneficial interest, (iii) approximately $500,000 was paid to the military and to certain military personnel in a foreign country for protection of a subsidiary's employees working in remote, dangerous locations and for rental of military aircraft and related equipment and (iv) a local sales manager of a subsidiary purchased in 1975 out of the subsidiary's petty cash fund merchandise valued at approximately $480 and gave same to three employees or officials of a foreign government purchasing office or agency to which the subsidiary was selling equipment. The two payments totaling $10,000 were improperly described on the books of the Company and may have been improperly deducted for U.S. income tax purposes. The $25,000 investment is properly described on the books of the Company. The payments totaling $500,000 for military protection and equipment were properly described on the Company's books and are considered properly deductible for U.S. income tax purposes because of the absolute necessity of military protection in that particular country. The $480 payment was not correctly described on the Company's books.

In connection with negotiations involving proposed long-term, multi-billion dollar purchases of raw materials from certain countries, consultants have contractual commitments to receive from the Company additional sums aggregating up to approximately $12.0 million (subject to adjustments, not presently subject to determination, under certain circumstances because of fluctuating currency exchange rates) plus out-of-pocket expenses upon successful conclusion of all phases of such arrangements.

Under contractual arrangements in four countries, the Company has made scholarship payments from time to time aggregating $330,000 for the five years and nine months ended September 30, 1975.

In connection with certain sales of products through independent dealers in foreign countries, the Company follows the practice, where requested by such dealers, of withholding all or a portion of the dealer's commission as an account payable to the dealer or of paying all or a portion of the dealer's commission to a bank account outside the country in which the dealer resides. Such deposits are made by check directly to the dealer's designated bank account. Commissions not paid by check are either disbursed in cash or by credit

against amounts due the Company. The payments are properly described on the Company's books and the Company's tax returns. The question of whether local laws of the countries involved are being violated is being reviewed and will be reported to the Audit Committee.

The Audit Committee of the Board of Directors has directed management of the Company to formulate procedures and policies to eliminate possible irregularities in connection with foreign operations and to present such procedures and policies to the Audit Committee and the Board of Directors for review, comment and approval. Thereafter, management will be charged with the responsibility, through internal audit procedures and such other techniques as may be deemed reasonably necessary (including disciplinary action, and, where appropriate, dismissal for violations), of insuring compliance with such procedures and policies on a company-wide basis. In this connection, and in addition to broader policy statements to be enunciated with respect to U.S. and foreign business operations in general, management intends to recommend the affirmation of substantially the following policy regarding payments which may be made in any country in connection with the purchases of products or raw materials or the sale of products or services:

> "The Board of Directors and management of Tenneco Inc., having due regard for and recognition of the responsibilities arising from and attendant to international operations, hereby affirm the corporate policy of Tenneco Inc., its subsidiaries and divisions to the effect that all employees and agents are to comply with the ethical standards and legal requirements of each foreign country in which business is conducted."

Commencing in 1966 or 1967 many high-level executives of the Company made annual cash contributions of $2,000 each to a fund to be used for political contributions. It is reported that approximately twenty executives made contributions each year and that the fund did not exceed $40,000 in any one year. It is reported that this fund was discontinued after 1973. Under applicable Federal law, the legality of the fund turns primarily on "voluntariness". If there was direct or indirect coercion or inducement, whether in terms of advancement or company cars or other job perquisites, the fund would probably be deemed illegal. "Voluntariness" is a subjective determination by each individual participant, and most participants would probably state that their contributions were made voluntarily. For this reason, it is believed that the establishment of the fund did not violate Federal law.

Another employee fund was established at the Newport News Shipbuilding subsidiary before it was acquired by the Company in 1968. Cash contributions were made to the fund by high-level executives of the subsidiary. It is believed that contributions were made only once in the aggregate amount of approximately $10,000. The fund presently has a balance of $2,370 and is in the custody of the subsidiary's general counsel. Disbursements from the fund were made at the direction of the President of the subsidiary. The establishment of the fund is considered to comply with applicable Federal law on the basis that contributions were made voluntarily.

Recipients of campaign contributions from the Company's executive fund are believed to have been generally

determined by the chief executive officer of the Company. During the fund's existence from 1966 or 1967 until 1973, campaign contributions were made in Federal elections and in state and local elections. It is believed that contributions in state and local elections were made primarily in Texas and Louisiana. Contributions from a voluntary employee fund are specifically permitted by Federal election law and the Supreme Court has held that such voluntary employee funds were permissible prior to enactment of such election law. It is believed that such contributions are also permissible under Texas and Louisiana law, although no specific statutory authority exists, because of analogous Federal judicial precedent exempting voluntary employee funds and the intent of the law to prohibit only contributions of corporate money.

Contributions were made from the Newport News Shipbuilding employee fund in one Federal election and various state and local elections in Virginia. The contribution to the Federal election is believed to comply with Federal election law on the basis that the contribution was made from a voluntary employee fund. The state and local contributions are likewise believed to be permissible. In any event, state and local corporate contributions are permitted by Virginia law.

During the period from January 1, 1970 through December 1, 1975, three subsidiaries, Tenneco West, Inc., Heggblade-Marguleas-Tenneco Inc. and Stockdale Development Corporation, made campaign contributions in California elections aggregating approximately $180,000. State and local corporate campaign contributions are permissible under California law.

It has been reported that since 1970 two corporate campaign contributions of $100 each were made by local sales managers of a subsidiary, J. I. Case, in connection with state or local elections in Rhode Island and Florida, in both of which states corporate campaign contributions in state and local elections are believed to be permissible. In one or, perhaps, both of such cases, the contribution was not correctly described on the subsidiary's books and/or was improperly deducted for tax purposes.

Beginning prior to 1970 and continuing until August 1972, it is reported that cash amounts ranging from $200 to $2,000 were given on several occasions by the President of a subsidiary, Midwestern Gas Transmission Company, to state public utility commission chairmen in Indiana, Illinois, Kentucky and Wisconsin. The subsidiary officer states that the money was understood to be given in turn by the recipients to various charitable projects of their choice. In 1972 the same subsidiary officer gave $2,000 in cash to the chairman of the Pennsylvania Public Utility Commission. The officer states that the Pennsylvania chairman requested the money for use as a contribution to a chairtable dinner in Washington, D.C., honoring a U.S. Senator from Pennsylvania. The money was given to the Pennsylvania chairman several months after the dinner, and the Pennsylvania chairman states that the money was applied as a reimbursement of his contribution to the dinner. Two other employees of the Company state that they believe or had heard that the money was given to the Pennsylvania chairman to obtain his influence with the head of the General Services Administration, which was participating as an

intervenor in a Federal Power Commission regulatory proceeding, Rate Proceeding 71-6, to which a Company division, Tennessee Gas Pipeline, was a party. The subsidiary officer who delivered the payment and the Pennsylvania chairman deny that this payment had any connection with such proceeding. The money was given to the Pennsylvania chairman several months after the regulatory proceeding had been ultimately resolved in a manner favorable to the division. The Company's executive fund may have been the source of these payments, although this has not been clearly determined since there are no records of disbursements from the fund and the recollections of the subsidiary President and the administrator of the fund differ.

Beginning on October 27, 1970, and continuing until September 1975, a subsidiary, Tenneco Oil Company, made payments of $2,000 per month to the sheriff of a Lousisana parish who is also an attorney. There are conflicting statements regarding the reason or reasons for the payments. The payments were approved by senior management of the subsidiary, but there is no evidence that the Board of Directors or high-level management of Tenneco Inc. were aware of the arrangement. The sheriff is presently under investigation by officials of the U.S. Department of Justice, and the Company does not believe that it would be appropriate to comment further about the matter pending resolution of such Federal investigation.

In June 1970, a $2,000 cash campaign contribution was made to a State District Judge in Louisiana for use in his race for a Louisiana appellate court seat. Approximately eighteen months prior to the contribution, the Judge had granted an injunction against violence on the picket line in connection with a union strike at the plant of a Company subsidiary, Tenneco Oil Company. Approximately two months after the contribution was made, the union filed a motion to dissolve the injunction, which was denied by the Judge in late 1970. The $2,000 was given to the Judge by a local employee of the subsidiary. The payment was approved by senior management of the subsidiary, but there is no evidence that the Board of Directors or high-level management of Tenneco Inc. were aware of this payment. The money probably came from either the personal funds of an officer of the subsidiary or the Company's executive fund, and not from corporate funds. It is believed that the campaign contribution did not violate the Louisiana prohibition against corporate contributions which was then in effect because the money probably did not come from corporate funds.

In 1972 contributions of $1,000 each were made by a subsidiary, Tenneco Oil Company, to two Louisiana District Judges and a Louisiana District Attorney who were running for re-election, all in the same parish. The contributions were made in cash by an employee from the subsidiary's working fund account. The payments were incorrectly described on the subsidiary's books and improperly deducted for tax purposes. The contributions were approved by senior management of the subsidiary, but there is no evidence that the Board of Directors or high-level management of Tenneco Inc. were aware of the payments. The contributions violated the then existing Louisiana prohibition against corporate campaign contributions.

Tenneco proposes to turn over to the Internal Revenue Service the relevant information relating to the foregoing matters and to amend tax returns and make additional payments where appropriate. It is not considered at this time that material income tax deficiencies will result.

At its meeting in October 1975 the Audit Committee of the Board of Directors approved and adopted the following policy statements:

1. The use of assets of the Company or any subsidiary for any unlawful or improper purpose is strictly prohibited;

2. No undisclosed or unrecorded fund or asset of the Company or any subsidiary shall be established for any purpose;

3. No false or artificial entries shall be made in the books and records of the Company or its subsidiaries for any reason, and no employee shall engage in any arrangement that results in such prohibited act;

4. No payment on behalf of the Company or any of its subsidiaries shall be approved or made with the intention or understanding that any part of such payment is to be used for any purpose other than that described by the documents supporting the payment;

5. Any employee having information or knowledge of any unrecorded fund or asset or any prohibited act shall promptly report such matter to the chief executive officer or general counsel of Tenneco Inc.;

6. All executive officers of the Company shall be responsible for the enforcement of and compliance with this policy including necessary distribution to ensure employee knowledge and compliance;

7. Appropriate officers and employees will periodically be required to certify compliance with this policy; and

8. This policy is applicable to Tenneco Inc. and all its domestic and foreign subsidiaries.

The Audit Committee has also directed management to implement procedures for insuring compliance with such policies and to report to the Audit Committee and to the Board of Directors with respect thereto. Following such report and review thereof by the Board of Directors of the Company, a definitive statement of such policies and procedures will be distributed on a company-wide basis.

The matters described herein have been voluntarily disclosed by the Company, and the Company has advised the staff of the Commission that its documents, books and records relating to the investigation ordered by the Audit Committee will be made available at the Company's offices for examination by the staff of the Commission upon request.

In keeping with the practice of other companies reporting matters of the type described herein, the Company

SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

Form 8

AMENDMENT TO APPLICATION OR REPORT

Filed pursuant to Section 12, 13 or 15(d) of the
Securities Exchange Act of 1934

For the Month of January 1976

Tenneco Inc.
P. O. Box 2511
Houston, Texas 77001

AGO 667945

SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

FORM 8

AMENDMENT TO APPLICATION OR REPORT

Filed pursuant to Section 12, 13 or 15(d)

of

THE SECURITIES EXCHANGE ACT OF 1934

TENNECO INC.
(Exact name of registrant as specified in charter)

AMENDMENT NO. 2

The undersigned registrant hereby amends its Current Report on Form 8-K for the month of January 1976 by providing information for the following item as set forth in the pages attached hereto:

ITEM 13

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this amendment to be signed on its behalf by the undersigned, thereunto duly authorized.

TENNECO INC.

By M. W. Meyer
M. W. Meyer
Assistant Secretary

Date: February 23, 1976

Item 13. Other Materially Important Events.

February 13, 1976 Tenneco Inc. filed Amendment No. 1 to its Form 8-K Current Report for the month of January 1976, containing in part the following statements:

> "Beginning prior to 1970 and continuing until August 1972, it is reported that cash amounts ranging from $200 to $2,000 were given on several occasions by the President of a subsidiary, Midwestern Gas Transmission Company, to state public utility commission chairmen in Indiana, Illinois, Kentucky and Wisconsin. The subsidiary officer states that the money was understood to be given in turn by the recipients to various charitable projects of their choice."

By affidavit dated February 23, 1976 George Perrine made the following statements:

> "I was President of Midwestern Gas Transmission Company from 1961 until August 1972. I am presently a consultant to Tenneco Inc. Although I gave the information quoted above in substantially the language therein to Tenneco Inc. representatives, upon further reflection I am unable to recall any names, dates or amounts or whether any sums were actually delivered to public utility commission chairmen, members or employees in any of the states of Indiana, Illinois, Kentucky or Wisconsin or elsehwere. Because of such inability to recall specific information, I have concluded that my original statement was in error."

Item 14. Financial Statements and Exhibits.

(b) Exhibits

1. Affidavit of George Perrine dated February 23, 1976.

THE STATE OF TEXAS §

COUNTY OF HARRIS §

AFFIDAVIT OF GEORGE PERRINE

BEFORE ME, this day personally appeared George Perrine, who, after being duly sworn, deposed and said:

I.

My name is George Perrine. I have personal knowledge of every statement made in this Affidavit and am fully competent to testify about the matters stated herein.

II.

I understand that Tenneco Inc. has filed Amendment No. 1 on Form 8 amending its Current Report on Form 8-K for the month of January 1976, and that the following appears as part of said Amendment:

> "Beginning prior to 1970 and continuing until August 1972, it is reported that cash amounts ranging from $200 to $2,000 were given on several occasions by the President of a subsidiary, Mid-western Gas Transmission Company, to state public utility commission chairmen in Indiana, Illinois, Kentucky and Wisconsin. The subsidiary officer states that the money was understood to be given in turn by the recipients to various charitable projects of their choice."

III.

I was President of Midwestern Gas Transmission Company from 1961 until August 1972. I am presently a consultant to Tenneco Inc. Although I gave the information quoted above in substantially the language therein to Tenneco Inc. representatives, upon further reflection I am unable to recall any names, dates or amounts or whether any sums were actually delivered to public utility commission chairmen, members or employees in any of the states of Indiana, Illinois, Kentucky or Wisconsin or elsewhere. Because of such inability to recall specific information, I have concluded that my original statement was in error.

Further, the affiant sayeth not and I have read the foregoing Affidavit and it is true and correct.

George Perrine

SUBSCRIBED AND SWORN TO before me by George Perrine on this 23rd day of February, 1976.

Notary Public in and for
Harris County, Texas

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EFFECT OF ALASKA'S ROYALTY GAS ON NATURAL GAS SUPPLY:

TENNECO MARKET AREA (25 states)

Prudhoe Bay natural gas production rate is assumed to be
2.0 Bcf/day

Yearly Prudhoe Bay natural gas production 730 Bcf.

Royalty Share of Prudhoe Bay production = 1/8 of 730 Bcf = 91.25 Bcf/Year.

Tenneco Share of Royalty Gas = 50 % of 91.25 Bcf = 45.625 Bcf/year.

Tenneco Summary of Operating Data (from "Tenneco Statistics 1975")

Volume of Gas sold and transported: 1,634 Bcf
Volume of Gas purchased: 1,459 Bcf

Tenneco's share of 25-state gas market:
1,284 Bcf
9.9 %

Tenneco's share of royalty gas as a per cent of Tenneco's share of 25-state gas market:

(45.625 Bcf/year / 1,284 Bcf/year) = 3.55 %

Tenneco's share of royalty gas as a per cent of total 25-state gas consumption:

(45.625 Bcf/year / 12,879 Bcf/year) = 0.35 %

Total U.S. Consumption of Natural Gas in 1975 (rounded): 19,000 Bcf

Yearly Royalty Gas Production as a percent of total U.S. Consumption:

(91.25 Bcf/year / 19,000 Bcf/year) = 0.48 %

Yearly Prudhoe Bay gas production as a percent of total U.S. Consumption:

(730 Bcf/year / 19,000 Bcf/year) =3.84 %

Note: Above calculations do not take into account shrinkage of natural gas through transportation (e.g. 6% loss in liquefication and deliquification).

TABLE I

EFFECT OF ALASKA'S ROYALTY GAS ON NATURAL GAS SUPPLY:
TENNECO MARKET AREA

STATE	1975 Consumption (Bcf)	Tenneco % Share of Market	Tenneco Share of Market (Bcf)**	Tenneco Royalty Gas Share of Market (%)***
*Alabama	260	10	26	.36
Arkansas	270	<1	<2	<.03
Connecticut	64	46	29	1.63
Illinois	1130	16	181	.57
Indiana	488	<1	<4	<.03
Kentucky	208	13	27	.46
Louisiana	1376	<1	<13	<.03
Maine	2	91	2	3.23
Maryland	147	20	29	.71
Massachusetts	153	53	81	1.88
Michigan	902	6	54	.21
Minnesota	318	2	6	.07
*Mississippi	208	4	8	.14
N. Hampshire	8	72	6	2.55
New Jersey	279	6	17	.21
New York	571	27	154	.96
No. Dakota	26	21	5	.75
Ohio	951	21	200	.75
Pennsylvania	698	27	188	.96
Rhode Island	22	23	5	.82
*Tennessee	255	39	99	1.39
*Texas	3911	<1	<39	<.03
Virginia	123	20	25	.71
W. Virginia	172	19	33	.68
Wisconsin	367	14	51	.50
TOTAL 25 STATES	12,879	9.9	1284	25

AGO 667951

Notes to Table I:

* indicates state will receive additional royalty gas supplies from Southern Natural Gas:

Alabama receives 66% of supply from Southern
Mississippi receives 13% of supply from Southern
Tennessee receives 8 % of supply from Southern

** Tenneco share of market expressed in Bcf as calculated by multiplying each state's 1975 consumption by Tenneco's percentage share of market (Source of these figures was Table II from "Why Tenneco", published by Tenneco). Minor inaccuracies may have occurred due to rounding.

*** Figures for Tenneco Royalty Gas share of market assume equal distribution among states by relative share of consumption

Tenneco was chosen as an example of the impact of royalty gas commitment because original data was readily accessible. Figures for 1976 consumption among the states served by Southern Natural Gas indicate similar results. El Paso service area figures were not available.

The calculations indicate that the addition of Alaska's royalty gas to U.S. supply will increase total U.S. supply by less than 1/2 of one percent.

Prepared for House Special Committee on the Sale of Royalty Gas

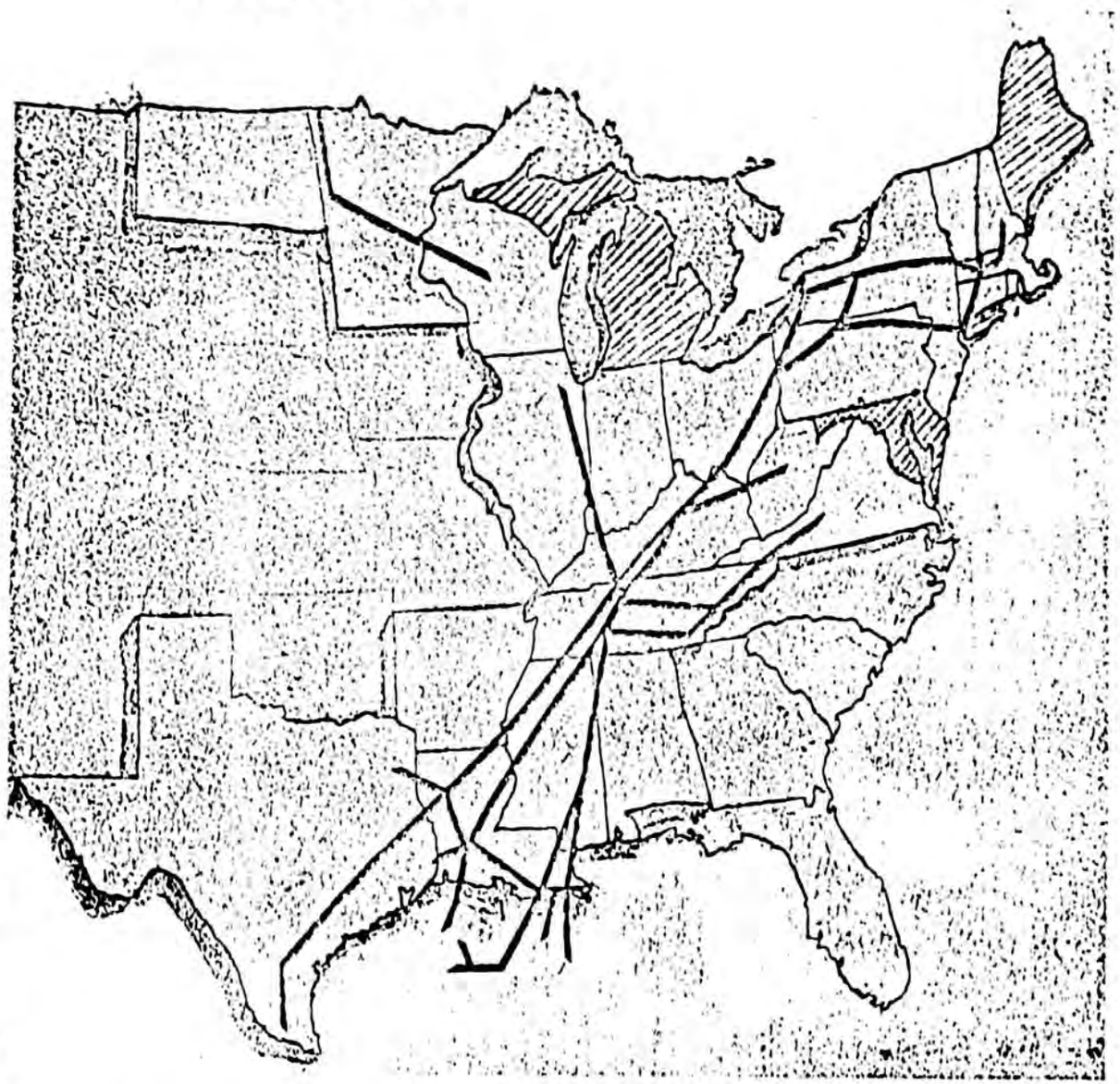
TENNECO'S INTERSTATE NATURAL GAS PIPELINES

MARKET AREA

Market Impact

State	1975[1] Natural Gas Consumption (Bcf)	Tenneco's Share of Total State Gas Market	Population[1]
Alabama	260	10%	3,577,000
Arkansas	270	<1	2,062,000
Connecticut	64	46	3,088,000
Illinois	1,130	16	11,131,000
Indiana	488	<1	5,330,000
Kentucky	208	13	3,357,000
Louisiana[3]	1,376	<1	3,764,000
Maine[2]	2	91	1,047,000
Maryland[2]	147	20	4,09[illegible],000
Massachusetts	153	53	5,800,000
Michigan[2]	902	6	9,098,000
Minnesota	318	2	3,917,000
Mississippi	208	4	2,324,000
New Hampshire	8	72	808,000
New Jersey	279	6	7,330,000
New York	571	27	18,111,000
North Dakota	26	21	637,000
Ohio	951	21	10,737,000
Pennsylvania	698	27	11,835,000
Rhode Island	22	23	937,000
Tennessee	225	39	4,129,000
Texas[3]	3,911	<1	12,050,000
Virginia	123	20	4,908,000
West Virginia	172	19	1,791,000
Wisconsin	367	14	4,566,000
TOTAL	12,879		136,428,000
% of United States	68%		65%

[1]Gas consumption based on Gas Requirements Committee, September, 1976 Report. Population data based on 1975 Statistical Abstract of the United States.
[2]Served indirectly through another wholesaler.
[3]Louisiana provides 75% of Tenneco's gas. Texas provides 16%.



AQD 667953

Source: "Why Tenneco" published by Tenneco
1976

SCOMM

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February 10, 1977

Representative Clark Gruening, Chairman
Special Committee to Consider Sale of Royalty Gas
Alaska State Legislature

Dear Representative Gruening:

Per your request, my comments follow regarding the salient points which I was able to gather from the recent public hearings regarding the proposed Royalty Gas Sales Contracts.

Given assurance under present Federal statute and regulation, that wellhead price for natural gas at prudhoe Bay will be a constant figure; that availability of a marketplace for Prudhoe Bay natural gas is equally equivalent regardless of route, there is little question but what a trans-Alaska transmission system for movement of the Prudhoe Bay natural gas is in the best interest of Alaska. And for as long as the foregoing premises remain constant, the best interest of Alaskans will continue to be best served by a trans-Alaska routing.

Testimony was strongly suggestive that present Federal statutes and regulations regarding the establishment of a wellhead price for natural gas at Prudhoe Bay will continue to be in existence for several years to come. In fact, our own retained expert testified that he saw little chance for relaxation of current regulations establishing wellhead price in less than ten years.

With possible relaxation of Federal regulatory statutes some ten-plus years from now, it could very well be that the wellhead price of Prudhoe Bay gas will be a function of the total capital outlay and operating expense required for a transmission system from Prudhoe Bay to a marketplace in the South 48. Under such relaxation of regulations wellhead price at Prudhoe Bay might be substantially lower for a transmission system to the South 48 which was substantially higher in cost to construct and operate than a less expensive alternate. Such a potential lowering in wellhead price might indeed result in a negative financial offset for Alaskans

than Alaskans might gain from the construction and operation of an All-Alaska system.

I further gathered from testimony that the Alaska Pipeline Act requires the Federal Government to make a binding decision upon the routing of a transmission system within the forthcoming year. Because of the short time fuse on the Federal decision as to route selection we cannot worry about what may or may not happen to FPC regulations ten years from now. Rather, we are forced to base our decisions upon facts as they exist today. And conditions today certainly favor the All-Alaska transmission route as being in the best interest of Alaskans.

Testimony, although quite varied as to degree, was strongly suggestive that legislative approval of the proposed Gas Sales Contract would, at least provide minuscule strengthening of Alaska's hand on the Federal level with respect to encouraging a final decision in favor of the Alaska route.

Testimony was also introduced that indicated, on the basis of all predicted reservoir performance, that with an operating and produciton program calling for 1.2 million barrels per day of oil, early gas sales in the amount of 2 billion cubic feet per day, or more, would sacrifice ultimate recovery of hydrocarbons (or energy) from the Prudhoe Bay reservoir. And testimony generally stated that the economic threshold, with respect to a daily throughput, was approximately 2 billion cubic feet per day of natural gas in order to make the transmission system a viable economic venture. Further, testimony indicated that at best, reservoir predictions were relative and not absolute. Only by close monitor and observance of actual reservoir performance after production is initiated and continued over a long time period can we gain, beyond all reasonable doubt, sufficient knowledge to make a determination as to what amounts of gas, if any, is indeed surplus to the needs to insure maximum ultimate recovery of hydrocarbons from the reservoir.

The best interest of we Alaskans and those who follow can only be served by maximizing ultimate hydrocarbon recovery from that field. This is one point that in our deliberations we should never overlook. Nor should we overlook the fact that we are dealing at Prudhoe Bay with a reserve of crude oil with associated gas. Crude oil is the prime resource by several fold with respect to both volume and value of the hydrocarbon reserve that nature saw fit to place in the Prudhoe Bay reservoir. Retaining gas within the reservoir will assure that we will always be able to maximize the recovery of crude

oil from the reservoir. By retaining associated gas in the reservoir until the maximum ultimate recovery of black oil is achieved assures us that we still have remaining in that reservoir the associated gas which some two or three decades from now will have increased value over that of today. Once black oil is fully recovered, we still have an economic reserve within the reservoir of salable gas that will continue for several years to come, one or two decades to yield a non-renewable income for the State of Alaska.

Testimony indicated that, had a transmission system from the Prudhoe gas cap to the South 48 been in existence a week ago, the President of the United States would have had the full authority to call upon the production of that natural gas to meet the South 48 needs, even though it could be extremely detrimental to the welfare of we Alaskans by materially affecting ultimate recovery from our Alaskan oil field. Such national emergency needs can well develop again and again. So long as we have no transmission system to the South 48 to move natural gas, we Alaskans can rest assured that the maximum benefit will continue to be achieved from the Prudhoe Bay reservoir. Only when we are assured, beyond all reasonable doubt, that the associated gas is indeed surplus to our needs should we permit the construction of a transmission system from Prudhoe Bay to the South 48.

However, testimony was strongly suggestive that our state's 1/8th Royalty Gas was merley a 1/8th tail attempting to wag a 7/8ths dog. In otherwords, contractual sale or commitment of Alaska's 1/8th associated gas today would in no way aide or abet the early construction of a transmission system to the South 48. The other 7/8ths of the dog is needed before sufficient volumes are realized to make a gas transmission system economically viable. As of this date, according to testimony, the other 7/8ths of the associated gas has not been commited for sale.

Testimony further was suggestive that in view of the control exercised under statute by our Alaska Oil & Gas Conservation committee, it would be doubtful if sufficient financing could be obtained for the construction of a gas transmission system until the Conservation Committee can first assure the financial centers that 2 billion cubic feet a day of associated gas or more would be available day after day on an uniterrruptable basis for approximately a twenty year period.* And it is my conviction that so long as our Oil & Gas Conservation Committee is isolated from political and economic pressures, they will continue to act with utmost prudency to insure the maximum benefit to Alaskans from our

* Solution gas from 1.2 MM Bbl/Day oil production is less than 1 billion cu ft/D

natural resources within the State. In short, it may well be ten to twenty years before the Conservation Committee can with any degree of certainty assure that associated gas is surplus to our needs, and can be exported at an uninterruptable 2 billion cubic foot daily rate for a twenty year period.

Based principally upon the foregoing, it is my determination that the approval of the Royalty Gas Sales Contract by the Legislature will have a plus value in the selection by the Federal Government for the routing of a gas transmission system from Prudhoe Bay to the South 48. Further, it is now my conviction that approval of the Royalty Gas Sales Contracts by the Legislature will not aide or abet early construction of a gas outlet for Prudhoe Bay's associated natural gas. I say this because it is my strong belief that the overriding consideration governing the availability of finance for a transmission system is the Oil & Gas Conservation Committee's ability to "turn-off the valve" at any point in time; whenever they believe that continued gas production is deleterious to overall reservoir performance with resulting loss in ultimate recovery.

Should public money enter into the picture, of course, the premise upon which I base my position no longer is valid. But in no way do I see public funds being made available at this point in time for assistance in the financing of a transmission system.

Accordingly, it is my recommendation that the Legislature approve the Royalty Gas Sales Contracts as they now stand before us.

Representative C. V. "Chat" Chatterton
Special Committee to Consider Sale of Royalty Gas

El Paso Seeks Continued Rate Base Treatment of Advance Payments for Alaskan Gas Beyond Initial Five-Year Term

On 10/6/78 the FERC issued notice of a petition filed 9/27/78 by El Paso Natural Gas Co. (RP72-116) requesting approval for continued rate base treatment of Alaskan advance payments made to Atlantic Richfield Co., Amoco Production Co. and Phillips Petroleum Co. under agreements dated in 1972. In the aggregate, these advances totalled $3.9 million as of 7/31/78.

Each of the agreements provides for recoupment of the advance payments from the proceeds of oil and gas production from the prospect areas for which the funds were advanced. In addition, El Paso's agreement with Phillips contains a backup provision whereby, if the advances have not been fully recovered by El Paso within a specified time (five years after the date of first deliveries from the funded area, or eight years from the date of the first advance), Phillips will assign a portion of its net revenues from oil and gas leases in the Prudhoe Bay area as an additional source of recoupment.

Rate base inclusion of the above advances was approved by FPC Opinion No. 673 (issued 11/6/73) 1/ subject to termination of such treatment and reduction of El Paso's rates if gas deliveries had not commenced within five years and no determination had been made that recovery would be made in economic consideration other than gas. The Commission provided, however, that El Paso could seek continued rate base treatment upon submission of evidence explaining why recoupment of the advances had not commenced, why further rate base inclusion was warranted, and what costs would result for El Paso's customers. In accordance with these conditions, El Paso asked to continue rate base treatment until five years from commencement of gas deliveries from the Kavic prospect area through the Alaska natural gas transportation system (or until full recovery of the advances, if earlier) in the case of the advances to Atlantic Richfield and Amoco, and until full recoupment of the advance to Phillips. In view of the backup recoupment provision in its advance payment agreement with Phillips, El Paso estimated that full recovery of the advance to Phillips would occur no later than June 1981.

In support, El Paso referred to a recent letter from Atlantic Richfield advising that the Kavic reservoir is estimated to contain approximately 100 Bcf of proven reserves and some 232 Bcf of potential reserves, based on an analysis of the three wells drilled to date. However, commencement of production depends upon completion of an Alaskan natural gas transportation system, which is not estimated to be operative until at least 1983. Since delays incident to construction of the pipeline are beyond El Paso's control, El Paso contended that extension of rate base treatment for five years from commencement of deliveries from the Kavic prospect area is appropriate. The prospect area underlying the Phillips advance has not been determined to be productive of oil or gas, El Paso added, but continued rate base inclusion of this advance to the extent requested is nevertheless justified because, if gas had been discovered, full recoupment would occur pursuant to the

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1/ By order dated 12/31/75, El Paso and three other pipelines who made Alaskan advance payments under contracts executed prior to Order No. 499 (issued 12/28/73) were directed to show cause why rate base treatment for these advances should not be terminated as of 12/31/75 and why refund of all carrying charges should not be required. The show cause order was issued at the same time as another order which terminated rate base inclusion of Alaskan advances covered by contracts executed after 12/28/73. The four pipelines filed responses to the show cause order in March 1976, and no further action has been taken by the Commission since that time.

backup provision due to the unavailability of a pipeline to transport North Slope gas until at least 1983. Assuming full recoupment under the backup provision by June 1981, El Paso said the Phillips advance will have been accorded rate base treatment for approximately seven years and nine months, which is well within the ten-year maximum period contemplated by Opinion Nos. 673 and 673-A if gas had been discovered in the funded area.

As further justification, El Paso argued that the subject advances were designed to benefit its customers in two respects. First, the advances served to accelerate exploration and development of nonassociated gas reserves necessary to support the implementation of a pipeline system to transport North Slope reserves. "Without the development of substantial dry gas reserves, a pipeline system would be totally dependent upon the associated gas reserves of the Prudhoe Bay Field." Second, the advance payment program gave El Paso a call on a portion of those reserves, thus insuring that gas from the North Slope would actually reach El Paso's customers by means of any pipeline project ultimately implemented. In short, El Paso declared, since the Alaskan advances represent investments made for the benefit of its customers, it would clearly be unfair to require the company's shareholders to bear the carrying costs thereof during any period of postponement in recoupment of the advances, particularly when that postponement results from delays in construction of a gas pipeline and other factors beyond El Paso's control. Moreover, El Paso added, denial of rate coverage of advance payment investments during a period of unavoidable delay in recovery would "operate as a disincentive to future efforts by El Paso, and by the industry generally, to undertake innovative gas supply projects. . . . [S]uch disincentive would be deleterious not only to the pipeline companies themselves, but also to their customers who would benefit from such projects."

If rate base treatment for its outstanding Alaskan advance payments is discontinued five years after the inclusion of each advance in Account 166, El Paso estimated that its total revenues would be reduced by approximately $4.3 million over the next ten years.

El Paso also observed that all three of the producers here involved had rejected requests to consider expedited or alternative recoupment of the advances.

In conclusion, El Paso called attention to an FPC order of 7/29/77 conditionally granting a petition by Columbia Gas Transmission Corp. (RP76-159) to continue rate base treatment of a $60 million advance to BP Oil Corp. for Alaskan North Slope gas beyond the initial five-year period approved in Opinion No. 674, issued 11/6/73. 1/ El Paso said the circumstances surrounding its advances are similar to those surrounding Columbia's advance, and hence similar treatment is warranted.

1/ More recently, on 6/28/78, the FERC conditionally authorized continued rate base treatment of advance payments made by Northern Natural Gas Co. (RP71-107, Phase II and RP72-127) for Alaskan gas under agreements executed prior to 12/28/73. (See REPORT NO. 1162, pp17-20.)

El Paso ALASKA COMPANY

POUCH 7009
ANCHORAGE, ALASKA 99510
PHONE: 907 279-6502

December 16, 1976

The Honorable John Rader
Alaska State Senator
P. O. Box 2068
Anchorage, Alaska 99501

Dear Senator Rader,

As you know, we are now entering the final, decisional phase of the North Slope gas pipeline controversy. The recently enacted Procedural Bill calls for an FPC recommendation by May 1, 1977, a decision by the President by September 1 and Congressional ratification within 60 days thereafter. Only two opportunities remain for input to the FPC by the applicants and other parties to the proceedings -- oral argument on the Judge's preliminary decision after January 15, and a "Brief on Exceptions" following his final recommendation (to be filed by March 1).

The State of Alaska will have one additional occasion to provide formal, direct input to the President. It is to be submitted by July 1, 1977.

Thus, the arena is shifting from the FPC regulatory phase to a purely political phase involving the federal administration and the Congress, and we and our allies are gearing up for increased promotional and lobbying efforts in behalf of the trans-Alaskan gas pipeline route.

An important influence on the ultimate success of these activities will be the State of Alaska's recent commitment of surplus Prudhoe Bay royalty gas to El Paso, Southern and Tenneco. We believe that such commitment is critical, because

(i) it is a real expression of the State of Alaska's solid support for the trans-Alaska route,

(ii) it brings Tenneco and Southern -- two substantial allies -- to the fight, and

(iii) it will help create a national constituency in the 38 states that will be the beneficiaries of surplus royalty gas if the trans-Alaska route is approved.

AGO 667960

We are advised by representatives of OMAR that you have been furnished a copy of the royalty gas contract. We hope that you have been able to read through it, and that you agree it is a fair and equitable arrangement for both the state and the purchasers. It has a 20-year term; it provides that the highest possible wellhead price will be paid to the state; and it allows the state to take back its gas in any amount and at any time in order to serve Alaskan markets as they develop.

It is also fortunate that the contracts were completed in time to allow the state to make them a part of the FPC record prior to its closing. In view of the suggested possibility that the Procedural Bill might be reconsidered by Congress next spring, we believe that placing the contracts before the FPC will provide additional assurances that the state will retain the right to recall its gas.

We hope that you will support early consideration and approval of the royalty gas contracts when the Legislature convenes next January. Since the decisional dates are now (essentially) firmly set, we have an excellent understanding of the time remaining for us to influence the final determination. Obviously, each day of delay in approval of the contracts is one less day that we can use their very meaningful leverage.

Turning briefly to another subject, you have probably heard that the FPC Staff recently endorsed the Arctic Gas route. Inasmuch as the Staff's position was developed on a strictly traditional basis, essentially ignoring the international ramifications of the two trans-Canadian proposals, we are not in any way discouraged by Arctic Gas' "winning" this first round. It was very disappointing that Staff would judge the competing proposals in this very unique case as they would any conventional pipeline in the lower 48. However, when other federal agencies, the President and the Congress become involved, the existence of Canada will no longer be ignored and the real disadvantages of Arctic Gas and Alcan will become known. When that occurs, the El Paso project should carry the day.

The FPC Staff position also reaffirmed the fact that our real competition is, and will continue to be Arctic Gas, since Staff harshly dismissed the concept, the costs and the schedule of Alcan as being "unrealistic and unreasonable."

We very much appreciate the support that the Legislature has given the trans-Alaskan gas pipeline route in the past, and we sincerely hope that our proposal will maintain its preferred position during the forthcoming legislative session.

Best regards.

Sincerely,

EL PASO ALASKA COMPANY

Michael C. Holland
Assistant to Vice President
John C. Bennett

Enclosures

NORTH SLOPE NATURAL GAS TRANSPORTATION

FACTUAL COMPARISON OF PROJECTS IN ALASKA
(December 1976)

	TRANS-ALASKA PROJECT	ALCAN PIPELINE PROJECT	ARCTIC GAS PROJECT
Pipeline Mileage	809 miles	731 miles	195 miles
Capital Cost of Alaskan Facilities	$4.6 Billion	$2.3 Billion	$662 Million
Employment Construction	21,600 direct and induced jobs at peak of construction.	14,900 direct and induced jobs at peak of construction.	6,800 direct and induced jobs at peak of construction.
Operation	624 permanent employees.	108 permanent employees.	39 permanent employees.
Construction Payroll	$840 Million	Unknown at present but expected to be about half that of the Trans-Alaska Project.	$190 Million
Ad Valorem and Income Taxes	$2.8 Billion	$1.3 Billion	$230 Million
Future Industrial Development	Offers greatest potential for future industrial development by offering shortest, most economical route to an ice-free, tidewater port (most economically attractive location for industrial development because of access to marine transportation of product).	To transport natural gas to tidewater requires 250 miles further transportation by pipeline, including a 150-mile lateral, resulting in increased cost of service. Therefore not as economically attractive as opportunities associated with the Trans-Alaska Project.	Route precludes use of state's royalty gas for industrial development.

AGO 667962

PLEASE NOTE

THE ORGINAL FILE CONTAINS AN OVERSIZED DOCUMENT THAT IS UNSUITABLE FOR FILMING. PLEASE REFER TO THE ALASKA STATE ARCHIVES TO VIEW THE ORIGINAL.

DESCRIPTION: MAP

TRANS-ALASKA GAS PROJECT

COMPARISON OF THE EL PASO PROJECT
WITH OTHER PROJECTS PROPOSING TO
TRANSPORT ALASKAN AND OR CANADIAN
NATURAL GAS DISCOVERIES

House Committee has held Dec 15 brief on same subject

UNITED STATES OF AMERICA

Before the

FEDERAL POWER COMMISSION

El Paso Alaska Company, et al.) Docket Nos. CP75-96, et al.

BRIEF OF EL PASO ALASKA COMPANY CONCERNING PROJECT FINANCING AND REGULATORY ACTION

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EL PASO ALASKA COMPANY

AGO 667964

June 4, 1976

BRIEF OF EL PASO ALASKA COMPANY CONCERNING PROJECT FINANCING AND REGULATORY ACTION

I. INTRODUCTION TO THE PROBLEM

In these consolidated proceedings, proponents of two 1/ mutually-exclusive delivery systems are each seeking requisite Federal Power Commission ("FPC") authority to construct and operate facilities in interstate commerce to move natural gas from Alaska's North Slope to consumers in the lower 48 United States.

The El Paso Alaska Project proposes the construction of a new gas pipeline southward across Alaska to a site near Gravina Point in Prince William Sound on Alaska's south-central coast, a route within an established utility corridor closely paralleling the Alyeska oil pipeline. After liquefaction at a new facility at Gravina, the gas would be carried by ship to a regasification plant near Point Conception in southern California, regasified, and thereafter transported to markets throughout the country by utilizing idle capacity in existing pipeline systems.

The Arctic Gas Project proposes the construction of an entirely new pipeline system first extending eastward out of northern Alaska through the Arctic National Wildlife Range into Canada and then southward through Canada to a point of bifurcation near Caroline, Alberta. From there, an eastern leg would proceed to a United States border-point near Monchy, Saskatchewan and then traverse the north-central United States to a point near Kankakee, Illinois. At various points along this portion of the system within the lower 48 states, Alaskan gas would be

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1/ Northwest Pipeline Corporation on May 10, 1976 announced plans to file an application to transport North Slope gas out of Alaska by a third route--along the course of the Alyeska oil line to Delta Junction and then eastward along the Alcan Highway to the Yukon border where three Canadian entities will in turn arrange for its transportation through Canada. Since no application has yet been filed, there has not been any Commission action to effect consolidation of that proposal with the two proposals which have been in comparative hearings for over a year.

delivered to existing pipelines for further movement and displacement to eastern and midwestern markets. A western leg of the Arctic Gas Project would use expanded pipelines in both the United States and Canada to move gas southward from Caroline across the International Boundary near Kingsgate, British Columbia to markets in the western states.

The capital requirements of these projects are enormous. The estimates of El Paso Alaska range between $6.5 billion and $7.9 billion; those of Arctic Gas range between $8.3 billion and $8.8 billion, each depending upon the amount of deliverability certificated. 2/

Recognizing that the unprecedented capital costs required for the construction of an Alaskan gas delivery system preclude any natural gas company or even a group of such companies from raising the necessary capital on the basis of their own credit, the financial advisors of El Paso Alaska--not unlike those of Arctic Gas--have recommended that the El Paso Alaska Project be project financed. Project financing involves the creation of a new enterprise whose own economic integrity is sufficient to finance itself independently to a significant degree. Stated in financial terms, this new enterprise is designed so that it generates sufficient revenues to pay its operating costs, to pay interest and principal on its debt and to pay a return on, and ultimately a return of, its equity.

The very nature of project financing identifies the principal financial risks inherent in it. The prospect that the project's revenues may be insufficient to permit it to make the necessary payments arises from three risks: (1) failure of governmental regulation to permit the project to generate sufficient revenues; (2) prolonged interruption of the project's operation without receipt of revenues; (3) non-completion of the project for economic, physical or other reasons.

El Paso Alaska's financial advisors have testified that neither the El Paso Alaska Project--nor any other comparable project--can be financed unless the investors can be

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2/ These figures reflect July 1, 1975, costs based on assumptions each party has made in its filings and proposed testimony.

assured that these risks are significantly reduced. 3/ Since they expect that the project, once in operation, will be permitted to earn a fair return, they do not consider the first risk to be a serious deterrent to a potential investor. But as to the other risks, they state that lenders will require undertakings which provide, irrespective of project completion or project failure due to force majeure or otherwise, that they will recover their debt, principal and interest. Similarly, because the equity capital required will be so large, it is doubtful if a potential sponsor could be induced to contribute equity if no assurance could be given that at least the return of equity would be made upon project failure. The reasons for these positions are set out in Exhibit EP-254, which accompanies this Brief.

This risk assessment, therefore, is intrinsic to the reasoning of this Brief. Financing of the El Paso Alaska Project will require contractual and tariff provisions which, at a minimum, provide that, in the event of either prolonged service interruption or a failure to complete the project, debt principal and interest will be repaid to the lenders and that equity contributions will be recovered. This burden of unconditional repayment will be hereinafter called "Investment Recovery."

The financial advisors produced by Arctic Gas were also of the view that lenders would require assurances that their investment would be returned if the project failed either of completion or of operation for a prolonged period. Raymond B. Gary stated in pertinent part:

> [Lenders] will require assurances a) that the project will be completed even if costs exceed those originally projected (or, if not completed, that the debt of the project will be repaid in full); b) that the project, once completed, will generate operating revenues sufficient to meet its expenses and service its debt; and c) that if for any reason, including force majeure, its operations are interrupted, suspended or terminated, its

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3/ L. E. Katzenbach, Tr. 13,443-13,444; 13,689-13,698; 13,781-13,786; 13,801-13,804; Stanley Lewand, EP-100 (p. 6 of prepared direct testimony); Tr. 13,866-13,868; 13,886-13,900.

> debt obligations will continue to be serviced either through continued receipt of revenues or otherwise. These assurances must take the form of binding contractual obligations. Tr. 17,801.

Stewart B. Clifford gave substantially the same testimony Tr. 17,818. The opinions of these U.S. financial advisors for Arctic Gas were also reaffirmed by their Canadian counterparts. 4/

L. E. Katzenbach, an El Paso Alaska financial witness, expressed the need for a series of agreements and tariffs. He thought that the tariffs of each of the shippers of Prudhoe Bay gas should contain a provision which would allow each to collect from its customers--in the event of the occurrence of either non-completion of the project or prolonged interruption of service--sufficient revenue to provide for Investment Recovery.

Katzenbach contemplated that all of the necessary agreements and tariff provisions would be submitted to this Commission as part of the totality of the financing package. The final approval of the El Paso Alaska Project by this Commission would include not only approval of the route and methodology for gas transport, but also approval of gas purchase contracts, approval of the necessary tariff provisions, approval of the overall financing plan and the issuance of certificates authorizing the construction and operation of jurisdictional facilities and for the sale and transportation of the gas. Each of the several elements would be approved as interdependent. "It would be a part of the whole closing arrangement." Tr. 13,725.

While the El Paso Alaska advisors thought that the assurances necessary to convince the lenders to advance funds would be supported by the approval of an all-events tariff and other contractual agreements, 5/ the advisors of Arctic Gas were of the opinion that the risk of prolonged interruption of service and non-completion could ultimately be met only by

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4/ J. Ross LeMesurier, Tr. 17,814; Thomas S. Dobson, Tr. 17,824.

5/ Katzenbach, Tr. 13,676; Lewand, Tr. 13,886-13,892.

AGO 667968

some form of guarantees from both the U.S. and Canadian governments and perhaps from state and provincial governments as well. 6/

Arctic Gas has identified two seemingly unresolvable roadblocks to satisfying the concerns of lenders by regulatory action alone. First, Arctic Gas contends that action by the FPC alone is not enough. Before lenders will be satisfied that gas consumers are backstopping the financing arrangements, satisfactory formal action must be unanimously forthcoming by state or local regulatory agencies in every state where Alaskan gas is destined. Having raised this hurdle, Arctic Gas then concedes the virtual impossibility of successfully attaining the required result in so many jurisdictions. 7/ Second, even assuming that satisfactory federal and local approvals could be obtained, Arctic Gas raises the specter of future regulatory change: "that in order for investors to have confidence in that tracking, that it would probably have to be legislatively mandated, so that future commissions could not upset or change the arrangements . . . wherein there is always the possibility that a politically constituted public utility commission could perhaps at a state level simply cancel the possibility of tracking." 8/

Treasury witnesses John M. Niehuss and Theodore M. Barnhill also recognized that lenders would require assurances of payment despite non-completion or prolonged interruption of service. They were of the opinion that it was possible to arrange financing without federal guarantees of financial assistance as long as appropriate regulatory actions were taken. Tr. 18,900; 18,908-18,912; 18,944-18,956.

It is, therefore, the purpose of this brief to address the means by which the investors in the El Paso Alaska Project might be assured that the risk of non-completion of the project and the risk of prolonged interruption of service--thereby creating a condition of non-revenue--would be covered. We believe that the approval by this Commission of an all-events

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6/ Raymond B. Gary, Tr. 18,072-18,082; Stewart B. Clifford, Tr. 18,405-18,410; 18,424-18,427; J. Rose LeMesurier, Tr. 18,189-18,193; Thomas S. Dobson, 18,507-18,508.

7/ Gary, Tr. 18,080-18,081.

8/ Id. Tr. 18,080.

AGO 667969

tariff for Alaska gas service and the approval of other contractual and rate clauses would reduce the financial risks perceived by investors to the degree needed to encourage a willingness on their part to advance the enormous sums necessary to the development of the El Paso Alaska Project.

II. THE MEANS BY WHICH REVENUE MAY BE GENERATED TO PROVIDE FOR INVESTMENT RECOVERY

El Paso Alaska proposes to provide against the risk of non-completion and the risk of prolonged interruption of service by means of contracts and tariff provisions which will assure investment recovery. The means by which these contracts and tariff provisions would operate are substantially the same for either service interruption or non-completion of the project, but since each risk would occur under different circumstances, each must be faced with slightly different procedural arrangements.

(a) Prolonged Interruption of Service

This condition would occur after the El Paso Alaska Project has been constructed and is in operation. Under these circumstances, the El Paso Alaska tariff, setting forth the terms and conditions under which gas would be transported for its shippers would be operative. 9/ That tariff, as presently proposed by El Paso Alaska, provides that a shipper must in all events pay a base monthly charge sufficient to pay operating expenses, debt service and a return of and on equity. Exh. EP-56, pp. 5-6, 26, 49. In the event of an outage, the return on equity is reduced to the point of elimination if the lack of service is substantial. 10/ However, there continues, even during prolonged outage, an obligation on the part of the shipper to pay a basic service charge adequate to provide for debt service and operating expenses 11/ and return of equity.

9/ The tariff as proposed is Exhibit EP-56. Its proposed effective date will occur when all segments of the El Paso Alaska Project have reached a stage of construction where El Paso Alaska stands ready to render initial transportation service to all shippers. Tr. 10,164-10,166.

10/ Exh. EP-56, pp. 56-57.

11/ Id.

AGO 667970

As a consequence, any shipper of Alaskan gas having a service agreement with El Paso will be required to pay a basic service charge irrespective of its receipt of gas. 12/

(b) Non-completion of the Project

It is possible that the El Paso Project may never be completed either by reason of the enormity of cost overruns or by reason of insurmountable physical obstacles. If completion is not accomplished, a method must nevertheless be found to provide for Investment Recovery.

Since the assumption here is that the project is not completed, it necessarily follows that El Paso Alaska will have no operative tariff in place in order to generate monthly charges 13/. As a consequence, the tariff is not the operative instrument for generating the necessary revenues to provide for investment recovery. However, this obligation can be met by contractual arrangements with the various shippers of Alaskan gas. Each by contract will obligate itself to make monthly payments sufficient over time to service the amount of debt previously put in place and to return that equity which has been advanced. The discharge of this contractual duty by the shippers would provide El Paso Alaska with

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12/ E.g., Exh. EP-56, p. 48-49 provides in pertinent part:

> 3. RATES AND CHARGES
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> 3.1 . . . Shipper shall pay Company each month under this Rate Schedule, (1) Shipper's allocable share of Company's monthly cost of service . . . regardless of (i) the amount of natural gas received, transported, or delivered to shipper or its designee during the billing month involved . . ., and (ii) the non-delivery of natural gas to Shipper or its designee during the billing month for any reason.

13/ In our opinion only a "natural gas company" may have an effective tariff under Section 4 of the Natural Gas Act. Until El Paso Alaska transports gas in interstate commerce, it will not become a "natural gas company." See Section 2(6) of the Act.

AGO 667971

the revenue required to provide for Investment Recovery.

While appropriate contracts and an all-events tariff will provide El Paso Alaska with revenue sufficient to provide for investment recovery in the event of either non-completion or prolonged outage, the shippers must be provided with a tariff mechanism by which timely to flow through these charges to their customers.

It is the submission of this Brief that the Commission, by the appropriate exercise of its certificate and rate authority, may provide sufficient assurances that once investments have been made in the El Paso Alaska Project, Investment Recovery can be accomplished in all-events and that neither supplementary legislation nor government backstopping is required.

III. NECESSARY ASSUMPTIONS

In order to put in place the various agreements, tariff provisions and regulatory actions necessary to provide the setting in which investment might be attracted to finance an Alaskan gas delivery system without increased burden to the federal Treasury, it is necessary to set out the assumptions which are critical to the legal conclusion which we reach--that, by the appropriate exercise by the Commission of its certificate and rate authority, sufficient assurance may be given to the U.S. financial community that the economic risks inherent in a project of this type an be avoided. It is therefore, assumed that:

1. In order to maintain effective federal regulation and provide for uniform treatment of gas consumers, this Commission will not certificate sales of North Slope gas to other than interstate transmission companies presently subject to its jurisdiction and who are currently selling gas in interstate commerce under service agreements and tariffs subject to the authority of the Commission. 14/ These companies in turn

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14/ An exception could be made in the case of the principal California distributors. See infra, p. 34. Historically, the two major California distributors have been regulated by the California Public Utilities Commission rather than the FPC. However, sales to California distributors should be certificated only if the CPUC were to agree to act with respect to the resale of Alaskan gas in the same manner as the FPC has been required to act to obtain the necessary financing commitments. Otherwise Alaskan gas should be delivered to the California markets under the existing service agreements with El Paso Natural Gas Company or other interstate carriers serving those markets.

AGO 667972

will resell their Alaskan gas on a rolled-in basis under existing service agreements.

2. In order that each of the several certificate and rate authorizations may be considered interdependent and required as a totality by the present and future public convenience and necessity, the Commission will condition each grant of authority requested herein upon final approval of all interdependent events.

3. At the conclusion of the present phase of these consolidated proceedings, the Commission will issue a certificate of public convenience and necessity under § 7(c) of the Natural Gas Act authorizing El Paso Alaska to construct and operate facilities to transport gas from the North Slope to markets in the lower 48 states. Among other things, the certificate will be conditioned to require the submission of proposed financing arrangements within a reasonable period of time for the Commission's review and approval.

4. Before any financing plan is submitted to the Commission for approval, North Slope producers will have executed definitive contracts for the wellhead sale of their gas to interstate pipeline companies in the lower 48 states and will have sought certificates for such sales under Section 7(c) of the Natural Gas Act.

5. The purchasers of North Slope gas, having by reason thereof the greatest interest in a delivery system for that gas, will become the principal subscribers to the Project's equity, and their willingness to make such a contribution will be recognized in the course of the certification of the North Slope gas purchase contracts.

6. The equity participants will have reached preliminary agreement among themselves as to their respective degrees of equity participation and negotiation of the terms and conditions of short term and long term debt financing will have commenced with representatives of commercial banks and institutional lenders.

7. A financing plan tentatively acceptable to equity participants and lenders alike will be agreed upon and tendered to the Commission for its review and approval. As a part of these financing arrangements, shippers and sponsors will have conditionally executed or will have agreed to execute various documents, including:

AGO 667973

(a) A service agreement, or a letter evidencing an intent to execute a service agreement, under the all-events cost of service transportation tariff of El Paso Alaska.

(b) An agreement by sponsors to make a specified dollar amount equity contribution to the El Paso Alaska Project.

(c) An agreement by sponsors, satisfactory to lenders, to contribute a pro rata share of a specified dollar amount of any additional funds needed during the construction period to provide for cost overruns.

(d) An agreement between shippers and El Paso Alaska, satisfactory to the Project's investors, by which the shippers, pro rata, will assure that sufficient funds will be made available to provide for Investment Recovery in the event the Project is aborted for any reason before completion.

8. Shippers of Alaskan Gas will have filed applications under Section 7(c) of the Act to add such facilities as are necessary in the lower 48 states to take delivery of their gas from the facilities available to the El Paso Alaska Project and each will have also filed applications with the FPC for appropriate Purchased Gas Adjustment Clause (PGAC) modifications sufficient to permit each to recoup in a timely manner all costs which may be incurred by reason of its agreement with El Paso Alaska to provide for Investment Recovery.

9. In connection with the applications specified in 8, supra, the shippers will each seek and obtain authority to treat its purchased supply of North Slope gas on a rolled-in basis as a part of its total system gas supply to be allocated and sold to its customers in accordance with existing contracts and the FPC curtailment plan prescribed for each.

10. Notice and opportunity to be heard shall have been afforded to all affected state regulatory commissions and to all affected distributor-customers of each shipper prior to the approval of the various tariff proposals.

11. The Commission will (i) issue final certificates to El Paso Alaska and each of the shippers; (ii) approve the financing plan submitted and recognize that its implementation is required by the present and future public convenience and necessity, and (iii) approve both the methods by which the shippers will wholesale their Alaskan gas and the tariff modifications proposed.

AGO 667974

By virtue of the exercise of this final authority, all expenditures subsequently incurred by the shippers in the discharge of their respective obligations to El Paso Alaska, including specifically the obligation to make payment in the event of the failure of the project, will be reflected in the shipper's rates on file with the FPC and will be collected by each of them in its sales of natural gas to customers under existing sales contracts.

IV. THE FPC POSSESSES THE AUTHORITY TO ACCOMPLISH THE GOALS NECESSARY TO ASSURE PRIVATE SECTOR FINANCING OF THE EL PASO ALASKA PROJECT

So that the enormous sums necessary to finance the construction of the El Paso Alaska Project may be forthcoming from the private investment community, three purposes must be accomplished:

1. A mechanism must be put in place which will generate sufficient revenues adequate to provide for Investment Recovery even should the Project fail of completion or operation. Without the assurance of such revenue, investment counsellors are unanimous in stating that the project cannot be privately financed.

2. The mechanism once adopted by this Commission must be effective to assure the collection of revenue through to the ultimate consumer without fear of state regulatory interference.

3. Once investment is made in reliance upon the effectiveness of the mechanism for the collection of revenue, it must be inviolate to arbitrary change.

These ends are attained by the approval of changes in the presently filed tariffs of interstate transmission companies by which such companies, as shippers of Alaskan gas, would be permitted to flow through to their customers charges which arise as a result of their Alaskan gas agreements. These changes would be found at the time of the certification of the Project to be just and reasonable and required to enable the Alaskan gas delivery system to be built. The required tariff change would authorize a shipper to increase its rates for flowing gas to the extent necessary to provide for debt service and operating expenses in the event of outage, and to provide for Investment Recovery in the event of project abandonment.

AGO 667975

1. The Natural Gas Act Contains a General Grant of Authority by Which the FPC May Accomplish Its Purposes

Section 1(b) of the Natural Gas Act is a grant to this Commission of jurisdiction over the "transportation of natural gas in interstate commerce" and "the sale in interstate commerce of natural gas for resale." Sections 4 and 5 of the Natural Gas Act grant exclusive jurisdiction to the Commission (a) to regulate charges for the transportation of gas in interstate commerce and (b) to fix the price at which gas may be sold in interstate commerce for resale. Section 16 grants the Commission "authority to perform any and all acts, and to prescribe, issue, make, and amend and rescind such orders, rules and regulations as it may find necessary or appropriate to carry out the provisions of this Act."

The Supreme Court has consistently accorded this Commission broad authority under the Natural Gas Act to deal with the jurisdictional transportation and sale of gas in an effective and comprehensive manner, and has emphasized the desirability and even the necessity for novel approaches, suited to the problems of the day, in the exercise of this authority. This generous interpretation of its authority has been particularly pronounced in recent instances where this Commission has acted out of a need to deal with the problems posed by the shortage of natural gas. Consistent with this need, the Supreme Court and the Courts of Appeal have appr ved a variety of FPC orders which, while only indirectly related to the actual transportation and sale of natural gas, are nonetheless appropriate measures to deal comprehensively with the problems posed by the delivery of gas from field to burner tip.

The use to which gas was put received the Supreme Court's attention in FPC v. Transcontinental Gas Pipe Line Corp., 365 U.S. 1 (1961). The Commission had denied Transco's application to transport gas from Louisiana to Consolidated Edison in New York for use as boiler fuel. Transco had proposed to make a direct sale of the gas to ConEd and argued that as a direct sale the transportation was beyond all FPC jurisdiction including consideration of either end use or price. The Commission denied certification for two reasons: the end use of the gas was perceived as an inferior one considering the need to conserve natural gas and the inflated price paid by ConEd was seen as having an undesirable inflationary effect on future sales of both jurisdictional and non-jurisdictional gas. The Court upheld the Commission's judgment citing the FPC's "wide range of discretionary authority" which obligated it "to bring to bear upon the problem an

AGO 667976

expert judgment and to determine from its analysis of the total situation on which side of the controversy the public interest lies." Id. at 7. The Court concluded that the Act, while leaving much authority over conservation to the states, did not preclude the Commission from acting in all matters of conservation, especially given the impracticality of uniform and effective state regulation.

In Permian Basin Area Rate Cases, 390 U.S. 747 (1968), the Court endorsed the Commission's experiment with area pricing designed to encourage exploration and prevent excessive producer profits. It reiterated that "the breadth and complexity of the Commission's responsibilities demand that it be given every reasonable opportunity to formulate methods of regulation appropriate to the solution of its intensely practical difficulties." Id. at 790. The Court reaffirmed Hope's teaching 15/ that the Court need not examine each detail of the Commission's order, but must only decide if the "total effect" of the order is "just and reasonable" under the Act. Id. at 767. It found no bar in the Act to the use of area rates, and in so doing held the Commission's authority to be co-extensive with the broad purposes of the Act:

> The Act was intended to create, through the exercise of the national power over interstate commerce, "an agency for regulating the wholesale distribution to public service companies of natural gas moving interstate"; it was for this purpose expected to "balanc[e] ... the investor and the consumer interests." This Court has repeatedly held that the width of administrative authority must be measured in part by the purposes for which it was conferred. Surely the Commission's broad responsibilities therefore demand a generous construction of its statutory authority. Id. at 776 (citations omitted).

The Court derived "additional assistance" for its conclusion that the Commission was due a "generous construction of its statutory authority" from the Commission's "power [under § 16] to perform any and all acts, and to prescribe ... such orders,

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15/ FPC v. Hope Natural Gas Co., 320 U.S. 591, 602 (1944).

AGO 667977

rules and regulations as it may find necessary or appropriate to carry out the provisions" of the Act. 16/

The Court continued that such "generous construction"

> [I]s consistent with the view of administrative rate making uniformly taken by this Court .... [R]ate-making agencies are not bound to the service of any single regulatory formula; they are permitted, unless their statutory authority otherwise plainly indicates, "to make the pragmatic adjustments which may be called for by particular circumstances."
>
> We are unwilling, in the circumstances now presented, to depart from these principles. The Commission has asserted, and the history of producer regulation has confirmed, that the ultimate achievement of the Commission's regulatory purposes may easily depend upon the contrivance of more expeditious administrative methods. The Commission believes that the elements of such methods may be found in area proceedings. "[C]onsiderations of feasibility and practicality are certainly germane" to the issues before us. We cannot, in these circumstances, conclude that Congress has given authority inadequate to achieve with reasonable effectiveness the purposes for which it has acted. Id. at 776-777 (citations omitted).

The unusual deference accorded to this Commission's expertise by the Court is illustrated by the fact that the rates were set in 1965 to encourage exploration but were applied

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16/ Section 16 is not to be read simply as a means of arranging the Commission's procedural affairs. It authorizes the agency "to use means of regulation not spelled out in detail, provided the agency's action conforms with the purposes and policies of Congress and does not contravene any terms of the Act." Niagara Mohawk Power Corp. v. FPC, 379 F.2d 153, 158 (D.C. Cir. 1967); Mesa Petroleum Co. v. FPC, 441 F.2d 182, 187 (5th Cir. 1971); see also FPC v. Louisiana Power & Light Co., 406 U.S. 621 (1972).

retroactively to gas committed to interstate commerce since January 1, 1961. "It is difficult to see," the Court admitted, "how the higher rate could reasonably have been expected to encourage, retrospectively, exploration and production that had already occurred." Id. at 798. Nonetheless, the Court respected this Commission's belief that its initial statement of policy, issued as it began area rate hearings in 1960, "had created reasonable expectations among producers that higher rates would thereafter be permitted" and the Commission's conclusion that it would be unfair to disappoint the producers. This factor, and the need to preserve confidence in interstate prices, was sufficient to justify the Commission's retroactive application of area rates. Id. at 798-99. The Court has repeatedly shown its disinterest in setting aside parts of orders and expressed its concern only with the "total effect of the rate order." 390 U.S. at 767. As it said in Permian, "Although the Commission's position might at several places usefully be clarified, the producers have not satisfied the 'heavy burden' placed on those who would set aside its decisions." 390 U.S. at 812-13, quoting Hope Natural Gas, supra.

The Commission's authority to employ pricing mechanisms to encourage new production received approbation in Mobil Oil Corp. v. FPC, 417 U.S. 283 (1974). There the Commission fixed area rates for the southern Louisiana area, and set rates for "new" gas which were substantially higher than those set for "flowing" gas. The court rejected a challenge to these higher rates as being predicated on an "erroneously limited view of the permissible range of the Commission's authority to employ price to encourage exploration or production." 417 U.S. at 319. The Commission's decision to set higher prices for new gas was not based on any change in producing conditions, but rather on the need for new revenues to expand future production. The court ratified this approach.

> Its justification here for increasing the price of flowing or first vintage gas was not that new evidence showed that the conditions of producing that gas differed from the conditions found in the 1968 opinion, but, as the Commission frankly acknowledged, new revenues were deemed necessary to expand future production. As between placing the burden of that expansion on new or second vintage gas alone or spreading it over both old and new gas, it judged the latter more equitable and

more likely to lead to the immediately increased capital necessary in the face of a crisis. We see nothing in New York's argument to suggest that the Commission could not--in view of its finding that increased revenues were necessary--place the burden of those payments on all users rather than on those alone who purchased gas in the future. Indeed, it is worth noting that the Commission's rate orders in Permian included in the cost components of gas a noncost price element for future expansion of exploratory effort.

In this situation, the Commission could reasonably choose its formula as an appropriate mechanism for protecting the public interest. And, against the background of a serious and growing domestic gas shortage, the Court of Appeals could certainly conclude that the Commission might reasonably decide that, as compared with adjustments in the rate ceilings for gas producers to induce more exploration and production, its responsibility to maintain adequate supplies at the lowest reasonable rate could better be discharged by means of the contingent escalation and refund credit provisions. We therefore agree with the Court of Appeals' holding that "these periodic escalations were a proper subject for the exercise of administrative discretion and clearly fall within that 'zone of reasonableness' which we allow FPC on review." Id. at 320-321.

In FPC v. Texaco, Inc., 417 U.S. 380 (1974), the court endorsed yet another FPC concept for ensuring an adequate gas supply by encouraging the exploratory efforts of small producers. In this instance, the Commission proposed to allow small producers to sell at the price the market would bear, with the Commission regulating those prices only indirectly in the course of regulating the rates of pipelines and of the large producers who purchase gas from small producers. Though sending the actual order back to the FPC for clarification, the court approved the plan in principle after concluding simply that there was "nothing in the Act which requires the Commission to fix the rates chargeable by small producers by orders directly addressed to them or which proscribes the kind of indirect regulation undertaken here." Id. at 387. While all rates must be just

AGO 667980

and reasonable, the Act "does not specify the means by which that regulatory prescription is to be attained." Id. Most recently, the Court reversed the District of Columbia Circuit and, reiterating Permian's language of "generous statutory authority," upheld the FPC's power to pre-grant abandonment at the time it certificates sales under § 7. FPC v. Moss, 44 U.S.L.W. 4278 (3/3/76).

The foregoing cases sketch at least in outline the expansive scope of FPC authority in certification and rate-setting proceedings. They demonstrate the disinclination of the Supreme Court to fragment complex FPC decisions into permissible and impermissible facets and, show moreover, the readiness of the Court to find support in the Act for FPC inventiveness necessary to deal with current gas shortage problems.

Section 4 of the Natural Gas Act provides that all rates and charges made, demanded or received by a natural gas company "for or in connection with" the transportation or sale of jurisdictional gas shall be just and reasonable, and that, upon the filing of a new schedule with the Commission, the Commission is authorized, after hearing, to "make such orders with reference thereto as would be proper in a proceeding initiated after it [i.e., the new schedule] had become effective." Section 5 of the Act authorizes the Commission to "determine the just and reasonable rate, charge, classification, rule, regulation, practice or contract to be thereafter observed and in force, and [to] fix the same by order."

Because the shippers' proposed tariff revisions will permit the flow-through of charges imposed by reason of interruptions of service or abandonment of the Alaska Project, such charges will be "in connection with" the jurisdictional transportation and sale of natural gas, and thus authorized under the Act. The power to regulate transportation necessarily includes, in any "comprehensive and effective regulatory scheme," 17/ the power to deal with the consequences of failure of that transportation. In order to fulfill its statutory duty to ensure

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17/ Panhandle Eastern Pipe Line Co. v. PSC, 332 U.S. 507, 520 (1947).

effective transportation the Commission may and indeed must provide for abandonment and interruption of service. 18/

The concept that failure of transportation must be a necessary aspect of the FPC's transportation jurisdiction is not a novel one, nor without judicial approval. As early as 1947, the Supreme Court explicitly recognized the nexus. In Panhandle Eastern Pipe Line Co. v. PSC of Indiana, 332 U.S. 507 (1947), the Court upheld state authority under the Act to regulate rates of direct sales in interstate commerce. To the pipeline's protest that this would bring about conflicting state regulations and conflicting state-federal actions "particularly in relation to curtailment of service when weather conditions or others require it," the Court answered that in the event of such conflict, "The matter of interrupting service is one largely related, as appellees say, to transportation and thus within the jurisdiction of the Federal Power Commission to control, in accommodation of any conflicting interests among various states." Id. at 523. See FPC v. Transcontinental Gas Pipe Line Corp., supra, at 27-28.

The Supreme Court reiterated its view that the Commission has pervasive authority over the transportation of natural gas in FPC v. Louisiana Power & Light Co., 406 U.S. 621 (1972). The question presented was whether the Commission had jurisdiction to curtail direct-sale deliveries in times of natural gas shortage. Since curtailment is a pro tanto non-delivery, and thus by extension a "non-transportation" and "non-sale" of gas, the Court's decision that direct-sale curtailments came under the aegis of the Commission's transportation jurisdiction is directly applicable here. The Court, reversing the Fifth Circuit, rejected the argument of Louisiana Power & Light, a direct-sale customer of a jurisdictional pipeline, that the direct-sale exemption in § 1(b) of the Act "creates a complete exemption of direct sales from curtailment regulations." "The answer," said the Court,

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18/ The rate mechanism proposed is nothing more than the conventional and familiar "demand charge" long recognized as an appropriate component of rate-making to reflect "costs which occur by reason of required plant and equipment capacity [which] must be available whether or not it is being used at any particular moment." Mississippi River Fuel Corp. v. FPC, 163 F.2d 433, 438 (D.C. Cir 1947).

[I]s that the prohibition of the proviso of § 1 (b) withheld from FPC only rate-setting authority with respect to direct sales. Curtailment regulations are not rate-setting regulations but regulations of the "transportation" of natural gas and this within FPC jurisdiction under the opening sentence of § 1 (b) that "[t]he provisions of this Act shall apply to the transportation of natural gas in interstate commerce. . . ." 406 U.S. at 637-638 (emphasis in original)

* * *

Since curtailment programs fall within the FPC's responsibilities under the head of its "transportation" jurisdiction, the Commission must possess broad powers to devise effective means to meet these responsibilities. FPC and other agencies created to protect the public interest must be free, "within the ambit of their statutory authority, to make the pragmatic adjustments which may be called for by particular circumstances." FPC v Natural Gas Pipeline Co., 315 U.S. 575, 586 (1942). Section 16 of the Act assures the FPC the necessary degree of flexibility in providing that:

> "The Commission shall have power to perform any and all acts, and to prescribe, issue, make, amend, and rescind such orders, rules, and regulations as it may find necessary or appropriate to carry out the provisions of this Act. . . ." 15 U.S.C. § 717o.

In applying this section, we have held that "the width of administrative authority must be measured in part by the purposes for which it was conferred . . . . Surely the Commission's broad responsibilities therefore demand a generous construction of its statutory authority." Permian Basin Area Rate Cases, 390 U.S. 747, 776 (1968); see United Gas Pipe Line Co. v. FPC, 385 U.S. 83, 89-90 (1966). Id. at 642

AGO 667983

The Commission had seen fit to use the provisions of Section 4 of the Act to effectuate its curtailment authority. It had required all pipelines facing supply shortages to file reasonable curtailment schemes as amendments to their existing tariffs. The Court approved this unusual usage of Section 4 authority and answering the argument that only Section 7(b) abandonment jurisdiction was available to the Commission, said, "Since § 4(b) deals with 'service,' the FPC may invoke it to deal with curtailment programs, whether or not it could also invoke § 7 for the purpose." Id. at 646.

The commodious grant of transportation jurisdiction which Louisiana Power affords the Commission fully encompasses the exercise of the authority which we seek--the authorization to amend existing tariffs in the exercise of Section 7 and Section 4 jurisdiction to permit the flow-through of charges necessary to finance an Alaskan gas transportation system.

2. The Authority to Track, Through Existing Tariffs, the Service Charges Which Might be Necessitated if the Alaskan Project Fails Is Clear

Since this Commission possesses wide authority to prescribe rules and rates for the transportation and sale of gas in interstate commerce, it clearly possesses as an incidental right the power to allow for the collection of service charges in the event the transportation system fails--if that collection is a necessary condition for providing for the financing of the transportation system in the first instance. This is the teaching of the opinions dealing with permission to rate base advance payments made by a pipeline to producers for gas to be delivered in the future from new exploration and development. See Public Service Comm'n of New York v. FPC, 467 F.2d 361 (D.C. Cir. 1972); Public Service Comm'n of New York v. FPC., 511 F.2d 338 (D.C. Cir. 1975). The Court of Appeals said of the advance payment program, 467 F.2d at 369-370:

> [W]e are convinced that the "total effect of the rate order" is a reasonable attempt to increase the available capital for development of gas production, which, under the circumstances of the present gas shortage, we find to be a valid exercise of the discretion of the FPC.

AGO 667984

By analogy, this Commission could authorize a present surcharge to the expected consumers of Prudhoe Bay gas for the purpose of creating a sinking fund sufficient to pay off investors in an Alaskan gas delivery system, if it found that such a fund was necessary to attract the capital necessary to construct the project. If it possesses such authority, as clearly it does under the "advance payments" cases, no reason suggests itself as to why it could not adopt the proposal we put forth, which has a lesser impact on the consumer--the allowance of tariff modifications which would permit Alaskan gas shippers to track through their rates the increased costs which they must bear only in the unlikely event of project interruption or non-completion.

3. The Several States Are Bound to Allow for the Collection From Consumers of Service Charges Required for Alaskan Gas Service

Both the distributing companies that may be subject to a shipper's additional charge on account of the failure of Alaskan gas service and state regulatory commissions having jurisdiction over such companies are precluded from attacking in any other forum the justness and reasonableness of this service charge.

Subject only to the judicial review afforded by the Natural Gas Act, 19/ rates fixed by this Commission for the transportation or sale of gas under its jurisdiction are conclusively presumed to be just and reasonable. Their justness and reasonableness may not be collaterally attacked in any other forum. Montana-Dakota Utilities Co. v. Northwestern Public Service Co., 341 U.S. 246 (1951). The holding of that case which was decided under the Federal Power Act 20/ is a critical underpinning to the position we espouse.

19/ See Section 19(b).

20/ "The pertinent provisions of the Federal Power Act 'are in all material respects' substantially identical to the equivalent provisions of the Natural Gas Act." Permian Basin Area Rate Cases, 390 U.S. 747, 821 (1968), quoting FPC v. Sierra Pacific Power Co., 350 U.S. 348, 353 (1956).

AGO 667985

In that case an interstate electric utility sued another utility with whom the plaintiff had exchanged electric energy over a period of years. During the period of exchange the companies had a director interlock. Upon termination of the interlock the former subservient corporation sued the dominant, claiming that the rates it had been forced to pay the dominant, and the payments it had received from the dominant were unreasonable and resulted from the impermissible interlock. In sum, it contended that the Commission's approval of the rates paid and collected was the result of fraud practiced upon the plaintiff. The Supreme Court found that no cognizable cause of action was stated. The Court said of the subservient utility:

> It cannot litigate in a judicial forum its general right to a reasonable rate, ignoring the qualification that it shall be made specific only by exercise of the Commission's judgment, in which there is some considerable element of discretion. It can claim no rate as a legal right that is other than the filed rate, whether fixed or merely accepted by the Commission, and not even a court can authorize commerce in the commodity on other terms.
>
> We hold that the right to a reasonable rate is the right to the rate which the Commission files or fixes, and that, except for review of the Commission's orders, the courts can assume no right to a different one on the ground that, in its opinion, it is the only or the more reasonable one. 341 U.S. at 251-252. 21/

Clearly, then, the states are barred from questioning in subsequent proceedings rates which utilities under their jurisdiction must pay for their interstate purchases of gas. This

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21/ This concept, that rates once fixed by federal regulatory agencies are conclusively presumed just and reasonable and cannot otherwise be challenged, is an old, firmly entrenched and necessary doctrine. See Texas and Pacific R.R. Co. v. Abilene Cotton Oil Co., 204 U.S. 426 (1907); Keogh v. Chicago and Northwestern Ry. Co., 260 U.S. 156 (1922); Georgia v. Pennsylvania R. Co., 324 U.S. 439 (1945); McLeran v. El Paso Natural Gas Co., 357 F. Supp. 329 (S.D. Tex. 1972).

is an area in which the states may not interfere. The law was plainly stated by a three-judge court in FPC v. Corporation Comm'n of Oklahoma, 362 F. Supp. 522, 538 (W.D. Okla. 1973), affirmed, 415 U.S. 961 (1974).

> The State has no authority, either directly or indirectly, to fix the price at which natural gas is sold in interstate commerce.

Quoting from Northern Natural Gas Co. v. State Corporation Comm'n of Kansas, 372 U.S. 84, 91 (1963), the opinion went on to state:

> The federal regulatory scheme leaves no room either for direct state regulation of the prices or interstate wholesales of natural gas, Natural Gas Pipeline Co. v. Panoma Corp., 349 U.S. 44 or for state regulations which would indirectly achieve the same result.

This principle arises from the doctrine of federal supremacy. 22/

A state order which "affect(s) the ability of the Federal Power Commission to regulate comprehensively and effectively the transportation and sale of natural gas, and to achieve the uniformity of regulation which was an objective of the Natural Gas Act. . . . invalidly invade(s) the federal agency's exclusive domain." Northern Natural Gas Co. v. State Corporation Comm'n of Kansas, supra at 91-92.

State orders which might impair the effective implementation of federal regulatory purposes "must be declared a nullity in order to assure the effectuation of the comprehensive federal regulation ordained by Congress." Id. at 92.

22/ "This Constitution, and the Laws of the United States which shall be made in Pursuance thereof . . . shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby; any Thing in the Constitution or Laws of any State to the Contrary notwithstanding." U.S. Const. Art. VI, cl. 2.

AGO 667987

As we have previously set out, 23/ filed tariffs approved by this Commission are conclusively presumed just and reasonable in other forums. As a consequence, the collection by a shipper of its filed rate from its customers is beyond the challenge of any state regulatory commission.

When the inquiry shifts from whether a state may regulate what a distributor pays, to whether the state may regulate what the distributor charges when reselling the gas to its customers, different considerations come into play, but the result is the same. Under the due process clause, the states must allow the distributor to pass on to its customers the charges imposed by the tariff of its interstate supplier.

Although Section 1(b) of the Natural Gas Act states that the FPC's authority shall not extend to "local distribution of natural gas", 15 U.S.C. § 717b, the states are nevertheless bound by the Constitution's due process clause 24/ to allow regulated utilities to pass legitimate operating expenses on to their consumers.

The Alaskan gas service charge which the distributor would be required to pay to its pipeline supplier on account of the latter's filed rates is plainly an operating expense for that utility, and past practice and the law developed in this area lead one to the conclusion that allowance of flow-through can be expected.

The disallowance by a regulatory body of a legitimate expense is a violation of the due process clause of the Fourteenth Amendment to the Constitution. West Ohio Gas Co. v. Public Utilities Comm'n of Ohio, 294 U.S. 63 (1935). In that case the Ohio Public Utilities Commission disallowed a $12,000 advertising expense incurred by a utility to procure new business and allowed only $5,000 on the ground that the excess was "unnecessary and wasteful" and could not be passed

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23/ See discussion, supra, at pp. 21-22, concerning Montana-Dakota Utilities Co. v. Northwestern Public Service Co., 341 U.S. 246 (1951).

24/ ". . . nor shall any State deprive any person of . . . property, without due process of law . . . . U.S. Const. Amend. XIV.

AGO 667988

on to consumers. The Supreme Court found no evidence to support such a conclusion and restored the original amount, holding that good faith on the part of management is to be presumed: "In the absence of a showing of inefficiency or improvidence, a court will not substitute its judgment for (management's) as to the measure of a prudent outlay." Id. at 72. The Court held that the state commission's rate "must give heed to all legitimate expenses that will be charged upon income during the term of regulation." Id. at 74. Similarly, the utility claimed as an expense the loss of 9 percent of its gas as a result of leakage. The state commission allowed for only a 7 percent loss. The Supreme Court found no evidence of fault or inefficiency to justify the modification. Such a modification in the absence of such evidence was held to be arbitrary and a denial of due process. Id. at 68-69. See also 294 U.S. at 77 (Stone, C. J., concurring).

As the District of Columbia Circuit said in setting aside a FPC disallowance of costs,

> Expenses (using that term in its broad sense to include not only operating expenses but depreciation and taxes) are facts. They are to be ascertained, not created, by the regulatory authorities. If properly incurred, they must be allowed as part of the composition of rates. Otherwise, the so-called allowance of a return upon the investment, being an amount over and above expenses, would be a farce.
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> ***
>
> [It is an] obvious basic premise [that a] rate order which does not provide for proper allowable expenses, taxes, depreciation and return, is unfair, unreasonable and confiscatory. Mississippi River Fuel Corp. v. FPC, 163 F.2d 433, 437, 451 (D.C. Cir. 1947).

Only expenses which are attributable to "inefficiency" or "improvidence", Alabama PSC v. Southern Bell Tel. & Tel. Co., 42 So.2d 655, 84 P.U.R. (n.s.) 221 (Ala. 1949); waste or negligence, West Ohio Gas Co. v. PUC, 294 U.S. 63 (1935); or resulting from an abuse of managerial discretion, Re New England Tel. & Tel. Co., 66 A.2d 135, 79 P.U.R. (n.s.) 508 (Vt. 1949), are disallowed.

AGO 667989

There can be no challenge to the legitimacy and propriety of an Alaskan gas service charge. If the charge is authorized in a tariff approved by this Commission, it is conclusively established as just and reasonable. Montana-Dakota Utilities Co. v. Northwestern Public Service Co. supra. Rates established by a state regulatory body for utilities under its jurisdiction must allow for such an expense. The service charge in these circumstances resembles the treatment which must be accorded a federal tax imposed upon the utility. "Normally included as a cost of service is a proper allowance for taxes, including Federal income taxes." FPC v. United Gas Pipeline Co. 386 U.S. 237, 243 (1971).

In Galveston Electric Co. v. City of Galveston, 258 U.S. 388 (1922) and in Georgia Ry. and Power Co. v. Railroad Comm'n, 262 U.S. 625 (1923), the Supreme Court reinstated as an allowed expense federal income taxes which lower courts had disallowed on grounds that Congress had intended the expense of income taxes to be borne by the taxpayer utility, and not to be shifted to alternate consumers. The Supreme Court held simply that all taxes, state or federal, income or otherwise, "which would be payable if a fair return were earned are appropriate deductions." Galveston Electric Co. v. City of Galveston, supra at 399.

Just recently in City of Cleveland v. FPC, 525 F.2d 845 (D.C. Cir. 1976), the court rejected the city's contention that a state gross receipts tax levied against certain portions of the utility's operations was not properly allowable as an expense. The applicability of the tax to the utility was then being litigated in Ohio courts. The utility was paying the tax and was required to continue until Ohio authority ruled to the contrary. The court held that the amount of tax paid was properly allowable as an expense. Id. at 850. Cf. Driscoll v. Edison Light & Power Co., 307 U.S. 104 (1939) (expenses incurred in unsuccessful defense of existing rate structure before a public utilities commission are allowable expenses).

A distributor customer of an Alaskan gas shipper, required to pay that shipper's Alaskan service charge, must be permitted to pass this charge along to its own customers. A state regulatory body cannot disallow such payments except under pain of being found to have acted arbitrarily. Any other treatment, by "not provid[ing] for proper allowable expenses" would be "unfair, unreasonable and confiscatory." Mississippi River Fuel Corp. v. FPC, supra. "[U]nder the due process clause of the Constitution no public utility could be compelled to absorb its own costs and not pass them on to the consumer." PSC of New York v. FPC, 467 F.2d 361, 370 (D.C. Cir. 1972).

4. The Commission is Bound to Continue for the Duration of the Risk the Approved Tariff Provisions

"The skepticism with which investors regard regulatory authorities" 25/ has prompted financial advisors for Arctic Gas to suggest that the risk of non-completion and prolonged interruption be guaranteed by some form of governmental insurance. The skepticism which is expressed is that the approval by this Commission of tariffs containing provisions assuring investors of a return of their investment in the event of the failure of the project will not be long observed but that the issue of the fairness of the provision will be revisited by some subsequent Commission. The Arctic Gas advisors fear there can be no guarantee that the required tariff provisions will remain effective.

It is our submission that this Commission has the statutory authority permanently to adopt such tariff provisions and that, absent changed circumstances, that approval cannot later be withdrawn. So to do would violate Section 5 of the Natural Gas Act and the due process clause of the United States Constitution. The recent opinion in Pacific Gas Transmission Co. v. FPC, No. 74-2046 (D.C. Cir. 4/9/76) does not in our opinion alter this submission. The court in that case specifically noted the Administrative Law Judge's finding that there had been since the approval of the Pacific Gas Transmission's cost of service tariff "a 'change of considerable significance and unquestionable certainty in the ground rules' under which the tariff had originally been approved." This change was the four-fold price increase ordered by Canadian authorities for Canadian export gas sold to Pacific Gas Transmission Company.

Once it is found by the Commission as a fact, in the course of its consideration of the Project's financing, that the funds necessary to provide for the construction of the El Paso Alaska Project will not be available unless investors can be assured that Commission approval is given for tariff provisions which would permit the collection of the necessary revenue to provide for Investment Recovery in the event of the failure of the project, the logic of the solution is readily apparent. The Commission, under that predicate, would be enabled to view the required tariff provisions as an integral

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25/ Testimony of Raymond B. Gary, Tr. 18,054.

AGO 667991

part of the application for a certificate and as a necessary assurance to the issuance of the certificate. The Commission would then be enabled to authorize the construction and operation of the project only if it also found that the necessary tariff provisions were required by the overall present and future public convenience and necessity. 26/ Charges for service are a proper subject for consideration in a certificate proceeding. See Atlantic Refining Co. v. Public Service Comm'n, 360 U.S. 378 (1959); Henry v. FPC, No. 73-2090 (D. C. Cir. 7/28/75).

The issuance of a final certificate to El Paso would contain the clear expression that the proposed tariff provision is required not only by the present but also by future public convenience and necessity.

Although this Commission may be of the opinion that it is unable to bind a future Commission not to invoke the prospective operation of Section 5 of the Natural Gas Act, 27/ we do not believe that Section 5 poses any real threat to the permanence of approval given to the requested tariff provisions. Section 5 does not authorize the Commission arbitrarily to change any filed tariff theretofore found to be just and reasonable. Any change to be worked under Section 5 must be based on a hearing record and supported by substantial evidence. The Commission's authority under Section 5 requires a "two-step adjudicatory process."

26/ Section 7(e) of the Natural Gas Act permits certification of a project such as that proposed by El Paso Alaska only if the Commission finds that it "is or will be required by the present or future public convenience and necessity."

27/ See Order No. 455, 48 FPC 218, 223:

> We cannot bind a future commission not to invoke the prospective operation of Section 5, nor do we attempt to do so. We do, however, announce our policy to examine the justness and reasonableness of proposed rates in Section 7 proceedings instituted under this Section, thus avoiding the uncertainty of reserving rate determinations for subsequent Section 4 or Section 5 action.

AGO 667992

> First, the Commission must find that an existing condition is unjust or discriminatory; second, the Commission must prescribe the remedy for that condition. Each step requires the Commission to draw a legal conclusion, viz: illegality of an existing condition and the justness and reasonableness of the remedy. American Smelting & Refining Co. v FPC, 494 F.2d 925, 940-41 (D.C. Cir. 1974).

Once a just and reasonable rate has been established, the Commission is not at liberty to allow change in that rate "without changes in circumstance." Southern Louisiana Area Rate Cases v. FPC, 428 F.2d 407, 429 (5th Cir. 1970), cert. denied, 400 U.S. 950 (1970).

While the Commission has considerable discretion under Section 5 to initiate inquiries into existing rates, once a judgment has been made as to the reasonableness of a particular tariff provision and especially when large sums of money have been committed to a project in reliance upon those provisions, that decision may not be reversed -- absent some new circumstance -- without offending traditional considerations of equity and due process.

> [A] decision may not be repudiated for the sole purpose of applying some quirk or change in administrative policy, particularly where, as here, considerable funds have been expended in justifiable reliance upon the earlier ruling. Chapman v. El Paso Natural Gas Co., 204 F.2d 46, 53-54 (D.C. Cir. 1953).

While we cannot dismiss out of hand the threat which the exercise of Section 5 authority would give to the Commission to change its mind concerning the approval of the required tariff provisions, it poses no practical threat to the guarantee of permanence required by the investors in the El Paso Alaska Project. The required tariff provisions are designed to repay investment in the event of project failure. If the condition occurs against which the tariff provision was designed, it cannot be argued logically that this is a change of circumstance. It is not possible presently to imagine any change in circumstance which would justify abrogation of a tariff provision found to be essential to

cert. denied, 419 U.S. 834 (1974). 29/ See also Consumers Union of U.S. Inc. v. FPC, 510 F.2d 656, 659 (D.C. Cir. 1974).

We propose, therefore, that the certificate orders themselves contain express provisions approving the necessary tariff provisions as essential conditions to implementation of the transportation and sales authorized.

Under these circumstances, tariff provisions necessarily required in order to finance a transportation system which are found to be reasonable and in the public interest and expressly recognized as integral to the certificating process could not be abrogated without in effect abrogating the certificate itself--a power which the Commission does not possess. No express power is reserved to the Commission in the Natural Gas Act to amend or alter a final certificate once issued. Cf. United States v. Seatrain Lines, Inc., 329 U.S. 424, 432 (1947). See also, CAB v. Delta Air Lines, Inc., 367 U.S. 316 (1961).

Moreover, the abrogation of the required tariff provisions without evidence of changed circumstances and thus changed equities would be an exercise of arbitrary conduct forbidden by the due process clause of the United States Constitution. In City of Chicago v. FPC, 385 F.2d 629, 637 (D.C. Cir. 1967), the court put the proposition clearly:

29/ The Court in Distrigas said:

> Thus should the Commission eventually decide that those facilities and sales proposed in Distrigas' original application do not now merit Section 7 certification, it would, in our view, be under some burden to justify its decision, on the basis of altered circumstances or otherwise. Moreover, in denying Distrigas' application for rehearing, the Commission acknowledged "the problems and equities associated with application of a change of [jurisdictional] policy." Given this acknowledgment, we cannot now assume that the Commission would, in applying Section 7 requirements to Distrigas, fail to abide the principles of fairness implicit in all standards governing exercise of regulatory power. See Amalgamated Meat Cutters v. Connally, 337 F. Supp. 737, 755-58 (D.D.C. 1971) (three-judge court) (opinion by Leventhal, Circuit Judge).

AGO 667994

financing and determined by the Commission to be in the present and future public interest. 28/

The ability of this Commission to bind a future Commission in a determination of what benefits the future public convenience and necessity has been established by the Supreme Court's opinion in FPC v. Moss, 44 U.S.L.W. 4278, (3/3/76). That case gave final judicial approval to all aspects of the Commission's Order No. 455 and in particular, approved the pre-granting of abandonment authorization as an integral part of a Section 7(c) certification proceeding. The procedure which was authorized by Order No. 455 permitted this Commission to "determine in a single proceeding whether the 'public convenience and necessity' under § 7(c) of the Act, 15 U.S.C. § 717f(c) warrants the issurance of a certificate authorizing the sale and whether the rates called for by the contract are 'just and reasonable' under § 4(a), 15 U.S.C. § 717c(a)." 44 U.S.L.W. at 4279.

We envision a similar one-step procedure -- the exercise by this Commission of its certification authority under Section 7(c) and its rate-making authority under Section 4. The final certificates and the necessary tariff provisions for El Paso Alaska and the shippers would be approved together upon consideration of the total financing plans submitted by El Paso and the shippers. The Section 7(c) certificates of El Paso and of the shippers would issue upon an express finding that the tariff provisions were necessary to ensure construction of the project and that the project was required by the present and future public convenience and necessity. The Commission's order would acknowledge that funds would be advanced in reliance upon the continued effectiveness of the required tariff provisions in each of the shippers' tariffs and in that of El Paso Alaska. Under these circumstances, no change in policy or change of mind by a future Commission would be adequate grounds for disturbing this finding, absent evidence of a change in the nature of the problem or a change of circumstances so considerable as to make it inequitable to adhere to the filed tariff. See Distrigas Corp. v. FPC, 495 F.2d 1057, 1065 (D.C. Cir. 1974),

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28/ This is not to say that the Commission would be without authority to institute, upon project failure, a Section 5 proceeding to disallow costs imprudently incurred. The standards for such disallowance are rigorous. See cases cited at p. 25, supra. This problem should be avoided by the adoption of audit procedures during the course of construction--a Staff recommendation which El Paso Alaska has endorsed.

AGO 667995

> The Rule of Law does not forbid an agency from modifying its regulatory policy, and the courts have upheld policy revision many times. Indeed one of the signal attributes of the administrative process is flexibility in reconsidering and reforming of policy. What is required by the Rule of Law is that agency policies and standards, whether or not modifications of previous policies, be reasonable and non-discriminatory, and flow rationally from findings that are reasonable inferences from substantial evidence.
>
> There is perhaps one additional requirement inserted in case of change in policy, that the agency give due consideration to the equities, if any, arising out of commitments based on previous rulings. (Citations omitted)

Consequently, if the equities remain the same, one can confidently expect a court to reach the conclusion that the Commission would be estopped 'to change its position.' Presumably, if the equities change, the reason for the tariff provision would have also changed. As long as the risk which the tariff provisions were designed to avoid remain, it follows that there can be no change in the operative equities.

While the doctrine of estoppel has been historically held, as a general rule, not to be applicable to the United States or its agencies in their exercise of governmental power, there has been a significant shift in recent years toward the adoption of the principle of estoppel against the government in situations where the equities require its application. 30/ It has now been recognized that

> [E]stoppel is available as a defense against the government if the government's wrongful conduct threatens to work a serious injustice

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30/ See Emergence of an Equitable Doctrine of Estoppel Against The Government-The Oil Shale Cases, 46 U. Colo. L. Rev. 433 (1975).

AGO 667996

> and if the public's interest would not be unduly damaged by the imposition of estoppel. United States v. Lazy FC Ranch, 481 F.2d 985, 989 (9th Cir. 1973).

See also United States v. Wharton, 514 F.2d 406 (9th Cir. 1975); United States v. Georgia Pacific Co., 421 F.2d 92 (9th Cir. 1970). 31/

The ultimate and practical effect of the three concepts just examined is that (i) if the risk of non-payment to the investors remains over the years and (ii) if the investors have advanced moneys for the completion of the Alaska Project upon the express approval by the Commission of the service charge provisions in the applicable tariffs, designed as the means to provide for investment recovery, these provisions have a permanence guaranteed by the Natural Gas Act, the Federal Constitution and general principles of equity.

V. APPLICABILITY TO THE ARCTIC GAS PROJECT

We are not convinced that our proposed theory will materially assist Arctic Gas in its financing. The absence of constitutional principles in Canadian law equivalent to the supremacy clause and the due process clause of the U.S. Constitution and the lack of confidence in the legal restraints upon Canadian governmental bodies preclude any sanguine judgment that the necessary tariffs could be put into place and maintained in Canada. Arctic Gas might well require other procedures to assure its financeability.

VI. APPLICABILITY TO CALIFORNIA STATE REGULATION

Should Southern California Gas Company or Pacific Gas and Electric Company become purchasers of North Slope gas and shippers over the facilities of the El Paso Alaska Project, it will be necessary to the financing of the project to involve the California Public Utilities Commission. Investors as a condi-

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31/ Should overriding considerations of public interest prevent the operation of the equitable doctrine of estoppel against the FPC in the circumstances, the investors would possess a substantial claim that there has been a "taking" within the meaning of the Fifth Amendment's obligation to pay appropriate compensation. See Union Oil Co. of California v. Morton, 512 F.2d 743, 750-52 (9th Cir. 1975).

AGO 667997

tion to financing would undoubtedly require that Commission to approve the same tariff provisions as would be submitted to this Commission. If the CPUC should refuse, it is doubtful that any large percentage of North Slope gas could be sold to Southern California or Pacific Gas and Electric except as a resale from a transmission company under FPC jurisdiction. 32/

If the CPUC were to approve the necessary service charge provisions, the investors should feel assured that a subsequent Commission, differently constituted, would not be free to abrogate the approved tariff provisions. Under California law the equitable doctrine of estoppel applies to the state to the same extent as to a private person. City of Long Beach v. Mansell, 3 Cal. 3d 462, 476 P.2d 423 (1970). See also U.S. Fidelity & Guaranty Co. v. State Board of Equalization, 47 Cal. 2d 384, 303 P.2d 1034 (1956); Strong v. County of Santa Cruz, 15 Cal. 3d 720, 543 P.2d 264 (1975).

In addition, concepts of due process, including the right to appropriate compensation for a public taking, bind the state no less than the Federal Government. See West Ohio Gas Co. v. Public Utilities Comm'n of Ohio, supra; Miller v. Railroad Comm'n, 9 Cal. 2d 190, 70 P.2d 164 (1937).

VII. CONCLUSION

It is in the interest of United States fiscal policy that an Alaskan gas delivery system be financed in the private sector. Treasury witnesses have urged this Commission to develop techniques to accomplish this end. Tr. 18,897-18,900.

Once it is perceived that private financing to construct such a transportation system will not be forthcoming unless the investor can be assured that he will recover his investment in any event and that it is in the interest of the gas consumer that Alaskan gas be brought to market as soon as possible, the logic of the plan which El Paso Alaska sponsors is compelling.

This Commission clearly possesses the necessary statutory authority to permit the imposition of a charge on

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32/ In this manner, this Commission's approval of an Alaskan gas service charge would control.

AGO 667998

flowing gas to pay for the financing of an Alaskan gas delivery system if the condition requiring such a charge arises.

If such a charge is found to be just and reasonable, it will be and must be passed along to the ultimate customer without the need for further state regulatory approval.

Once authorized, and once financing has been put in place in reliance upon the charge, it may not be abrogated while the risk which it was designed to avoid remains to threaten the investor with the non-recovery of his investment.

Respectfully submitted,

EL PASO ALASKA COMPANY

By Paul R. Connolly
Paul R. Connolly
One of Counsel

AGO 667999

CERTIFICATE OF SERVICE

I hereby certify that I have this day caused a copy of the foregoing to be served upon each state regulatory commission in accordance with instructions of the Presiding Administrative Law Judge and upon each person designated on the restricted service list compiled by the Commission Secretary in the proceedings consolidated at Docket Nos. CP75-96, et al., in accordance with the requirements of Section 1.17 of the Rules of Practice and Procedure.

Dated at Washington, D. C. this 4th day of June, 1976.

Paul R. Connolly
One of Counsel

Prepared by El Paso

EL PASO NATURAL GAS COMPANY
NATURAL GAS CONSUMPTION FOR THOSE STATES SERVED WHOLLY OR IN PART
Calendar Year 1975

STATE	EPNG SALES	TOTAL CONSUMPTION	EPNG PERCENT OF TOTAL CONSUMPTION
Arizona	164,704 MMCF [1]	164,704 MMCF	100.0%
California	1,008,158 MMCF	1,807,604 MMCF	55.8%
Colorado	120 MMCF	290,798 MMCF	<1%
Nevada	28,590 MMCF	60,446 MMCF	47.3%
New Mexico	43,336 MMCF	167,220 MMCF	25.9%
Oklahoma	11 MMCF	639,575 MMCF	<1%
Texas	34,627 MMCF	3,911,026 MMCF	<1%
Utah	19 MMCF	123,098 MMCF	<1%

[1] MMCF = millions of cubic feet

NATURAL GAS CURTAILMENT IN 1976 AND ESTIMATED CURTAILMENT IN 1981

1976

	VOLUME	% OF REQUIREMENT
P 1	0	0
P 2	1,731 MMCF	1%
P 3	35,666 MMCF	16%
P 4	2,862 MMCF	21%
P 5	219,809 MMCF	65%
TOTAL	260,068 MMCF	19%

1981

	VOLUME	% OF REQUIREMENT
P 1	83,071 MMCF	15%
P 2	143,261 MMCF	52%
P 3	254,693 MMCF	100%
P 4	11,440 MMCF	100%
P 5	348,723 MMCF	100%
TOTAL	841,188 MMCF	58%

AGO 668001

El Paso ALASKA COMPANY

POUCH 7009
ANCHORAGE, ALASKA 99510

PHONE 907 279 6502

December 23, 1975

Dear Senator Rader,

John Bennett has asked that I send you the enclosed presentation by Mr. E. C. Phillips, President of Westcoast Transmission Company Limited. It was given recently before the Canadian House of Commons Standing Committee on National Resources and Public Works.

The major theme of Mr. Phillips' talk is that Canada must not act in haste on the matter of frontier gas transportation systems. He briefly discusses a forecasted shortage of natural gas in eastern Canada (by the winter of 1979-80) and projected curtailments of U. S. exports. Most importantly, however, Mr. Phillips suggests a nine-point program which would provide for the prudent development of Canada's frontier gas resources and at the same time satisfy both Canada's growing demands for natural gas and U. S. export contracts. The salient point endorses a recently announced offer by the Province of Alberta to provide interim supplies of natural gas from existing, proven Alberta reserves in order to meet immediate requirements, and thereby lessen the urgency of any decision on the Arctic Gas or Foothills projects. Such interim supplies would ultimately be repaid with frontier gas developed at a later time.

Very truly yours,

EL PASO ALASKA COMPANY

Michael C. Holland
Assistant to the Vice President

Enclosure

The Honorable John L. Rader
Box 2068
Anchorage, AK 99501

AGO 668002

WESTCOAST TRANSMISSION COMPANY LIMITED

PRESENTATION TO
HOUSE OF COMMONS STANDING COMMITTEE
ON NATIONAL RESOURCES AND PUBLIC WORKS

Ottawa, December 9, 1975

As representatives of Westcoast Transmission Company Limited, we are delighted, Mr. Chairman, to have this opportunity to discuss the subject of frontier natural gas. It is not overly dramatic to say this is the most complex and important project our regulators and legislators have considered in this century. As one of the three major Canadian gas pipelines, we are anxious to make whatever contribution we can to this great national undertaking. Our formal presentation will be very brief in order to permit sufficient time for questions from your committee.

With me today is our Senior Vice President, John Anderson. His principal responsibility is regulatory affairs, together with other legal matters and gas supply.

Merely as a word of qualification on this subject, Westcoast Transmission operates 2,242 miles of gas pipeline reaching from the U.S.A. border, through British Columbia into the Yukon and Northwest Territories. This system traverses residential areas, rich farmland, plains, foothills, mountains, Indian reserves, major rivers, muskeg and permafrost - the most challenging and varied pipeline operation in North America. We are the only pipeline in Canada operating gas processing plants. The one in Fort Nelson is the largest of its type in the world and the most northerly-situated in Canada, just 80 miles south of the Northwest Territories border.

With Alberta Gas Trunk Line, we are a sponsoring partner in Foothills Pipe Lines Ltd., familiarly known as the Maple Leaf Project to move Mackenzie Delta gas to southern Canada.

The thrust of our presentation today definitely will run counter to some popularly accepted views on the subject of frontier natural gas. We will develop the thesis that undue haste is both unnecessary and imprudent in this vital matter. There is a process by which interim arrangements can be made to supply gas, for both domestic and export requirements, while regulatory proceedings follow a cautious and deliberate pace. Our grestest concern in this matter is the extent to which the public and many in

AGO 668003

the industry have under-estimated the time required for all the complex regulatory, legislative, economic, contractual and physical factors to be harmonized in a fashion that will not impose serious social or economic hardship or injustice on any geographical region of Canada, or on any segment of its population. Consequently, it could be an unkindness, bordering on unintentional deception to leave the impression with the U.S.A. that they can safely defer their plans while waiting for Canada to select the best frontier pipeline route in this country's own public interest.

Unlike the detailed geological knowledge Westcoast has developed concerning natural gas reserves in British Columbia and Alberta, we do not have our own calculations of the frontier reserves. However, our examination of the submissions of others leads us to the conclusion that there are abundant reserves to be found both in the Mackenzie Delta and the High Arctic regions. There is no question that these reserves will be required in southern Canada, and the technology will be developed to permit their transport. The same applies to Alaska gas reserves and their movement to the lower 48 states.

Based on that confident expectation, Westcoast, with four U.S.A. partners, acquired Mountain Pacific Pipeline Ltd. in 1969 as a corporate vehicle for the purpose of moving Alaska gas to the Pacific coast of the U.S.A. Because of an abrupt change in the gas supply situation, we were compelled to change our priorities and consider moving Canadian frontier gas to Canadian consumers first.

To accomplish this new priority, we joined Foothills Pipe Lines Ltd. rather than its competitor, Canadian Arctic Gas Pipeline Limited. Our many reasons for that choice have been given in evidence before the National Energy Board. If we had to identify our most compelling reason, we would say it was the decision of CAGPL to bypass the existing gas transportation system in Alberta, which reaches within 80 miles of the Northwest Territories border, and to build 1,000 miles of all new right-of-way and pipeline through that province; and another 105 miles through southeastern British Columbia. In our view, as pipeliners and citizens, that departure from practical engineering and the easily avoidable duplication of services would impose a perpetual social and economic cost on Canadians that should be rejected by this nation.

Having earlier offered a word of caution regarding improvident haste in this matter, we should emphasize this advice is not indicative of any insensitivity to the urgent natural gas needs of either eastern Canada or our export customers in the United States.

Our own studies forecast a shortage in eastern Canada by the winter of 1979-80. As to U.S.A. requirements, our own system in British Columbia will curtail our export customers in the Pacific Northwest about 300 million cubic feet per day this winter, almost 40 percent of their contract. And we believe it was quite significant that the Minister of Energy, Mines and Resources recently limited his assurance of no curtailment of exports from other locations in Canada to just this winter. The gas export prospect for subsequent winters is not encouraging.

We recognize that the need to meet the imminent gas shortage in eastern Canada is of national importance. Similarly, we maintain it is in the Canadian public interest to remove the curtailment in the Pacific Northwest and to prevent the commencement of any curtailment of NEB approved gas exports to the mid-western and eastern United States. Without labouring the point, we cannot accept that tampering with Canada's gas export contracts worth about $1.6 billion per year will not be injurious to relations with Canada's most important trading partner, not to mention the negative effect on our balance of payments.

Fortunately, the U.S.A. has more than one possible long-term alternative to their proposed Mackenzie Valley pipeline. At least two of the alternatives have different but demonstrable economic benefits to the U.S.A. when compared to the Mackenzie Valley route. The Federal Power Commission staff and the Department of the Interior have both indicated interest in a possible alternative to the two contesting applications now being heard by the FPC. And reference will be made in a moment to a method of short-term relief for U.S.A. gas requirements.

Our position that frontier gas must ultimately flow to southern Canada is not inconsistent with our publicly expressed sensitivity to the question of native land claims. Indeed, this is why we are urging that there not be even the slightest appearance of using a gas supply emergency as an excuse to proceed with a pipeline without resolving the land dispute. As far as Westcoast is concerned, we would not start construction of a pipeline through lands of clearly contestable ownership or control.

In order to make a constructive contribution to your committee's consideration of this great national debate, I will itemize a sequence of events that could satisfy the reasonable aspirations of all, with discrimination and hardship for none. Further, these events could be acceptable to the principal ministries involved - Energy, Indian Affairs, External Affairs and Finance.

The following sequence is clearly idealistic but still attainable with prudent and determined regulatory, legislative and industry effort:

1. Continue the current NEB Hearing and Berger Inquiry without the burden of injudicious deadlines for decisions.

2. Meantime, exploit the offer of the Honorable Donald Getty to provide an interim supply of "swap" gas from Alberta's reserves.

3. Use these interim supplies to reduce the Pacific Northwest curtailments and to eliminate the need for any export curtailments to the mid-western and eastern United States. Retention of their present importation from Canada of one trillion cubic feet per year should be a higher U.S.A. priority than locating an all new remote source of a trillion cubic feet per annum with availability many years in the future.

4. Polar Gas should be encouraged to come forward formally, with its proposal to move gas from the Arctic Islands, in sufficient time to be heard by the National Energy Board as a concurrent or sequential project to the Mackenzie Valley applications.

5. U.S.A. can exploit the interim assistance by using the time afforded to examine thoroughly the pipeline alternative to their Mackenzie Valley plan, namely a pipeline through Alaska and Canada carrying only Alaska gas.

6. Canada can exploit the interim Alberta supply by using the extra time to resolve native land claims in an atmosphere unclouded by impending gas shortages in eastern Canada.

7. U.S.A. can finally adopt an Alaska-gas-only project designed to fit their specific requirements, more time having been provided to negotiate an international transportation treaty if required.

8. Canada could finally achieve, if warranted, a sequential melding of Mackenzie Valley and Arctic Islands projects in a profitably and practically phased all-Canadian undertaking.

9. Commence replacement of Alberta "swap" gas with frontier gas.

In summary, we are advocating unhurried and thorough consideration by all involved in this vital matter. Although we have been identified as a partner in the proposal with the descriptive nickname Maple Leaf Project, we submit that although Westcoast's position is thoroughly responsive to Canadian needs, it is at the same time pro-American. We cannot agree that the suggested cancellation of export licences is an acceptable solution.

The willingness of your committee to travel extensively in the frontier areas and its policy of inviting presentations such as this, give us assurance that the legislative processes are keenly tuned to this complex subject. And, in closing, I would like to record the complete confidence Westcoast has in the National Energy Board - its Chairman Marshall Crowe, the Board Members, the executives and staff. The NEB is unquestionably capable of submitting to government an objective recommendation at an appropriate time. We only hope that industry will assist the Board with sound and imaginative proposals and that the Canadian public will be understanding and patient concerning the amount of time all of this will take.

E. C. Phillips, President

John Anderson, Senior Vice President

prepared by El Paso

Ex 13

EL PASO NATURAL GAS COMPANY
NATURAL GAS CONSUMPTION FOR THOSE
STATES SERVED WHOLLY OR IN PART
Calendar Year 1975

STATE	EPNG SALES	TOTAL CONSUMPTION	EPNG PERCENT OF TOTAL CONSUMPTION
Arizona	164,704 MMCF [1]	164,704 MMCF	100.0%
California	1,008,158 MMCF	1,807,604 MMCF	55.8%
Colorado	120 MMCF	290,798 MMCF	<1%
Nevada	28,590 MMCF	60,446 MMCF	47.3%
New Mexico	43,336 MMCF	167,220 MMCF	25.9%
Oklahoma	11 MMCF	639,575 MMCF	<1%
Texas	34,627 MMCF	3,911,026 MMCF	<1%
Utah	19 MMCF	123,098 MMCF	<1%

[1] MMCF = millions of cubic feet

NATURAL GAS CURTAILMENT IN 1976
AND ESTIMATED CURTAILMENT IN 1981

1976

	VOLUME	% OF REQUIREMENT
P 1	0	0
P 2	1,731 MMCF	1%
P 3	35,666 MMCF	16%
P 4	2,862 MMCF	21%
P 5	219,809 MMCF	65%
TOTAL	260,068 MMCF	19%

1981

	VOLUME	% OF REQUIREMENT
P 1	83,071 MMCF	15%
P 2	143,261 MMCF	52%
P 3	254,693 MMCF	100%
P 4	11,440 MMCF	100%
P 5	348,723 MMCF	100%
TOTAL	841,188 MMCF	58%

STATEMENT OF JOHN C. BENNETT
VICE PRESIDENT, EL PASO ALASKA COMPANY
BEFORE THE JOINT LEGISLATIVE GAS REVIEW COMMITTEE
FEBRUARY 1977

Mr. Chairman, members of the Joint Legislative Gas Review Committee, we are grateful for this opportunity to meet with you today and to discuss both the purpose and the effects of the state's commitment of surplus Prudhoe Bay royalty gas.

I want to say at the outset that the arrangements which are the subject of these deliberations represent one of the most significant actions by any participant in the lengthy decisional process for the North Slope gas pipeline route. I can assure you that the support of the State of Alaska, as expressed by this commitment of surplus royalty gas, is having a profound positive influence on the ultimate success of our proposal. Conversely, we can just as confidently predict that defeat of these contracts by the Legislature will have an equally profound negative effect. Any inordinate delay in their approval would produce identical negative results.

So, our hope, ladies and gentlemen, is that these contracts will be approved in their present form at the earliest possible date.

I would like to take a few moments to emphasize some of the reasons for our belief that these contracts are the best attainable for both the state and the buyers.

1. They are the product of intensive, arms-length negotiations. Neither the state nor the buyers are completely happy with all of

the provisions in the contracts, but, for our part, we are satisfied that we can neither give up anything more than we already have, nor can we ask anything further from the state. As a result, the contracts represent a true bargained arrangement, arrived at in good-faith negotiations.

2. We are obviously pleased with the provision calling for active support of the trans-Alaska route for the gas pipeline by both the state and the buyers. From the state's standpoint, there has never been a Governor, a Legislature or any state agency, task force, or committee which has studied the alternative proposals and reached any conclusion other than that the trans-Alaska route is best for the state. The citizens and institutions of Alaska are overwhelmingly in favor of our line. A number of state entities, from political subdivisions to special interest groups, have joined the Hammond Administration in intervening in behalf of the project before the Federal Power Commission. Indeed, Alaska's commitment to a trans-Alaska line is perhaps best expressed by a statement in the November 1976 Gas Pipeline Task Force Report, which said,

> ".....the Alaska public is more united on this question than on any other present major public issue."

3. As to the buyers' support for the trans-Alaska route, you need have no fears about my company's sincere dedication to its own proposal. Since 1970, when we first looked at this proposition (at the request of a group of Alaskan businessmen), we have expended approximately

$20 million in the design and promotion of the trans-Alaska route. This is more than four times the amount spent by any individual company sponsoring a competing proposal, and it is 100% risk money.

Tenneco and Southern are the other two purchasers of the state's surplus royalty gas. In spite of the fact that the contracts are not yet final, both companies have played large parts in the progress we have made recently on the Hill and elsewhere in the lower 48. They have done far more than any of us have had a right to expect, and we are extremely pleased with the results of their efforts. They have shown us that they can and will produce, and I believe that the best is yet to come.

4. Both Tenneco and Southern bring to this project considerable talent and experience. While we jealously guard our own company's reputation as the leader in the field of large scale, base-load LNG technology, Tenneco and Southern are also recognized experts.

Southern is part of El Paso's initial Algerian LNG project and is currently constructing LNG receiving facilities at Savannah, Georgia. Tenneco has recently filed for its own base-load LNG project to supply Algerian gas to the United States. The addition of these two respected companies to the trans-Alaska project will strengthen the available resource base to ensure the development of the most efficient and environmentally acceptable project possible.

5. From the state's standpoint, these contracts provide for the highest possible price for its surplus gas; rights to the LPG's in the gas

stream are reserved; flexibility in recalling gas to meet in-state gas needs is total; and resources surplus to Alaska's needs are used as a lever to help obtain approval of a project which will undoubtedly provide the greatest possible benefits for its citizens.

During the three months that this commitment of surplus royalty gas has been public, we have heard and read of several concerns about these contracts which have been expressed by responsible citizens who, we have no doubt, have had the best interests of the state in mind.

Some have suggested that the trans-Alaska route might not be best for the state. We ask only that those people look at the record of support for our project by the citizens of Alaska. We challenge either of our competitors to show that they will provide more jobs, more taxes, lower transportation cost or more spin-off development opportunities than we can.

We have heard some suggest that the timing of this sale is bad. From the standpoint of its support for the trans-Alaska route, this is probably true. It would have produced far greater positive results had it been made a year ago. To those who feel it is too soon, we point out that the contract contains every conceivable flexibility for the state to recall its gas as in-state markets develop -- even to the point where virtually all of the gas could be recalled on the day the pipeline begins operation. In fact, under the lease agreements with the Prudhoe Bay producers, the state does not acquire title to its royalty gas until it arrives at the wellhead. So it must be produced in order to exist as royalty gas per se. As a physical matter, the state's royalty gas could be gathered up and then reinjected into the Prudhoe Bay reservoir. But as a practical matter, who can explain to the citizens of Alaska that they have a

valuable, marketable resource which they are paying to have withheld from market, and which is diminishing by between 5 and 8 percent each production/ reinjection cycle. We have firm assurances from the Prudhoe Bay producers that between 2 and 2.4 billion cubic feet of gas per day can be produced without adversely affecting oil production. So protection of oil production is no reason for reinjection, nor is economics, nor is conservation. In our view, reinjecting the gas gains nothing for the state, and therefore makes no sense at all.

We have heard some ask for guarantees that the state's right to recall its royalty gas from our pipeline for in-state use will be fully protected. This is a guarantee that we as a private company simply cannot provide. The United States Congress, however, can and has. Under the Alaska Natural Gas Transportation Act of 1976, the State of Alaska has been given unique authority to take its gas back from interstate transportation to satisfy its own needs. Additionally, these contracts were submitted to the FPC -- on the last afternoon of the hearings -- and once their approval is granted, another layer of protection of the recall right will be obtained. Finally, under the provisions of the contract itself, if the state's access to its royalty gas is not guaranteed, the contracts self-destruct. There simply is no other way that we can think of to protect this right.

A final point that we hear made in detraction of this surplus royalty gas sale is that the state should not commit its resources to gain political leverage. Obviously, this is a philosophical question, but as a practical matter, natural gas is no different a resource than money from the State's Treasury. Those who suggest that the Legislature should appropriate several million dollars of state

funds for lobbying and promotional activities ignore the fact that the royalty gas contracts achieve this same objective without the expenditure of a single tax dollar. In fact, the influence gained in behalf of the trans-Alaska route from the contracts is far more substantial than that which could be gained from almost any amount of money spent for lobbying or similar efforts. The commitment of surplus royalty gas will allow Tenneco, Southern and El Paso to develop a constituency in almost 40 of the lower 48 states. When we visit our market areas and point out that more gas will be available if and only if the trans-Alaska route is approved, we expect that considerable support for our project will result, particularly in the face of the critical gas situation and cold weather of this winter.

Ladies and gentlemen, that concludes my prepared remarks. If you wish, I will now respond to any questions you might have.

Thank you.

STATEMENT

By

ROBERT C. THOMAS

BEFORE THE

JOINT SPECIAL ROYALTY GAS REVIEW COMMITTEE

My name is Robert C. Thomas. I am a Senior Vice President of Tennessee Gas Transmission Company with responsibility for energy supply for all of Tenneco's Interstate Transmission Companies. I am also a Vice President of Tenneco Alaska, an Alaskan Corporation, which has entered into a royalty gas agreement with the State on behalf of Tenneco.

My purposes today are to urge your early approval of the Royalty Gas Sales Agreements, to explain why we believe these agreements are in the best interests of Tenneco and the State, and to answer your questions.

The State has presented to you the terms of this agreement and the benefits accruing to the State. I would like to start with the reasons Tenneco has signed this agreement.

Each day, Tenneco's interstate system supplies an average of 3.2 billion cubic feet of natural gas to their customers. This volume is insufficient to meet demands. As their demands are growing, our reserves in our traditional supply area of the Gulf Coast are declining.

To meet this demand, Tenneco is working in many different areas to secure energy supply from non-traditional sources. These sources include liquefied natural gas from Algeria, Trinidad, Nigeria, the USSR and other countries. We are also pursuing synthetic natural gas to be manufactured from domestic coal deposits and additional natural gas from the Canadian Arctic Islands.

We are vitally interested in purchasing natural gas in Alaska, not only because of the large volume of currently proven reserves, but because we feel Alaska will be the most active area in the U. S. for the exploration for major new energy supplies for the next 20-30 years. We want to be a part of this future activity. We also believe there are substantial advantages in purchasing domestic, as opposed to foreign, gas.

These facts explain our needs. The fulfillment of needs, however, inevitably encounters obstacles. The securing of natural gas supply from Alaska was no exception.

Tenneco looked at these obstacles from the viewpoint of the largest natural gas transmission system in the United States that was uncommitted to any of the competing proposals for delivery of Prudhoe Bay gas to market. The State also made it very clear that the primary condition in any sales agreement would be support for the Trans-Alaska delivery systems.

We considered carefully three fundamental questions before determining we could undertake such a commitment:

1. Would there be sufficient reserves available, either now or in the future, to justify our efforts;
2. If we committed our resources of time, money, and people to the project, was there a substantial likelihood it would succeed;
3. Would such an effort adversely affect substantial business interests in Canada which we intend to maintain and to further.

Our analysis concluded that we could not only agree to support the Trans-Alaska route but could also agree to condition our right to purchase the royalty gas upon the eventual designation of that route by the Federal Government. These terms are in the agreements before you.

Our conclusion was based upon the belief that with a strong, responsible team supporting the Trans-Alaska project and making objective arguments in its behalf, the Federal decision makers, after extensive and careful analysis, would conclude the Trans-Alaska system would get the North Slope gas to the lower 48 States at the earliest possible date. While early delivery is the most important element of national interest, other issues such as jobs and taxes clearly favor the Trans-Alaska route.

It has always been our firm opinion, however, that Federal acceptance of the Trans-Alaska delivery system and therefore the benefits to the parties, depends upon prompt approval of the royalty sales agreement by this Legislature.

Another major factor crucial to your deliberations is the strength that Tenneco can add to the team dedicated to the securing of a Trans-Alaska route. Let me give you a brief summary of our technical capabilities:

1. Tenneco maintains a staff of approximately 140 engineers in it's pipeline headquarters in Houston. This department not only supervised the construction of our 15,000 plus miles of interstate pipeline, but was also involved in the construction of the existing Trans-Canada pipeline of which we were a part at that time. Our operations people routinely run an interstate system transporting up to five BCF on peak days.

2. Tenneco is dedicated to the conduct of its operations within the proper environmental framework. The Corporation maintains a staff of approximately 60 environmentalists.

3. Tenneco maintains a staff of cryogenic, process, and LNG systems engineers plus the services of numerous consultants with expertise in LNG projects. We have had much experience in the planning of major LNG programs.

4. As a corporation, Tenneco has annual capital expenditures in the range of $500 million. In the 34 years of our existence, our assets have grown from zero to approximately $7 billion. The strength and the financial experience gained through this evolution is invaluable in the planning and execution of multi-billion dollar energy projects.

All of these areas of expertise are now being readied in preparation for our participation in the Trans-Alaska project.

There has been a great deal of reference during the negotiation of these agreements to the "political influence" to be contributed by each party. It is unfortunate that this gives some people the impression that the purchasers control votes in the Congress or in the Executive Branch to be used on behalf of the Trans-Alaska project as soon as this agreement is ratified. This, of course, is not true.

No amount of so-called political clout or pressure is going to determine the federal decision on this matter. We are convinced that the decision will be

made on the merits of the issues. Neither we nor the new Administration have incentive to proceed in any other way. This approach is also assured by the detailed and comprehensive provisions of the Alaska Natural Gas Transportation Act of 1976.

For these reasons, it is essential that all the issues involved be thoroughly discussed at both regional and national levels with all parties having input into the final decision. This will present a monumental job of planning and coordination to insure that knowledgeable staff, both technical and non-technical, be made available to discuss the issues with people needing this information.

From a regional standpoint, it is essential that the issues be reviewed and discussed as they affect different parts of the lower 48 states and Canada. The perspective and needs of these different regions vary and their views must be analyzed and effectively answered.

We feel we are best qualified to present the Trans-Alaska merits in our market area. Our market area covers 25 states in New England, New York-New Jersey, Appalachia and the Upper Midwest. These states

embrace 65% of the U. S. population and much of its industrial capacity.

We feel that Southern and El Paso will be most effective in their market areas. All three companies will be effective on the national scene.

The combined facilities of Tenneco, El Paso and Southern with minor modifications could deliver Alaskan gas to at least 42 states. It is improbable, perhaps impossible, that any other group of three or more companies presently uncommitted to any pipeline route could equal this coverage.

El Paso has made and is continuing to make a tremendous effort on behalf of the Trans-Alaska project. More help is needed and we are prepared to provide this help.

We believe it essential that the Legislature act promptly to approve these agreements. The time available to make all the necessary contacts is becoming short. The U.S.-Canadian pipeline treaty was signed last Friday. The Presiding Administrative Law Judge of the FPC will issue his decision tomorrow. We expect his decision to favor the Arctic Gas proposal. All the participants

before the FPC, of which we are one, will be permitted to file comments on this decision by March 1.

The Alaskan Transportation Act provides that the FPC must submit its recommendation to the President by May 1. Federal agencies are now preparing their comments to the FPC and Federal and State officers and agencies may submit their comments to the President by July 1. Our views must be made known to all of these people as soon as possible in order to ahve any effect on their comments. The President's decision is due September 1 and the Congress has 60 days in which to approve this decision.

There is much to be done and the Federal timetable leaves no time for delay.

In anticipation of your approval, Tenneco has already taken substantial steps in preparation for the support of this project.

1. We have had many meetings with representatives of the State, El Paso and Southern to insure maximum cooperation, coordination and effectiveness in this combined effort.

AGO 668023

2. El Paso has given our engineering, environmental, LNG and financial experts a detailed review of their plans. We will work closely with them toward assuring the best possible project and to answer the questions that will be raised in Washington, California, Canada and elsewhere concerning the physical, environmental and financial integrity of this project.
3. We have designated a project manager within Tenneco with authority to call upon and coordinate activities of all our involved departments.
4. We have retained counsel in Alaska and in Washington to assist in the planning and the execution of our overall plan to insure adoption of the Trans-Alaska delivery system.
5. We have communicated to the State of California our reasons for supporting the Trans-Alaska project. I will be happy to make a copy of this letter available for your record.

These efforts are only a beginning. However, further efforts to implement a detailed plan to secure adoption of a Trans-Alaska route will not be credible if the State of Alaska does not act promptly to approve the agreement which provides the reason for our support.

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In summary, Mr. Chairman, Tenneco is prepared to invest their time, money and people in a maximum effort to secure a Trans-Alaska route. We are prepared to begin as soon as our agreement with the State is approved by the Legislature.

The State has retained the ultimate assurance of our performance. If the Trans-Alaska route is not approved, the State has the right to terminate this agreement. Should that happen, we will have wasted our money, manpower and time.

The State has assembled a strong team, the contest is in progress and we are ready to participate when we receive your approval.

El Paso ALASKA COMPANY

310 SUBMARINE BUILDING
1775 K STREET N.W.
WASHINGTON, D.C. 20006
PHONE 202-872-3123

JOHN C. BENNETT VICE PRESIDENT

February 23, 1977

Dear Mr. President:

I understand that in the Senate's discussion of the State's royalty gas contracts, some question has been raised about our company's intent to support the State of Alaska in retaining the provisions of section 13(b) of Public Law 94-586 in the statute.

In order to clear the air, I would like to record El Paso's support for section 13(b) and to assure you and your colleagues that, should any effort be made in Congress to modify that section, the State can count on El Paso to make every possible effort to retain this provision in Public Law 94-586.

Sincerely,

John C. Bennett

The Honorable John Rader
President
Senate of the State of Alaska
Anchorage, Alaska

AGO 668026

For Calif. situation

El Paso ALASKA COMPANY

POUCH 7009
ANCHORAGE, ALASKA 99510

PHONE: 907-279-6501

why E.P. needs gas

February 27, 1977

The Honorable Joseph H. McKinnon
Alaska State House of Representatives
Pouch V - State Capitol Building
Juneau, Alaska 99811

Dear Representative McKinnon,

During our conversation in your office last week, you asked for additional information respecting the value of a commitment of the state's surplus royalty gas to El Paso Natural Gas Company in eliciting support for a trans-Alaska gas pipeline route.

We note that the report published by the House Special Committee on the Sale of Royalty Gas states that El Paso needs no additional incentive to work in behalf of its own proposal, and suggests that the value of committing 25% of the state's surplus gas to El Paso is questionable. While we are certainly dedicated to doing everything within our ability to secure approval of the trans-Alaska route, the persuasive force of additional gas supplies for the eight-state El Paso market area is of no less significance than that for Tenneco and Southern. In fact, many knowledgeable experts involved in the gas line issue have singled out California as the state most critical to the success of the trans-Alaska route (next to Alaska, of course!)

As you can see from the attached description of the states served by El Paso, over 55% of the total volume of gas consumed in California is supplied by that company. Moreover, in recent years, El Paso has, through its natural gas deliveries, provided more energy to California than any other company involved in supplying energy of any kind. Nonetheless, it is well known that the State of California does not support our project. The reasons for this fact are complex, but the simple problem we have experienced in persuading California to back the trans-Alaska route is that we have nothing tangible to offer them. For over four years, we have attempted to elicit support on the basis of our friendship and goodwill with our California customers. At the same time, sponsors of the trans-Canadian route have argued successfully that approval of their project with its "western leg" could mean that additional gas supplies from some unnamed source (presumably Mackenzie Delta) would be available to California markets. We know that such argument has no

factual basis, since testimony before the NEB has been that Mackenzie Delta gas will not be exported to U.S. markets. However, Arctic Gas has very effectively used the suggestion of additional Canadian gas via its project to gain California's endorsement.

With the commitment of Alaska's surplus royalty gas to El Paso, we will have at least three means of turning California around on this issue.

1) Senators Stevens and Gravel and Congressman Young can write "Dear Collegue" letters to California's U.S. Congressional Delegation, asking for their support on the basis of Alaska's surplus gas offsetting part of the severe curtailments facing California markets.

2) The State of Alaska will be able to send representatives to California with the message, "Fellow Americans, we understand your critical needs for natural gas. We will have some royalty gas which will be surplus to our own needs in Alaska, and we are willing to make this excess gas available to your markets provided the trans-Alaska route for the North Slope gas pipeline is approved."

3) El Paso itself will be provided with a tool for use in mounting an extensive state-wide public campaign in California. Given this tool (additional natural gas) and sufficient time, we believe that we can generate sufficient public support for our project to reverse the stand of the California administration. We have hired the necessary public relations expertise but it is now up to the Alaska House of Representatives to provide us with the tool to work with. We have encountered several congressional representatives who, after hearing our presentation on the trans-Alaska route, have said, in essence," Gentlemen, I can see that your project will provide some real benefits for the American gas consumer and the U.S. economy, but until 51% of my constituents tell me to do so, I can not support you." Obviously, our mission in California is to pursuade 51% of the population to support the trans-Alaska route. And, as I have said, we have not been able to do it with friendship and goodwill.

The foregoing plans have been described on the basis of their application in California alone. We would, of course, work throughout our 8-state market area.

I don't want to leave you with the impression that we intend to claim that El Paso's share of Alaska's surplus royalty gas would solve all of our customers' gas problems. However, you can see from the attached document that we estimate 15% curtailment in Priority 1 (household) uses in 1981. Alaska's surplus royalty gas could offset a major portion of that curtailment, to the tune of supplying over 190,000 homes which would otherwise be without gas.

Alaska has an opportunity to present itself as a concerned, generous number of the U.S. energy community by offering to share its surplus resources. While we do not wish to suggest anything that is more properly the right of those with the constitutional authority to establish state policy, such as yourself, it would certainly seem that the "generous" approach would be a far more effective means of generating support for Alaska's programs than the "dog in the manger" attitude which some elements in the lower 48 perceive on the part of a few Alaskans.

One final point. The debate in the Senate last week was centered around an amendment which would have compelled El Paso, Tenneco and Southern to support the retention of section 13B of the Alaska Natural Gas Transportation Act of 1976. As you know, section 13B gives Alaska the right to recall its gas from interstate pipelines as Alaska's own needs develop. There are some who fear that the Act may be amended and section 13B repealed. For the record, El Paso suppported section 13B when it was first proposed, and we intend to continue to support its retention in the Act. No action by the Alaska Legislature is necessary to force us to do so.

I have attempted to be as brief as possible and still be responsive to your request. If you should want any additional information on this matter, please let me know.

Best regards.

Sincerely,

EL PASO ALASKA COMPANY

Michael C. Holland
Assistant to the Vice President

Attachment

cc: Speaker Malone
Representative Cowper
Representative Gruening
Representative Parr
Representative Hayes
Representative Chatterton

EL PASO NATURAL GAS COMPANY
NATURAL GAS CONSUMPTION FOR THOSE STATES SERVED WHOLLY OR IN PART
Calendar Year 1975

STATE	EPNG SALES	TOTAL CONSUMPTION	EPNG PERCENT OF TOTAL CONSUMPTION
Arizona	164,704 MMCF [1]	164,704 MMCF	100.0%
California	1,008,158 MMCF	1,807,604 MMCF	55.8%
Colorado	120 MMCF	290,798 MMCF	<1%
Nevada	28,590 MMCF	60,446 MMCF	47.3%
New Mexico	43,336 MMCF	167,220 MMCF	25.9%
Oklahoma	11 MMCF	639,575 MMCF	<1%
Texas	34,627 MMCF	3,911,026 MMCF	<1%
Utah	19 MMCF	123,098 MMCF	<1%

[1] MMCF = millions of cubic feet

NATURAL GAS CURTAILMENT IN 1976
AND ESTIMATED CURTAILMENT IN 1981

1976

	VOLUME	% OF REQUIREMENT
P 1	0	0
P 2	1,731 MMCF	1%
P 3	35,666 MMCF	16%
P 4	2,862 MMCF	21%
P 5	219,809 MMCF	65%
TOTAL	260,068 MMCF	19%

1981

	VOLUME	% OF REQUIREMENT
P 1	83,071 MMCF	15%
P 2	143,261 MMCF	52%
P 3	254,693 MMCF	100%
P 4	11,440 MMCF	100%
P 5	348,723 MMCF	100%
TOTAL	841,188 MMCF	58%

El Paso ALASKA COMPANY

310 SUFFRIDGE BUILDING
1775 K STREET, N.W.
WASHINGTON, D.C. 20006
PHONE 202-872-8133

JOHN C. BENNETT VICE PRESIDENT

February 23, 1977

Dear Mr. President:

I understand that in the Senate's discussion of the State's royalty gas contracts, some question has been raised about our company's intent to support the State of Alaska in retaining the provisions of section 13(b) of Public Law 94-586 in the statute.

In order to clear the air, I would like to record El Paso's support for section 13(b) and to assure you and your colleagues that, should any effort be made in Congress to modify that section, the State can count on El Paso to make every possible effort to retain this provision in Public Law 94-586.

Sincerely,

John Bennett

The Honorable John Rader
President
Senate of the State of Alaska
Anchorage, Alaska

JOSEPH R. HENRI
ATTORNEY AT LAW

907-586-3669

203 WEST THIRD AT DIXON
JUNEAU, ALASKA 99801

AGO 668032

3 March 1977

Mr. President

John Bennett wanted you to have this, which we gave to the House this morning.

Joe

File El Paso Oil

March 3, 1977

To: Honorable Hugh Malone
Speaker of the House
Alaska House of Representatives
Juneau, AK

Dear Mr. Speaker:

The purpose of this telegram is to express my reaction to the vote of the House yesterday disapproving El Paso's contract for surplus royalty gas.

The El Paso Company came to Alaska five years ago at the invitation of Alaskans to pursue the Trans-Alaska Gas Pipeline Project. The approval of our projects by all legislatures and governors since our arrival in the State led us to believe that the considerable investment and risk to which we were exposing ourselves were being made in an environment where we were a welcome member of the Alaskan community.

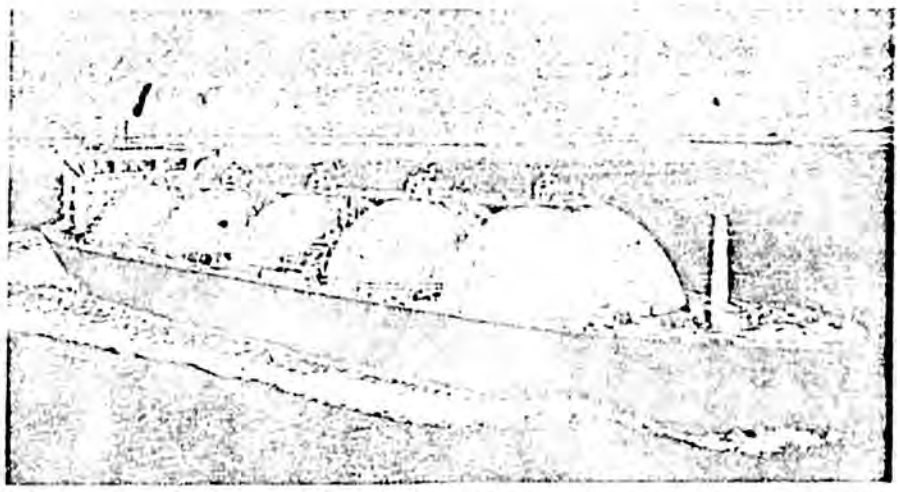
If yesterday's decision is confirmed by the State today, I can only interpret the rejection of our contract in favor of other companies, who have made virtually no investment in the future of Alaska, as an abrupt and significant change in the atmosphere in which we have worked on the Trans-Alaska Gas Pipeline until now. Our company, as a matter of policy, has never attempted to intrude in situations where we are less than a welcome partner. I sincerely hope that the common interest and cooperation that have characterized our efforts in the past will be restored by the House in view of the very important common objectives which have enabled us to work together thus far.

Sincerely,

Howard Boyd
Chairman of the Board
The El Paso Company

Liquid Natural Gas Tankers Rouse Fears of Catastrophe

by Alexander Cockburn & James Ridgeway



Mammoth tankers carrying liquefied natural gas may soon visit American ports. Artist's concept of the 936-foot-long ship shows five spherical tanks which together can hold some 33 million gallons of the potentially explosive fuel.

In the summer of 1883, a gigantic explosion echoed across the world. The island of Krakatoa, off the coast of Indonesia, simply disappeared into the sea. Its remains were blown 17 miles into the sky and dust particles filtered around the globe, causing extraordinary sunsets remembered by all who had seen them for years afterward. Tidal waves were observed as far away as the English Channel. The noise of the explosion was heard 3000 miles away. Thirty-six thousand people in the near vicinity were killed.

The cause of this catastrophe was a mighty volcanic eruption. Scientists now speculate that the unparalleled intensity of the blast was caused by the sudden mixture of lava with seawater, leading to the creation and release of vast amounts of energy. This theory carries a startling message for modern times. For scientists now worry that the modern industrial age may have unwittingly developed the conditions under which the "Krakatoa effect" could be repeated on a smaller scale hundreds of times around the globe.

What frightens these scientists is not the specter of nuclear explosions with which mankind has lived since World War II, but an entirely new menace: liquefied natural gas. Natural gas, often found in the search for oil, is one of our most valuable fuels. It provides about one-third of all energy consumed in the United States. It is clean and, until recently, cheap. Now U.S. companies that produce and sell natural gas from the Southwest claim the resource is fast being exhausted and, in order to meet demands, they must look further and further afield.

Solution: import gas

While gas is a precious fuel in the U.S., in other parts of the world—the Middle East, Africa and Asia—it is regarded as of little use and burned off at the wellhead, its usefulness lost to mankind. One solution now being adopted by the oil and gas industries is to ship this foreign gas to the U.S.

Gas, of course, is an impractical cargo in its natural form. The solution has been to freeze it down into a liquid form at a temperature of about -260 degrees Fahrenheit. In this state, the gas is 1/600th of its original volume and becomes a practical shipping proposition.

Within the next few years, specially built tankers will begin transporting the liquefied gas from North Africa to ports up and down the Eastern Seaboard of the U.S. There are schemes to ship the gas from Asia and even Alaska to the West Coast by these tankers. Other countries are making similar plans. The small trade from North Africa to Europe is expected to increase, and a $3 billion project is well under way to ship liquid gas from Indonesia to Japan. The U.S. government, in fact, is issuing $730 million in loan guarantees to General Dynamics Corporation — the largest guarantee ever made to a single company—for the building of tankers to carry the gas from Indonesia. The U.S. also is negotiating with the Soviet Union to bring in gas from Siberia.

If all goes according to plan, within a decade or so, scores of these odd-looking ships will be crisscrossing the ocean and routinely sailing in and out of busy American ports with their cargoes of desperately needed fuel. As much as 15 percent of the nation's gas may soon be imported in this manner.

Both in government and industry, experts hail this development as an innovative answer to the energy crisis. But these same experts now are meeting with growing opposition to their plans. At the center of debate is the question of safety and the stark fact that the explosion of just one of these gas tankers in a U.S. port could kill upwards of 100,000 people.

Little real testing has been done on the safety of the new tankers that will carry the liquid gas in huge cylinders embedded in their hulls. In 1970 the U.S. Bureau of Mines mounted a brief experiment. A small quantity of liquid natural gas was dropped into an aquarium, which promptly blew up. Later the liquid gas was dropped into a pond, with equally explosive results. The bureau concluded in a report that no assurances can be offered "that these explosions could not scale up to damaging proportions in a massive spill." The scientists engaged in these experiments all recalled one of the few cases in which the effects of an accident involving liquid natural gas could actually be observed.

On Oct. 20, 1944, in Cleveland, Ohio, 2 million gallons of liquid natural gas burst from two storage tanks belonging to the East Ohio Gas Co. and created a firestorm. Liquid gas flowed



In Cleveland, rescue workers dig through ruins after giant 1944 firestorm—caused by 2 million gallons of escaped liquid gas—gutted 29 acres, killed 131. Experts say the explosion of a liquid-gas tanker would do far worse.

AGO 668034

PARADE
FEB. 20, 1977

down the streets and into the sewers. The slightest spark exploded it. Manhole covers sailed into the air and fell like bombs on the fleeing crowds. So intense was the heat that birds above the city burned alive as they flew. The streets became rivers of flame. Houses exploded. In the end, 29 acres of homes and stores were gutted and 131 people lost their lives. And the liquid gas tanks in Cleveland held only a small fraction of the amount carried by a modern tanker, which ranges from about 33 to 42 million gallons.

Safety studies urged

In recent months anxiety over the dangers of liquid natural gas has spread. No less a figure than Dr. Edward Teller, the nuclear physicist often viewed as the father of the H-bomb, is concerned: "The gas shortage is apt to become very serious and therefore the importation of liquid natural gas may become really necessary. . . . Time and money spent on the safety of liquid natural gas is less than one percent of what has been spent on the safety of nuclear reactors. I am suggesting that, in view of our need for liquid natural gas, very greatly increased attention be paid to safety studies."

The Coast Guard is so concerned that it has established special procedures protecting gas tankers. In Boston, where small shipments of the liquid gas are already being off-loaded, the shipping lanes are cleared of other traffic long in advance. Fire departments are placed on standby alert. Tankers may only enter the harbor if visibility exceeds two miles. At the first sign of a thunderstorm, all unloading ceases.

Congress concerned

Citizens' groups around likely liquid natural gas terminals (such as Staten Island, N.Y., and Los Angeles) are opposing the building of such facilities. In the Congress, in the Federal Power Commission and in the Department of Transportation, politicians and officials are nervously considering improved safety precautions. Committees in the House may begin public inquiries shortly and could well involve testimony on the likelihood of the "Krakatoa effect" occurring in the event of an accident.

Over the last few months, this concern has been redoubled. Oil tanker disasters, including the explosion of one tanker in Los Angeles harbor and the wreck of another off Nantucket, have brought home in brutal fashion the result of lax safety measures on fuel shipments to the U.S. These calamities would pale in comparison with any accident to a liquid natural gas tanker. It is a race against time in more ways than one: the race to head off another energy crisis; the race of the tanker men to get their new fleets under way; the race of government regulators to catch up on safety precautions and head off what could be a terrifying catastrophe.

AGO 668035

GAS

High Hurdles for Imports

For Americans flying over the deserts of the Middle East, it is a doleful sight: mile after mile of flaring wellhead fires burning off natural gas, a fuel that has become painfully scarce in many parts of the U.S. Equally bounteous reserves of gas exist in many other parts of the world, from Soviet Siberia to the marshy fields of Holland—and several of the nations with the biggest reserves must export gas if they are to tap the potential wealth, because their populations are too small to use all they have *(see chart)*. Yet apart from a trickle of imports flowing in by pipeline from Canada, the gas deposits in most other countries might just as well be on Mars for all the help they offer in easing American shortages any time soon.

Unlike the relatively simple procedures for shipping crude oil across vast stretches of ocean, importing foreign gas to the U.S. poses a cluster of complex problems—financial, political, technical and environmental. Though some imported gas is now seeping in from distant points, and efforts are under way to bring in more, it will probably be five years at least before any appreciable supplies of such fuel enter the U.S. to help warm homes and run factories. Even then the amount is unlikely to fill more than a small fraction of U.S. demand.

Giant Fireball. A key problem is that the wildly expensive technology needed to ship gas over water requires long start-up times and makes the fuel extremely costly to import. For example, Algeria, which has taken the lead in trying to boost exports to the U.S., is spending billions of dollars to build six liquefaction plants, but they are not expected to be fully operational for a decade. These facilities freeze the fuel into liquid natural gas (LNG), which is then loaded on specially constructed tankers that cost up to $150 million each.

A fleet of nine newly constructed LNG ships owned by El Paso Natural Gas Co. will begin carrying gas from Arzew, Algeria, to Cove Point, Md., and Elba Island, Ga., early next year. That gas, for which El Paso signed a contract before the Arab oil embargo, will sell in the U.S. for about $1.25 per 1,000 cu. ft., v a top federally controlled price of $1.44 for domestic gas shipped across state lines and $2 or more for uncontrolled intrastate gas. Algerian gas bought under a post-embargo agreement, however, will cost Americans $3.30 per 1,000 cu. ft. The Algerians are expected to lift the price even higher in future contracts.

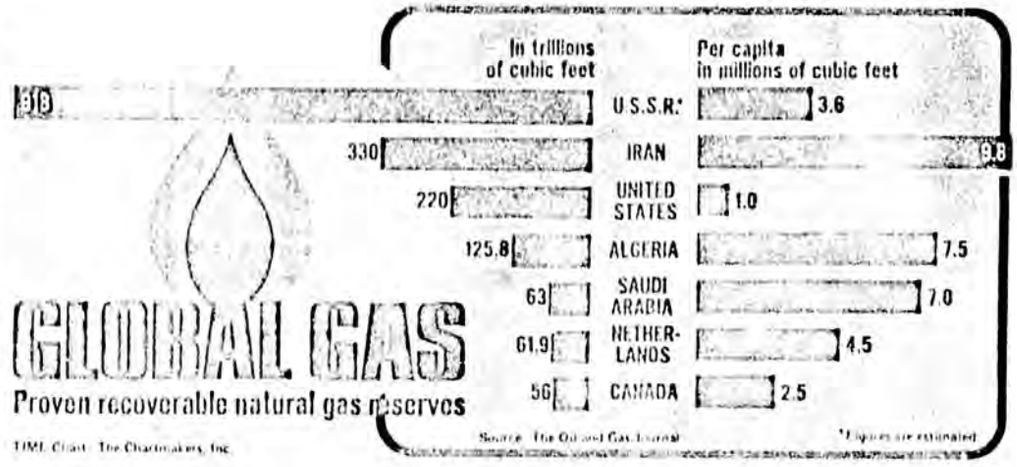
Another drawback to increased gas imports is the danger of a ship spilling some of its cargo in or near a port. That could result in a catastrophe far worse than the oil spills from tankers that have worried many Americans this winter. As the frozen LNG warms into gas, it could ignite, creating an immense fireball threatening lives and property in the vicinity. Last year New York, New Jersey, Delaware and other coastal states petitioned the Federal Power Commission to promulgate national safety standards that would keep LNG port facilities out of populous areas. The agency is still considering the request. On top of that, independent gas producers, who fear competition from imports, loudly argue that buying from foreigners would only make the U.S. more dependent for its energy needs on unreliable sources. Asks Dallas Gasman D.K. Davis: "Do you want Chicago to become dependent on Algerian gas so that they can shut the pipe some day?"

Despite the hurdles, however, a growing number of gas-producing countries are making plans to cash in on the rich American market. For example, Saudi Arabia recently decided to pipe its gas instead of simply flaring it off. To get the job done, the Saudis signed a $7.5 billion contract with the Arabian American Oil Co. (Aramco), which eventually intends to export gas to the U.S. Iran is sinking $6 billion into liquefaction plants and a fleet of 35 LNG carriers to ship gas to its American and European markets beginning in 1982.

The Soviet Union, which is believed to have the world's largest deposits of gas, could become a major source of U.S. imports. The Russians have been pushing hard in recent years to exploit their vast gas reserves in Siberia, including the northern Tyumen Oblast, near the Ob Gulf, and the Urengoy field, reportedly the world's largest. Their aim: to make the Soviet Union a major exporter by 1980 (at present, so few of the reserves have been tapped that the Soviets themselves import gas from Iran). The only deal involving Americans, however, is a tentative agreement between the Soviets, Occidental Petroleum, El Paso and a group of Japanese firms to develop a major field near Yakutsk in Siberia. After years of negotiating, the Soviets are still surveying the area. If the deal finally goes through, gas would be piped 2,000 miles to Vladivostok for shipment to the U.S. and Japan.

Mixed Blessing. By contrast, the U.S. will probably not be importing much gas from Europe. Holland, the Continent's leading producer and exporter, is phasing out shipments to other countries in an effort to conserve its supplies. Britain, too, intends to hold on to most of the gas that it is beginning to pump from underneath the North Sea. Indeed, according to the Paris-based Organization for Economic Cooperation and Development, European demand is already outstripping its reserves. By 1985, the organization estimates, European gas imports from Iran, Algeria, the Soviet Union and elsewhere will total almost 3 trillion cu. ft. a year, six times the 1975 figure.

For the U.S., however, the cost and difficulties of shipping LNG long distances will, for the foreseeable future at least, keep gas imports from becoming the major energy prop that oil imports now are. At a time when the Government is striving to lessen dependence on foreign energy, that could be at least an ironically mixed blessing.



AGO 668036

El Paso COMPANY

2727 ALLEN PARKWAY
P. O. BOX 2185
HOUSTON, TEXAS 77001

PHONE: 713-524-3911

HOWARD BOYD CHAIRMAN OF THE BOARD

April 25, 1977

The Honorable John L. Rader
Alaska State Senator
State Capitol Building
Pouch V
Juneau, Alaska 99811

Dear Senator Rader:

Sometime this summer the President is expected to make a decision, subject to Congressional review, on which project to move Alaskan natural gas to market best serves the national interest. Because of your interest in this important decision, it might be helpful to summarize the economic benefits of the El Paso project, compared with the two trans-Canadian alternatives.

First, El Paso's commitment to purchase all possible goods and services within the American economy will provide a direct infusion of $8 billion--$4-5 billion more than either of the trans-Canadian projects.

Second, the El Paso proposal (over the 20-year financing "life" of the project) will pay more taxes to American entities than will either of the trans-Canadian projects--by a margin of up to $10 billion.

Third, El Paso will avoid an outflow of taxes to Canadian authorities (at present tax rates) of up to $7 billion.

There is no question where these dollars come from--the American gas consumer's pocket. But where the dollars end up shows a difference of more than $20 billion lost or added to the American economy.

I am enclosing a study just completed by Robert R. Nathan Associates, detailing by region and state the new American jobs to be created by the El Paso project. The total of 765,000 man-years of additional jobs--three times that provided by either trans-Canadian project--would be generated wholly within the private sector.

AGO 668037

As the decision-making process proceeds, I think you will agree that, in addition to delivering the Alaskan natural gas at the earliest date, minimizing adverse environmental impacts, and maintaining U. S. control of costs to the consumer, the El Paso project certainly benefits the American economy much more than either of the trans-Canadian schemes.

Thank you for your continuing interest in this important decision. Should you wish any additional information on any aspect of our proposal, please let me know.

Sincerely yours,

Edward Boyd

El Paso ALASKA COMPANY

POUCH 7009
ANCHORAGE, ALASKA 99510

PHONE 907-279-6501

April 4, 1977

The Honorable John L. Rader
Alaska State Senator
Pouch V, State Capitol Building
Juneau, Alaska 99811

Dear Senator Rader,

Congressman Tino Roncalio (Democrat, Wyoming) has convened a series of meetings of his Sub-Committee on Indian Affairs and Public Lands to hear testimony on the subject of how best to transport Prudhoe Bay natural gas to market. A number of parties have appeared before the sub-committee to date, including representatives of the State of Alaska, the project sponsors and environmental groups. Of particular significance were the statements made by officials of three Canadian native organizations respecting the status of land claims negotiations and the position of the native membership regarding the trans-Canadian pipeline proposals of Arctic Gas and Alcan. As you know, sponsors of those proposals have repeatedly claimed that Canadian native claims would not be an obstacle to either route, and Judge Litt was of the same view, although he at the same time denied responsibility for such "political matters."

Testimony of the Dene people was that no pipeline would be allowed in the Mackenzie Corridor until their land claims were settled and implemented. The Dene representative said that his people's opposition to such a pipeline is "unanimous," and that disregard for the rights of the Dene by non-Dene would be "genocide." Also, he sharply criticized Judge Litt's report as "based on misinformation" and "total misunderstanding" of the Dene position.

Mr. Sam Raddi, speaking for the Inuit (Eskimos) in the Yukon and Northwest Territories, said that "there will be no pipeline in the Western Arctic until the government of Canada settles the Land Claims." Furthermore, he called Judge Litt's opinion "alarming," and charged that Litt has prejudiced land claims negotiations.

Testimony for the Council of Yukon Indians was given by Mr. Daniel Johnson, its Chairman. CYI, which has laid claim to the entire Yukon Territory, wants no pipeline across the southern Yukon "until the land

claims of the Yukon people have been settled and implemented." And it wants the northern slope area of the Yukon "closed for purposes of pipeline construction forever."

Obviously, we are gratified that the land claims issues facing both Alcan and Arctic Gas is finally receiving the public airing they deserve. The statements made by the native representatives reflect their insistence that claims not only be settled, but also implemented prior to pipeline construction. While no one has a good handle on how long this process will take, CYI believes 6 years would be optimistic, and the Berger staff has suggested 10-15 years.

Clearly, because of the hardships of last winter resulting from the natural gas shortage, the American gas consumer will not wait for an additional 6-15 years for the Prudhoe Bay supplies. The trans-Alaska route faces no such delays, and this is another reason that our project is best for all-America.

Enclosed are copies of the prepared remarks of all three Canadian native leaders. Feel free to pass them along to influential friends and Congressmen!

Best regards.

Sincerely,

EL PASO ALASKA COMPANY

Michael C. Holland
Assistant to Vice President
John C. Bennett

Enclosures

STATEMENT OF

SAM RADDI

PRESIDENT OF

COPE

BEFORE THE

HOUSE INTERIOR AND INSULAR AFFAIRS COMMITTEE,

SUBCOMMITTEE ON INDIAN AFFAIRS AND PUBLIC LANDS

FEBRUARY 17, 1977

I am Sam Raddi, president of the Committee of original peoples entitlement. "Cope" is incorporated as a nonprofit society under the Company Law of the Northwest Territories of Canada. Cope represents the Inuvialuit of the Western Arctic of Canada. This is an area that includes the North Slope of the Yukon right to the Alaskan Border, the Mackenzie Delta and east to Coppermine, including Banks and Victoria Islands. Cope was formed on January 28, 1970, to protect the rights of the native peoples in Canada's western Arctic. We became a regional association of Inuit Tapiritsat of Canada (National Eskimo Brotherhood) when it was formed. I.T.C. was handling the Land Claims for the Inuit of the Northwest Territories and presented to the Cabinet of Canada a Land Claims proposal "Nunavut" on February 27, 1976.

AGO 668041

In September of that year the proposal was withdrawn from the Federal government and Cope followed the wishes the Inuvialuit of the Western Arctic and proceeded on its own Land Claims proposal for the settlement of Inuvialuit aboriginal Land Claims with the Government of Canada. It was our desire to have a just settlement of our Land Claims before any pipeline was built. It was also our desire to secure an agreement in principle with our Federal government before a pipeline decision was made. This would serve the best interests of Canada and the Inuvialuit.

The Inuvialuit are ready to begin our Land Claims process with the Federal government to secure that approval in principle by that time. Our Federal government has always stated that it was willing to settle our land rights question. However, I am increasingly skeptical that they have the ability or the desire to in fact deal with our aboriginal rights fairly. I want everyone to know that the Inuvialuit are enthusiastic Canadian citizens. Our Land Claims will only be considered just if we are able to bring our lands and our knowledge into Canada to participate fully in Canada's future.

Our lawyers tell us that Native rights are protected with the British North American Act, and that is a matter of public policy in both U.S. and Canada.

The construction of a pipeline through our land and a decision to proceed with construction prejudices the just settlement of our Land Claims. To proceed with a pipeline before our land rights question suggests our Canadian government is planning to extinguish our rights to our land by a process other than what applies to all other Canadian citizens (i.e. expropriation).

There will be no pipeline in the Western Arctic until the government of Canada settles the Land Claims with the Inuvialuit.

Judge Litt's decision which has created a cause of action for Inuvialuit to be here. We are alarmed that Judge Litt supported the Arctic gas proposal at the cost of the Inuvialuit rights and Land Claims process. I understand that in U.S. that only Congress can extinguish aboriginal title not an administrative judge of the U.S. This pipeline is a private interest that will be trespassing on our lands, if our rights and Land Claims are not settled by that time. Judge Litt has prejudiced that process of negotiating the land rights between the Government of Canada and the Inuvialuit. At this time I wish to state that we are opposed to any ruling of an administrative judge of the U.S. on the proposed gas line routes prior to the resolution of the Inuvialuit land rights question. The Inuvialuit do not wish a lengthy court battle which will further delay peaceful energy coexistence between Canada and the U.S. We are asking the patience of the U.S. to avoid this situation.

We wish to commend Congress for the fair treatment that they gave to our Inupiat brothers in resolving their land rights prior to construction of the trans Alaska pipeline. We understand the best the need for energy because of our 10,000 years of occupation of a cold land space in the Arctic of Canada. To prevent an undue delay of the energy requirements of both nations I would recommend to Congress speedy negotiations of this particular problem with Canada and our native people as the number one priority in determining energy policy.

I am leaving with you a copy of Cope's final argument to Justice Thomas Berger. There were other interveners who provided evidence that supported Cope's position on Land Claims, environmental and social issues. I am distressed to hear again the Arctic gas treatment of the environmental issues to this Congressional Subcommittee. I would recommend that Congress hear what Justice Thomas Berger, who has held exhaustive hearings from all of the experts, thinks about the environmental and social issues.

STATEMENT

TO THE
SUBCOMMITTEE ON
INDIAN AFFAIRS AND PUBLIC LANDS

BY THE
INDIAN BROTHERHOOD OF
THE NORTHWEST TERRITORIES

WASHINGTON, D.C.
MARCH 17, 1977

We represent the Dene People of the Mackenzie Valley. It is our custom at home to thank people who take the time to listen. We wish to thank you for inviting us here today to tell you our position on the proposed Arctic Gas pipeline down the Mackenzie Valley.

The Dene people are very concerned about the proposed Arctic Gas pipeline. It is the official position of our people that there will be no pipeline in the Mackenzie Valley until we have completed negotations on a land settlement agreement with the Federal Government of Canada, and have had the time necessary to implement that settlement to our satisfaction.

Who are the Dene?

The Dene are the original inhabitants of the Mackenzie Valley. From time immemorial, we have lived on, and made our living from, this land. Unlike the rest of North America, native people

.../2

are still a majority in the N.W.T. There are about 15,000 people of Dene descent; 15,000 Inuit (Eskimos), and 13,000 whites. The Canadian government has divided Indian people into categories of status or registered Indians, non-status, and Metis. But the Dene do not recognize these artificial divisions. In our delegation today we have status, non-status, and Metis, all representing and supporting the Dene position.

Through countless generations of living on our land, we have developed a complete Dene society, with our own institutions, our own government, our own religion, our own ways of educating our children. Our traditional values and our way of life are still strong.

The Dene Position:

After years of research, of community meetings and workshops, of consultation with the elders, and discussions at our assemblies, the Dene presented our official position on our land claims to the Government of Canada last October 25, in the form of an Agreement-in-Principle. We are submitting copies of this document as evidence with your committee.

As Dene, we are the owners of our traditional lands in the Mackenzie Valley. The treaties which the Government of Canada signed with the Dene - Treaties 8 and 11 - have been proved

virtually fraudulent by the Supreme Court or the N.W.T. We maintain that our aboriginal title to the land has never been extinguished, and that a new agreement must be negotiated with the Canadian people, one which is not based on the treaties.

The agreement that we are proposing to the Government of Canada is one where our aboriginal rights are not extinguished, but are protected by legislation. Our political rights must be recognized and guaranteed - the right to be a self-determining people, and to control development on our land. This is the only way we can survive as a people, and preserve our land for future generations.

We are proposing that a large area of our traditional lands will be under the exclusive jurisdiction of a Dene government, with powers similar to those of a province.

The Dene position on the proposed pipeline:

We do not want to see a decision made without a full and clear understanding of the situation in the Mackenzie Valley on your part.

The statements made by Judge Litt in his report to the Federal Power Commission, and statements by our own Federal Government officials, may have left you with the impression that the Dene land claims will not be a significant factor in the decision about whether to build a Mackenzie Valley pipeline, and that the details and implementation of a settlement with the Dene can be

worked out during construction of a pipeline. Such statements are based on misinformation and are a total misunderstanding of our position.

Dene opposition to a pipeline down the Mackenzie Corridor at this time is virtually unanimous. The Dene as a people cannot survive the social, economic, and environmental impact of pipeline construction at this time. We need time - time to negotiate an agreement with the Federal Government, and time to implement that agreement, to develop our own political and economic institutions further.

Should the decision to build a pipeline be made by non-Dene, before the right of the Dene to collectively decide their own future has been fully recognized by the Federal Government, it is obvious that the right to self-determination of the Dene will have been ignored. Such disregard for the right of self-determination of a people is genocide.

Evidence for support of the Dene position:

There is no doubt that the Dene position, as presented to the Federal Government and described here, is a majority position among our people. We Dene have stated unanimously to the Berger Inquiry at the community hearings that the land is ours. We have said over and over that the land has always been ours, that we

.../5

AGO 668048

have never sold or surrendered it and that we want recognition as property owners. We have expressed the intention to decide our own future on our own land. We have stated that we do not want a pipeline and we do not need it. We have voiced the belief that in fact the pipeline would destroy our people. This position is also supported by the evidence of Chiefs and elders, including eye-witnesses to the negotiation of the treaties, before the N.W.T. Supreme Court.

Almost 1,000 Dene people testified to Justice Berger at the community hearings. Fewer than 5 said that they were in favor of a pipeline.

At our joint general Assemblies, including non-status and Metis, over the last three years, we have stated that we do not recognize Treaties 8 and 11, that we do not wish to sell our land but want to have our rights recognized and protected by the Federal Government.

We are filing as evidence over 2,000 pages of research done with and for the Indian Brotherhood by top Dene and non-Dene experts, in the fields of economics, the Canadian constitution, Canadian and international law, education, and other areas, that supports and elaborates on our position. We will be filing a set of these research volumes with your committee as evidence.

.../6

In addition, there is overwhelming public support for the Dene right to self-determination, and to a land settlement before discussion of a pipeline, in southern Canada. We are submitting as further evidence a list of individuals and organizations who appeared before Justice Berger's southern hearings to state their support for the Dene, and opposition to a pipeline.

There is a small minority of our people, represented by the Metis Association of the N.W.T., who do not support the Dene position as we have presented it here. They are willing to accept the existing colonial structure of government, and would be willing to sell their rights for a certain amount of money, title to some land, and limited rights governing the use of that land. They have stated publicly that they would welcome construction of a pipeline immediately after land claims are settled.

We recognize the right of this group to define their own interests. However, we do not accept their right to undermine the political rights of the Dene by pretending to represent more than a very small minority of the native people of the Mackenzie Valley.

Summary:

You should not underestimate the strength and determination of the Dene people. Our position is clear - there can be no consideration of a pipelin on our land until we are ready to discuss such a development on our own terms.

We have legal avenues open to us. The Supreme Court of Canada rejected our application to file a caveat on a technical point, but they have not yet dealt with the whole question of aboriginal title to Dene land.

We have the strong support of the Canadian public. In addition to the evidence we have submitted about support for our position, many southern Canadians are opposed to the proposed pipeline for other reasons - because they are convinced that it is not in the public interest at this time.

We ask you to consider the effect a decision by the U.S. Government to go ahead with the Arctic Gas proposal would have on the Canadian situation at this time. It would create undue pressure on the Canadian government to negotiate a hasty land settlement with the Dene.

We understand that your Committee was instrumental in making certain that the Alaskan natives were given time to negotiate a land settlement before construction on the Alaska pipeline got the go-ahead. We ask the same consideration for the Dene people. Read our position, listen to what we have to say, and believe us when we say that the Dene cannot survive the construction of a pipeline at this time. We intend to survive.

BRIEF TO HOUSE OF [illegible]

LANDS AND INDIAN AFFAIRS: (Washington, March 17, 1977)

INTRODUCTION:

MR. CHAIRMAN AND MEMBERS OF THE SUB-COMMITTEE. I WOULD LIKE TO SAY THAT IT IS WITH PLEASURE AND PRIVILEGE THAT I APPEAR BEFORE YOU ON BEHALF OF ALL YUKON INDIAN PEOPLE.

IN THIS PRESENTATION I WILL TELL YOU OF OUR ORGANIZATIONAL STRUCTURE, OUR OBJECTIVE OF SETTLING AND IMPLEMENTING LAND CLAIMS AND FINALLY OUR POSITION ON PIPELINES IN THE YUKON TERRITORY. HOWEVER, BEFORE I DO THAT, I WOULD LIKE TO GIVE SOME BACKGROUND ON THE YUKON TERRITORY. THE TOTAL POPULATION OF YUKON IS 22,000 PEOPLE AND OF THAT WE REPRESENT APPROXIMATELY 7,000 INDIAN PEOPLE. IN CANADA, THE INDIAN PEOPLE HAVE BEEN CLASSIFIED BY THE CANADIAN GOVERNMENT AS EITHER STATUS INDIANS OR NON-STATUS INDIANS. STATUS INDIANS ARE GOVERNED BY A PIECE OF FEDERAL LEGISLATION CALLED THE INDIAN ACT. AND UNDER THE MEMBERSHIP SECTIONS OF THE INDIAN ACT THE INDIAN PEOPLE WHO QUALIFY ARE UNDER THE JURISDICTION OF THE FEDERAL DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS. THE INDIAN PEOPLE WHO COME UNDER THE FEDERAL GOVERNMENT HAVE CERTAIN PRIVILEGES AND RETAIN A CERTAIN STATUS IN THE CANADIAN SOCIETY. HOWEVER, THE NON-STATUS INDIANS ARE TREATED AS THOUGH THEY ARE NON-NATIVE AS THEY ARE NOT ON THE INDIAN BAND LISTS WHICH ARE ADMINISTERED BY THE INDIAN ACT. THERE ARE MANY FULL-BLOODED INDIANS WHO HAVE BEEN ENFRANCHISED BECAUSE THEY WERE SEEKING PRIVILEGES WHICH WERE NOT GRANTED TO NATIVE PEOPLE WHO WERE ON THE BAND LISTS OR WHO ARE GENERALLY CALLED STATUS INDIANS. I DO NOT WISH TO DWELL ON THIS AREA VERY LONG, HOWEVER, TO GIVE YOU SOME IDEA AS TO WHY STATUS INDIANS GAVE UP THEIR STATUS, HERE ARE A FEW EXAMPLES: THEY WISHED TO SEND THEIR CHILDREN TO PUBLIC SCHOOL; THEY WISHED TO BE GRANTED THE RIGHT TO VOTE IN FEDERAL AND TERRITORIAL ELECTIONS; THEY WISHED TO ENTER THE

BUSINESS WORLD AND BE GIVEN A BUSINESS LICENCE; THEY WISHED TO GO INTO AREAS WHERE LIQUOR WAS SERVED. IN THE YUKON THIS DISTINCTION BETWEEN STATUS INDIANS AND NON-STATUS INDIANS IS BEING DEALT WITH IN A MANNER IN WHICH WE DO NOT RECOGNIZE THIS DISTINCTION WHICH THE FEDERAL GOVERNMENT, THROUGH THE INDIAN ACT, HAS PLACED UPON THE INDIAN PEOPLE THROUGHOUT CANADA. INSTEAD THE COUNCIL FOR YUKON INDIANS IS NOW NEGOTIATING TO SETTLE THE LAND CLAIMS OF ALL YUKON INDIAN PEOPLE REGARDLESS OF STATUS.

THE INDIAN PEOPLE OF THE YUKON HAVE NEVER CEDED OR SURRENDERED THEIR LANDS AND THEY HAVE NEVER SIGNED A TREATY WITH THE GOVERNMENT OF CANADA. THERE ARE MANY AREAS IN CANADA WHICH ARE COVERED BY TREATIES. HOWEVER, THE YUKON IS NOT ONE OF THESE AREAS. THIS IS WHY WE WISH TO SETTLE OUR LAND CLAIMS BEFORE THERE ARE ANY OTHER MAJOR DEVELOPMENTS. IN 1973 WE BEGAN TO NEGOTIATE WITH THE FEDERAL GOVERNMENT ON OUR LAND CLAIMS AND WE HAVE ATTEMPTED TO SETTLE BY NEGOTIATING WITH THE FEDERAL GOVERNMENT THE BASIS AND THE MEANINGS OF OUR LAND CLAIMS. THE PROCESS OF NEGOTIATIONS IS STILL CONTINUING. I WOULD JUST LIKE TO SAY THAT THE NEGOTIATING PROCESS IS A SLOW ONE AS WE MUST SEEK APPROVAL ON THE MAJOR ISSUES FROM OUR TWELVE INDIAN COMMUNITIES AND THE FEDERAL NEGOTIATORS MUST ALSO SEEK INSTRUCTIONS FROM THE FEDERAL CABINET OF CANADA. WE DO NOT SEEK ONLY TO SETTLE OUR LAND CLAIMS WITH THE FEDERAL GOVERNMENT PRIOR TO THE CONSTRUCTION OF A PIPELINE ACROSS THE YUKON BUT RATHER WE INSIST UPON IMPLEMENTING OUR SETTLEMENT AND OBTAINING BENEFIT FROM IT BEFORE WE WILL CONSIDER ANY PIPELINE DEVELOPMENT.

I WISH, AT THIS TIME, TO TELL YOU SOMETHING OF THE STRUCTURE AND PURPOSE OF THE ORGANIZATION THAT I REPRESENT. THE COUNCIL OF YUKON INDIANS CONSISTS OF TWELVE MAIN INDIAN COMMUNITIES IN THE YUKON TERRITORY. EACH YEAR EVERY COMMUNITY ELECTS FIVE

PERSONS TO THE GENERAL COUNCIL. THE GENERAL COUNCIL IS RESPONSIBLE FOR MAKING ALL OF THE MAJOR POLICY DECISIONS FOR OUR ORGANIZATION.

ONE OF THE FIVE MEMBERS ELECTED TO THE GENERAL COUNCIL FROM EACH COMMUNITY, IS ELECTED AS A BOARD MEMBER AND IT IS THESE PERSONS WHO ARE RESPONSIBLE FOR CARRYING ON THE DAY-TO-DAY ADMINISTRATIVE AFFAIRS OF OUR ORGANIZATION, AS WELL AS, CARRYING OUT THE DIRECTION AND POLICILS OF THE GENERAL COUNCIL.

FROM THESE TWELVE BOARD OF DIRECTORS, THERE ARE FOUR PERSONS ELECTED TO THE EXECUTIVE POSITIONS OF CHAIRMAN, VICE-CHAIRMAN, TREASURER AND SECRETARY. I HAVE BEEN ELECTED IN THE POSITION OF CHAIRMAN OF THE COUNCIL FOR YUKON INDIANS, AND IT IS WITH HONOUR AND PRIVILEGE THAT I AM ABLE TO PRESENT TO THIS SUB-COMMITTEE OUR POSITION IN RELATION TO PIPELINE DEVELOPMENT IN THE YUKON TERRITORY. I SHOULD ALSO ADD THAT THE COUNCIL FOR YUKON INDIANS WAS FORMED ON NOVEMBER 15, 1973 TO NEGOTIATE A LAND CLAIMS SETTLEMENT, BASED ON OUR ABORIGINAL RIGHTS, IN THE YUKON TERRITORY, WITH THE GOVERNMENT OF CANADA.

THE COUNCIL FOR YUKON INDIANS REPRESENTS ALL PEOPLE OF INDIAN ANCESTRY AND TO ENSURE THAT ALL INDIAN PEOPLE ARE INFORMED OF THE COUNCIL FOR YUKON INDIANS' ACTIVITIES, WE HAVE INCLUDED THE PRESIDENTS OF BOTH MAJOR INDIAN ORGANIZATIONS, THE YUKON NATIVE BROTHERHOOD REPRESENTING STATUS INDIAN PEOPLE, AND THE YUKON ASSOCIATION OF NON-STATUS INDIANS, REPRESENTING NON-STATUS INDIAN PEOPLE, AS EX-OFFICIO MEMBERS OF THE GENERAL COUNCIL.

AS YOU CAN SEE FROM OUR CONSTITUTIONAL STRUCTURE, THE BOARD AND EXECUTIVE MEMBERS ARE DIRECTLY RESPONSIBLE TO THE GENERAL COUNCIL WHO ARE THE POLICY MAKERS OF THE COUNCIL FOR YUKON INDIANS. ON TWO OCCASIONS WE HAVE APPEARED BEFORE THE NATIONAL ENERGY BOARD OF CANADA TO CONVEY OUR POSITION CONCERNING PIPELINES TO THEM.

ON SEPTEMBER 27TH, 1976, I PRESENTED TO THE NATIONAL ENERGY BOARD A SHORT HISTORY OF THE INDIAN PEOPLE IN THE YUKON TERRITORY.

PRESENT POSITION:

ON MARCH 4TH, 1977 THE COUNCIL FOR YUKON INDIANS PRESENTED ANOTHER BRIEF TO THE NATIONAL ENERGY BOARD IN WHITEHORSE, YUKON. THE BRIEF UPDATED THE POSITION OF THE COUNCIL FOR YUKON INDIANS IN RESPECT TO PIPELINE DEVELOPMENT. IN THE FIVE MONTHS BETWEEN SEPTEMBER 27TH, 1976 AND MARCH 4TH, 1977 THE COUNCIL FOR YUKON INDIANS HAS HAD SUFFICIENT TIME TO CONSULT WITH THE TWELVE INDIAN COMMUNITIES ON THE QUESTION OF PIPELINE CONSTRUCTION. THE RESPONSE WE HAVE RECEIVED HAS BEEN CLEAR AND UNEQUIVICAL. THE YUKON INDIAN PEOPLE ARE OPPOSED TO ANY PIPELINE IN THE NORTHERN YUKON IN PERPETUITY, AND IN THE SOUTHERN YUKON WE ARE OPPOSED TO PIPELINE CONSTRUCTION UNTIL THERE HAS BEEN A LAND CLAIMS SETTLEMENT WHICH HAS BEEN IMPLEMENTED. THIS POSITION WAS RATIFIED AT OUR GENERAL ASSEMBLY MEETING IN WHITEHORSE, YUKON ON FEBRUARY 17TH, 1977, BY A MOTION THAT WAS UNANIMOUSLY PASSED BY THE GENERAL COUNCIL DELEGATES.

THIS MOTION READS AS FOLLOWS: "THAT THE COUNCIL FOR YUKON INDIANS ARE 100% OPPOSED TO THE BUILDING/CONSTRUCTION OF A PIPELINE UNTIL SUCH TIME AS A LAND CLAIMS HAS BEEN SETTLED AND IMPLEMENTED BY THE COUNCIL FOR YUKON INDIANS AND WITH RESPECT TO THE OLD CROW AND NORTH SLOPE AREAS, THERE SHALL BE NO PIPELINE IN THIS AREA, FOREVER."

THE PIPELINE PROPOSALS PRESENTLY BEFORE YOU ARE NOT THE FIRST LARGE SCALE DEVELOPMENTS THAT WE HAVE ENCOUNTERED. OUR FIRST MAJOR CONTACT WITH NON-NATIVE PEOPLE OCCURRED DURING THE

KLONDIKE GOLD RUSH WHEN 30,000 PEOPLE WHO WERE PRIMARILY AMERICAN, DESCENDED ON DAWSON CITY IN THE YUKON TERRITORY. THEY LEFT AS QUICKLY AS THEY CAME, LEAVING OUR PEOPLE TO COPE WITH EPIDEMICS, LOSS OF LAND, CULTURAL DISLOCATION AND NO CONTROL OVER THEIR POLITICAL DESTINY. WE HAVE YET TO REGAIN THAT CONTROL OVER OUR OWN DESTINY AND REMAIN A MINORITY IN A LAND THAT BELONGS TO US.

LARGE SCALE DEVELOPMENT OF THE YUKON WAS NOT TO STOP WITH THE KLONDIKE GOLD RUSH. IN 1943 THE CANADIAN AND AMERICAN GOVERNMENTS DECIDED THAT THE ALASKA HIGHWAY WAS A NECESSITY. THE POPULATION OF WHITEHORSE SKYROCKETED FROM 300 PEOPLE TO 40,000. OUR PEOPLE ARE STILL SUFFERING FROM THAT IMPACT. THE TERM SOCIAL IMPACT MAY BE RELATIVELY NEW BUT THE DISEASE, ALCOHOLISM, FAMILY BREAK-UP, VIOLENCE AND DESPAIR SUFFERED BY OUR PEOPLE CONTINUES TODAY. WHAT NON-NATIVE YUKONERS SEE AS PROGRESS, WE SEE AS DESTRUCTION OF OUR WAY OF LIFE. THERE HAVE BEEN MANY OTHER DEVELOPMENTS IN THE YUKON TERRITORY SUCH AS THE AISHIHIK HYDRO POWER PROJECT, THE ANVIL MINING PROJECT AND THE CONSTRUCTION OF THE DEMPSTER HIGHWAY. EACH OF THESE HAVE PREJUDICED OUR POSITION IN RESPECT TO A LAND CLAIMS SETTLEMENT. THERE WERE ASSURANCES GIVEN FOR MANY OF THESE DEVELOPMENTS, IN THAT OUR RIGHTS WOULD NOT BE PREJUDICED IN ANY MANNER, HOWEVER, WE HAVE LEARNED OTHERWISE. WE ARE DETERMINED THAT WE WILL NOT NOW COMPROMISE OUR POSITION. WE WILL NOT AGAIN HEAR OF HOLLOW ASSURANCES AND GUARANTEES. WE WILL NOT TOLERATE ABUSES OF OUR PEOPLE AND OUR LAND FOR THE SAKE OF DEVELOPMENT ALONE. WE WILL DEDICATE OUR ENTIRE RESOURCES TO THE COMPLETION AND IMPLEMENTATION OF A LAND CLAIMS SETTLEMENT BEFORE WE CONSIDER ANY MAJOR DEVELOPMENT IN THE YUKON.

ONCE OUR LAND CLAIMS HAVE BEEN RESOLVED, WE WILL BE IN A POSITION TO CONSIDER OTHER MAJOR CONCERNS.

YOUR CONERN TODAY IS A PIPELINE ROUTE. OUR CONCERN IS IN MANY OTHER AREAS, BUT ONE WHICH YOU CAN CONSIDER IS YOUR ILL TREATMENT OF OUR PEOPLE IN YUKON OVER THE SALMON FISHING.

OUR WATER HAS BEEN THE TRADITIONAL SPAWNING GROUNDS FOR SALMON THAT LATER GO TO THE SEA THROUGH ALASKA, WHEN THEY RETURN FOUR YEARS LATER TO SPAWN, THE ALASKANS CATCH THEM, LEAVING ONLY A FEW FOR US.

YOUR PEOPLE APPARENTLY HAVE LITTLE OR NO CONCERN FOR OUR PLIGHT, WE HAVE BEEN TOLD BY THE CANADIAN GOVERNMENT FISHERIES REPRESENTATIVES THAT THE TALKS WITH YOUR PEOPLE ARE UNSUCCESSFUL,

THIS HAS RESULTED IN A GREAT DEPLETION OF OUR FOOD SUPPLY IN THE YUKON,

WE ASK YOU, WHY SHOULD WE CO-OPERATE WITH YOU TO PROVIDE A ROUTE FOR A GASLINE THROUGH OUR LAND WHEN YOU CUT OFF OUR SALMON FOOD SUPPLY?

WE HAVE CONSIDERED OUR POSITION VERY CAREFULLY, WE REALIZE THAT THERE ARE SOME TOKEN BENEFITS THAT WE AS INDIAN PEOPLE MAY TAKE ADVANTAGE OF IN CASE OF PIPELINE CONSTRUCTION WHICH WOULD ALLOW AMERICAN GAS TO FLOW OVER OUR LAND, HOWEVER, THESE TOKEN BENEFITS ARE NOT ENOUGH TO OUTWEIGH THE PREJUDICIAL EFFECT A PIPELINE WOULD HAVE ON OUR PEOPLE, WE FEAR THAT THE IMPACT OF ANOTHER LARGE SCALE DEVELOPMENT EVEN AFTER OUR LAND CLAIMS ARE SETTLED AND IMPLEMENTED, THE PAST EXPERIENCES THAT I HAVE CONVEYED TO YOU AND THE PRESENT EVIDENCE OF MODERN DEVELOPMENTS ARE WHY WE INSIST ON THE SETTLEMENT AND IMPLEMENTATION OF OUR LAND CLAIMS BEFORE ANY LARGE SCALE DEVELOPMENT TAKES PLACE, THIS POSITION IS NOT ONE OF TACTICS

OF NEGOTIATION OR A DESIRE TO SETTLE OUR CLAIM WHILE THE DEVELOPMENT PRESSURE IS ON BUT RATHER IT IS FOR THE SURVIVAL OF OUR PEOPLE.

IT IS NOW OUR PARAMOUNT POSITION TO FIRST OF ALL, SETTLE AND IMPLEMENT THE LAND CLAIMS SETTLEMENT BEFORE ANY CONSIDERATION OF CONSTRUCTING A MAJOR DEVELOPMENT AND THIS INCLUDES A PIPELINE. WE WILL NOT BE SWAYED FROM THIS POSITION. WE WILL CONTINUE TO OPPOSE PIPELINE CONSTRUCTION, AND IN THE EVENT ONE IS AUTHORIZED BY THE FEDERAL GOVERNMENT BEFORE THE SETTLEMENT AND IMPLEMENTATION OF OUR LAND CLAIMS, WE WILL GATHER OUR COLLECTIVE RESOURCES AND FULLY UTILIZE THESE RESOURCES IN COMPLETE OPPOSITION TO THE CONSTRUCTION OF A PIPELINE. IF THIS OPPOSITION MEANS USE OF THE COURTS, WE WILL USE THE COURTS. WE ALSO FEAR THAT THERE WILL BE PHYSICAL PROTESTS BY MANY OF OUR PEOPLE. BUT WE SHALL NOT COMPROMISE OUR PRESENT POSITION UNTIL OUR LAND CLAIMS HAVE BEEN IMPLEMENTED. WE DO NOT VIEW A MORATORIUM ON CURRENT NORTHERN DEVELOPMENT AS NEGATIVE BUT RATHER WE VIEW SUCH DEVELOPMENT AS POSITIVE, IN THAT WE, THE ORIGINAL INHABITANTS OF THIS LAND, WILL BE ABLE TO CONSIDER IT AND COMPETE ON AN EQUAL BASIS. I DO NOT FEEL THAT I HAVE TO REPEAT TO THIS SUB-COMMITTEE THE NATIONAL TREATEMENT THAT WE AS INDIAN PEOPLE IN CANADA HAVE RECEIVED, BUT WE IN THE YUKON ARE DETERMINED THAT WE WILL NOT BE SUBJECTED TO CONTINUED DEGRADATION AND HUMILIATION IN OUR OWN LAND. WE ARE DETERMINED TO ATTAIN THE NECESSARY AUTONOMY AND CONTROL OVER OUR LANDS AND OUR LIFESTYLES, AND WE FEEL THAT AN EQUITABLE AND JUST LAND CLAIMS SETTLEMENT WOULD AFFORD THIS OPPORTUNITY. CONTINUED DEVELOPMENT IN THE YUKON TERRITORY WITHOUT SETTLEMENT AND IMPLEMENTATION OF THE LAND CLAIMS SETTLEMENT WOULD ALSO WIDEN THE ECONOMIC AND SOCIAL GAP WHICH PRESENTLY EXISTS BETWEEN INDIAN AND NON-INDIAN COMMUNITIES IN THE YUKON TERRITORY. CONTINUED DEVELOPMENT BEFORE OUR LAND CLAIMS SETTLEMENT WOULD DEPRIVE US OF THE OPPORTUNITY TO MEANINGFULLY CONTRIBUTE TO FUTURE NORTHERN DEVELOPMENT.

IN CLOSING, WE RECOMMEND THAT: 1) NO PIPELINE BE CONSTRUCTED ACROSS THE SOURTHERN YUKON UNTIL THE LAND CLAIMS OF THE YUKON INDIAN PEOPLE HAVE BEEN SETTLED AND IMPLEMENTED. 2) THE NORTHERN SLOPE AREA OF THE YUKON AND THE AREA THROUGH THE OLD CROW COMMUNITY LAND BE CLOSED FOR PURPOSES OF PIPELINE CONSTRUCTION FOREVER.

THESE RECOMMENDATIONS AND INHERENT POSITIONS WHICH WE HAVE CONVEYED TO YOU TODAY, IS A POSITION WHICH WE FEEL WOULD ALLOW US THE OPPORTUNITY TO CONTRIBUTE TO ANY MAJOR NORTHERN DEVELOPMENT, AND TO REGULATE TO SOME EXTENT FUTURE DEVELOPMENT IN ORDER THAT IT IS MORE COMPATIBLE WITH OUR YUKON INDIAN CULTURES. FROM OUR POINT OF VIEW, THIS CAN ONLY BE POSITIVE, NOT NEGATIVE.

THANK YOU MR. CHAIRMAN AND MEMBERS OF THE SUB-COMMITTEE.

El Paso ALASKA COMPANY

JOHN C. BENNETT

6 May, 1977

The Honorable John L. Rader
Alaska State Senator
State Capitol Building
Pouch V
Juneau, Alaska 99811

Dear John:

As we move toward the final decision concerning an Alaskan gas transportation system, I thought that you might be interested in reviewing El Paso Alaska's final documentary presentation before the Federal Power Commission. This document addresses several important issues concerning new proposals made recently by both Alcan and Arctic Gas.

For your convenience, we have highlighted those sections that are of particular interest.

Pages 1-2	-	The Federal Power Commission has adopted procedures which preclude adequate examination of the new proposals.
Pages 2-4	-	Alcan's new proposal suffers from critical omissions of pertinent information.
Pages 4-11	-	Alcan's schedule ignores preconstruction activities; therefore, the Alcan claim that it can deliver gas sooner than any other applicant is untenable.
Pages 11-21	-	Unrealistic construction schedules will increase Alcan's costs and delay completion.
Pages 22-26	-	Inadequate environmental preparation will further delay the Alcan project.
Pages 27-36	-	Alcan's new 48-inch proposal will increase costs and severely strain capital markets.
Pages 36-37	-	The Arctic Gas so-called frost heave design is actually a new construction plan for almost 2,000 miles of its Canadian line.

AGO 668060

Pages 43-44	-	Arctic Gas' redesign indicates a lack of confidence in its engineering and geotechnical presentations.
Pages 48-49	-	Arctic Gas has erroneously overestimated Mackenzie Delta reserves.
Pages 50-51	-	Two separate studies, one commissioned by the Environmental Protection Agency and the other by the Department of Interior, predict time schedule slippage is significantly more likely for Arctic Gas than El Paso.

I hope you find this document a useful reference. Should you need more information, please let me know.

Sincerely yours,



UNITED STATES OF AMERICA

BEFORE THE

FEDERAL POWER COMMISSION

El Paso Alaska Company, et al.	)	Docket Nos. CP75-96, et al.
	)	
Order Providing for Suspension of Proceedings, et al.	)	Docket No. RM77-6
	)	

RESPONSE OF EL PASO ALASKA COMPANY TO THE SUBMISSIONS OF ARCTIC GAS AND ALCAN

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April 8, 1977

TABLE OF CONTENTS

		Page
The Alcan Project		2
A.	Preconstruction Schedule	4
1.	Prepare a preliminary detailed route selection	4
2.	Accumulate field data on a site-specific basis	4
3.	Prepare a final detailed alignment	5
4.	Acquire rights-of-way and permits for land use	5
5.	Prepare detailed design	5
6.	Apply for and obtain authorizations to construct	6
7.	Arrange for procurement of long delivery items of materials and equipment	7
8.	Acquire granular materials	9
9.	Start civil construction	9
10.	Select pipeline contractors	9
11.	Mobilize pipeline contractors	9
B.	Optimistic Alcan Schedule	11
1.	Pipeline Construction	11
2.	Production Rates	14
3.	Cost Impact	15
C.	Construction Manpower	17
D.	Environmental Considerations	22

TABLE OF CONTENTS (cont'd.)

		Page
E.	Financing the 48-Inch Alternative	27
	1. Negative Impact on Financial Feasibility on All Counts	27
	2. Higher Capital Costs	28
	3. Higher External Financing Requirements	28
	4. Required Financing Expanded Most in Weaker Markets	31
	5. Previous Criticisms Still Valid	32
The Arctic Gas Proposal		36
A.	New Frost Heave Design	36
B.	Financing	45
C.	MacKenzie Delta Gas Supply	45
D.	Risk Analyses	50

UNITED STATES OF AMERICA
Before the
FEDERAL POWER COMMISSION

El Paso Alaska Company, et al.	)	Docket Nos. CP75-96, et al.
	)	
Order Providing for Suspension of Proceedings, et al.	)	Docket No. RM77-6
	)	

RESPONSE OF EL PASO ALASKA COMPANY TO
THE SUBMISSIONS OF ARCTIC GAS AND ALCAN

The actions of this Commission in accepting submissions of additional materials under Order No. 558-C from Arctic Gas and Alcan, especially the latter's submission of an entirely new proposal, and the attempt to provide an opportunity for the testing of that new material by the interrogatory and response process of Order No. 558-E and by argument offered under Order No. 558-D, are violative of due process of law under the Fifth Amendment to the Constitution if these actions result in the Commission's use of the newly filed materials in the decisional process by which the Commission makes a comparative judgment among proposals for an Alaskan gas transportation system under Section 5(b)(1) of the Alaska Natural Gas Transportation Act of 1976.[1/]

The time afforded and the procedures offered are inadequate to test the newly filed materials for accuracy, candor, bias

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1/ If it be contended that the procedures adopted are authorized by Section 5(b)(2), then El Paso Alaska submits that such an interpretation would make this latter section unconstitutional. Section 5(b)(2) also provides for a delegation of authority which is itself unconstitutional.

or completeness. We have not been afforded adequate opportunity for discovery, confrontation and cross-examination. The procedure adopted permits a decision or recommendation outside a record made in the course of a due process hearing.

While our responses to many new matters are not complete, and with protest to the procedures adopted, El Paso Alaska nevertheless submits the following in response to the Commission's Orders Nos. 558-C and 558-E.

THE ALCAN PROJECT

The new Alcan 48" project continues to suffer from all the problems which inhered in its original 42" filing. With respect to that 42" filing, El Paso Alaska had made the following observations:

> "As El Paso Alaska noted earlier, the Alcan project is in such an incipient state of development that no real meaning can be given to its schedules, cost estimates or pricing suggestions. At this stage, they are nothing more than an 'educated guess.' Tr. 221/38,538 (Hauser). Given that state of events, there is no way in the world that a fact finder can conclude that the Alcan project can and will complete within the time proposed or within the cost figure suggested.
>
> * * *
>
> " * * * The Alcan project sponsors clearly prepared their schedule before either knowing or solving the problems which a critical path analysis for the proposed Alaskan gas delivery system would have revealed. No lawyers' brief can develop a critical path analysis. The assignment of duration time, probability and interrelating nodes requires an exercise of

> engineering judgment. However, it takes no such expertise to realize that the absence of coordinated and comprehensive engineering judgment for the entire Alcan project is a major defect." Reply Brief of El Paso Alaska Company With Respect to Cost, Scheduling and Economics, filed December 13, 1976, pp. 112-13.

Responsive to that and other criticisms, the Administrative Law Judge arrived at the following well-founded conclusions:

> "Construction is another matter. Assuming that Alcan could demonstrate that it would be permitted to build on the Alyeska right-of-way, it could not say how close to Alyeska's line it would be permitted to come, and construction costs -- when a line cannot be specifically placed -- begin to be vague. Not that its costs elsewhere can be accepted with confidence. Its engineers are excellent; Westcoast's in particular displayed a great knowledge of their art. But, given the time constraints and magnitude of the job to be done and the vagueness of much of the specific alignment at the time their estimates were made, they were not able to support costs in more than a general way in either the U.S. or Canada. Blind faith in its engineers' expertise cannot replace the ability to independently check figures against known plans of pipeline construction on fixed right-of-way." I.D., at 345.

The new 48" filing does nothing to alleviate these problems. It is a totally new system design, with new hydraulics, a new construction schedule, new project planning and a new route over almost 500 miles. Alcan offers no additional project planning evidence and no additional evidence by environmental, geotechnic or engineering consultants to show why any more credence should be given to its 48" proposal than was previously given to its 42" line. Even on the issue of system expansibility, the

Alcan 48" alternative departs from an optimized design and results in an ultimate system of low efficiency with high fuel consumption, which approaches the same inefficiencies of their original 42" system. Moreover, even the most cursory examination of the Alcan filings, together with what materials were submitted in response to interrogatories, reveals the following problems.

A. Preconstruction Schedule

Alcan has seriously underestimated the length of time required for preconstruction activities. This period can be defined as the time between receipt of approval of the application (Congressional approval of the Presidential decision) and the start of construction. The functions that Alcan omitted and must complete are:

1. Prepare a preliminary detailed route selection: The present route selection is merely a line drawn on a map. Details, such as crossings of Alyeska, river crossings, specific locations on terrain features, use of the Alyeska haul road, and utilization of the Alyeska guidelines for distances between pipelines are non-existent.
2. Accumulate field data on a site-specific basis: This includes negotiations for and purchase of existing Alyeska data, geophysical surveys of permafrost limits, environmental studies,

archeological studies, soil borings and laboratory analyses on compressor station sites, at river crossings, and along the pipeline route, weather data and the hydrological data and stream characteristics necessary to design stream crossings.

3. Prepare a final detailed alignment: This includes the preparation of completely detailed alignment sheets on orthophoto mosaics.

4. Acquire rights-of-way and permits for land use: Assuming Congressional approval of the Presidential decision automatically carries with it a permit for right-of-way on federal land, it will still be necessary to determine title to every parcel of land crossed by the pipeline, prepare property plats and obtain easements from the BLM, the State of Alaska, native villages and corporations and private individuals. Mining claims must be settled and the Haines pipeline rights-of-way (including the existing products pipeline) must be purchased from the GSA.

5. Prepare detailed design: This includes a safe and reliable design of the pipeline, compressor stations and all ancillary facilities. Details must be prepared for mitigating permafrost

degradation and protecting the environment. Stream crossings, road crossings and pipeline crossings must be individually designed and drawings and applications for permits must be prepared. The route of the pipeline must be analyzed by use of an acceptable thermal simulation computer model to determine if the proposed mitigative measures are sound and effective. A thorough, effective quality assurance program must be developed.

6. Apply for and obtain authorizations to construct: These must be prepared and submitted to the DOI, DOT, State of Alaska and the various subagencies having jurisdiction such as the State Highway Department, Joint Fish and Wildlife Advisory Team and the State Department of Natural Resources. The most serious aspect of this phase is that a denial of authorization at any level will mean a complete revision of that particular phase, and a major denial from DOI, DOT, or the State could mean a complete revision of the entire project and a return to Item No. 1 on this list for a recycle through the entire process. Prior to issuance of authorization to construct, site-specific field archeological investigation must

take place. A significant archeological discovery on the pipeline right-of-way would require a re-route and a recycle of the pre-construction activities.

Concurrently with the above procedures, the Canadian companies (Foothills, Westcoast and AGTL) will be concerned with similar agencies in Canada plus the time required to settle the Yukon native claims. The time required to settle these native claims is not easily estimated. It can range from several years down to the time frame approximately equal to the time required to process the other permits.

7. Arrange for procurement of long delivery items of materials and equipment: This includes preparation of specifications, bidding, negotiations of purchase contracts, and issuance of purchase orders. The various suppliers must fit the orders into their production schedules, acquire raw materials, convert these raw materials into the basic components such as steel plate, castings, and electronic parts, and manufacture and test the finished products.

Compressors, refrigeration equipment, electrical generators and switch gear, electronics,

and computer controls ordinarily require the longest lead times. However, all these items are installed on the pipeline in the later years of the schedule, and should not be critical items.

Pipe, then, becomes the critical item. This is especially true of the Alcan project because the pipe to be used must be rolled from arctic grade steel in larger than normal size (48") and with greater than normal wall thicknesses. Special items such as this require longer lead times than normal.

But the production of pipe is not the final step in this process. A sample of the finished pipe must be thoroughly tested to the satisfaction of the governmental agencies. Welding procedures must be developed and radiographic inspection techniques set up. A failure anywhere along the time in this process will send the metallurgists and purchasing agents back to the beginning of this item.

The various applicants in these proceedings have indicated that pipe specifications have been drafted and initial contacts have been made with the pipe mills. No one has testified for Alcan that a commitment has been made which will start

the processes described above.

8. Acquire granular materials: This will probably be a combination of purchase of excess materials stockpiled by Alyeska (if any) and mining borrow sources after receipt of permits from the DOI (BLM) and the State of Alaska.

9. Start civil construction: This includes preparation of storage yards, double jointing yards, work pads, access roads, camp sites, and sites for ancillary facilities. This item requires the receipt of many permits described in Item No. 6 above.

10. Select pipeline contractors: This procedure can start after Item No. 6 has proceeded to a point of confidence that permits will be awarded and can be continued during the processing of Item No. 7 -- acquisition of materials and equipment. But this item must be completed prior to the start of Item No. 11.

11. Mobilize pipeline contractors: This is the prelude to the start of construction. It has a controllable flexibility and must be fitted into the critical path whether first pipe delivery or receipt of governmental permits becomes critical. It is, in fact, the "bridge" that connects the

"paths" followed by the two possible critical items, pipe and permits, and they converge on this item.

Thus, it can be seen that preconstruction activities are complicated, detailed, and time consuming. Alcan has done none of them and has scheduled none. The above listed items must be done in sequence except where noted otherwise. The preconstruction schedules of the various proposals can be found in the record in the following references:

Company	Reference
Westcoast	Vol. 1A, Tab 11
AGTL	Vol. 1, Fig. 3-D-1
El Paso	Ex. EP-172
Arctic	Ex. AA-35

From these references, it can be seen that the time required for preconstruction activities should be approximately 24 months to the start of civil construction and approximately 31 months to the start of pipeline construction. Two of the applicants, Alcan and Foothills, have not provided for such time in their project schedule. This conclusion is verified by the cash flow schedules in the capital cost estimates of the applicant. This analysis does not include the time required to arrange financing for the project and obtain approvals of tariffs. It is possible for these two items to require more time than all of the other preconstruction activities described. However, for the

purposes of this analysis, time for financing and tariff approvals has not been included.

Alcan has simply omitted adequate preconstruction time from its schedule. Alcan's claim that it can deliver gas sooner than any other applicant is simply lawyer's puffing.

B. Optimistic Alcan Schedule

1. Pipeline Construction

The Alcan 48" express proposal plans to install the following mileages of pipeline, including Northern Border and PGT-PG&E.

1979 - 561 miles
1980 - 2367 miles
1981 - 1816 miles

By comparison, the total amount of large-diameter pipeline (30 inches and larger) installed in the U.S. and Canada in 1976 was approximately 1900 miles. Alyeska installed 496 miles or 28% of the 1976 total. The total large-diameter pipeline installation planned for 1977 in the U.S. and Canada is only 1055 miles. Thus, Alcan is grand in scale.

The Alyeska project attracted five joint venture companies consisting of most of the major big-inch pipeline contractors operating in the U.S. and Canada. The gathering line construction at Prudhoe Bay required by the Alyeska project attracted three other major pipeline construction companies. These companies committed all available equipment, their best management personnel,

and attracted the most productive manpower available in the North American pipeline labor pool to complete the Alyeska project. The result of this effort was that the large demand for equipment caused equipment prices to increase at nearly twice the national wholesale price index. Management personnel and productive skilled labor were in short supply. Pipeline contractors working in the lower 48 in 1976 experienced productivity much lower than estimated or previously experienced and costs higher than estimated. Labor rates for operators, teamsters and laborers in Alaska increased 51% between January 1, 1974 and January 1, 1977, an annual inflation rate of nearly 15% (compared to an annual increase of the wholesale price index of 8.5%).

The over-optimism of the Alcan construction plan is summarized below.

Proposed Alcan Mileage U.S. Industry
(30-Inch Diameter and Larger)

	Year	Miles	% Alyeska 1976 (496 Miles)	% Total 1976 (1800 Miles)	% Estimate Total 1977 (1055 Miles)
Alcan (Total System)	1979	561	113%	31%	53%
	1980	2367	477%	132%	224%
	1981	1816	366%	101%	172%
Alyeska	1976	496	100%	28%	---

The pipeline construction industry is an extremely cyclical industry. Many pipeline companies are owned by parent companies who achieve financial stability by diversification. Most pipeline contractors own very little equipment, meeting

their requirements by leasing from dealers from each project. Naturally, no pipeline contractor retains hourly labor on the payroll between projects. Seccnd tier supervision also is released to work for other contractors between projects, although many of these people have primary allegiance to a single general superintendent.

A pipeline contractor, then, offers experienced key management personnel, limited owned equipment, a capable organization, knowledge of the labor pool and project financing ability. Second tier supervision (spread superintendents, foremen, administrative help, etc.), skilled hourly labor, and most equipment come from a pool common to the entire industry. The ability to meet industry's requirements from this common pool is not unlimited.

During periods of low economic opportunity, such as will be experienced in 1977 with the shutdown of Alyeska, the pool shrinks. Equipment is junked, sold to foreign markets, converted to other use, deteriorates while idle or becomes obsolete. The labor pool shrinks from diversion to other fields of opportunity and by death or retirement.

During economic buildup the equipment pool is not able to increase as quickly as demand. This results in over-inflated prices and the use of less than efficient equipment. Similarly, the labor pool is not able to expand with trained and experienced manpower until incompetent and inefficient members of the pool are fully employed.

Given the huge demand on the industry planned by Alcan, its construction schedule and cost estimate are not worthy of consideration. The high level of activity that Alcan expects to achieve simply will not commence without a great deal of difficulty. If it is achieved, project completion will only be obtained after massive cost overruns and significant delays. Significant cost overruns on the Alcan project must be assumed.

2. Production Rates

Alcan, based upon the Alyeska experience, has filed a construction plan for installing 48" pipe in Alaska at the rate of 0.43 miles per calendar day. Such a rate compares favorably with the final rate experienced by Alyeska and generates a cost estimate that is comparable with the El Paso Alaska estimate.

However, the Canadian applicants indicate a much higher rate of progress. The Canadian companies, who will not be using a work pad for the most part and plan to snake their line through the rugged Canadian Rockies, plan a winter installation rate for 48" pipe from 79% to 142% of the Alcan Alaska rate and a summer rate of 128% to 212%[2/] of the Alcan Alaska rate. While experience in constructing big-inch pipelines in Canada indicates better performance records by Canadian welders than by their U.S.

2/ Planned by AGTL in the summer working only six days per week. Effective rate per scheduled work day in 247%.

counterparts, this experience does not reflect installing pipelines when the demand on the labor pool exceeds 100% of the supply as stated by AGTL in its application (3.D.5-1). If the industry in Canada is fortunate in training or attracting welders, they may experience a 10% production advantage over the U.S. portion of the project. To plan on anything more is imprudent to say the very least.

The Northern Border project, presumably based on comparable continental U.S. pipeline construction experiences, plans an average rate per calendar day per spread of 0.55 miles for its 42" line. The Canadian applicants again plan a more optimistic rate, ranging from 122% to 182% of the Northern Border rate.

On the 36" western leg, PGT and PG&E plan a rate equal to 147% of the Northern Border rate for their looped line. Westcoast's construction rate on the 36" leg is 191% of the Northern Border rate and AGTL plans 182% in the valley and 113% in the Rocky Mountains. No credence can be given to any such construction scheduling.

3. Cost Impact

Failure to meet production rates will cause increased construction costs and schedule delays. Failure to mobilize 24 pipeline spreads concurrently will impact costs and schedule. Should the Alcan system be planned with a five-year construction schedule instead of the three years now planned, the impact on

the North American pipeline industry would only be twice the impact caused by Alyeska.

Presently the Canadian wage rates used by the applicants in their estimates are approximately 50% of the Alaska wage rates. Present Canadian economic conditions and future pressure by labor to approach parity with their counterparts across the border will result in higher labor costs -- that's what can be expected from projecting historical trends. Foothill's consultant, Canuck Engineers, has predicted exactly this outcome during its cost critique of the Arctic Gas project as filed before the NEB. This increase may be added to the omissions category.

Other omissions are:

1. No provision for work pads in Canada;
2. No cost for air support for mobilization and re-supply of labor and emergency supplies. (Alcan Answers to Interrogatories, Vol. I, pp. 9-12);
3. Only meager provisions for supply of granular material (12 inches for pads in the Yukon Territory) (Ibid., pp. 3-5); and
4. Inaccurate representation of Northern Border cash flow and inconsistent and inaccurate de-escalation of Canadian costs (Ibid., pp. 112, 76, 77).

Three substantial items of cost will impact the computed cost of service for the Alcan 48" project.

1. Rate of construction - overestimated in Canada.

2. Duration of construction - A minimum of five years instead of three, increased AFUDC.

3. Omissions - underestimated in Canada.

The minimum expected impact on cost of service of these omissions would be a 20% increase in costs.

C. Construction Manpower

It is clear that the Alcan project stretches beyond belief the available construction manpower in Canada. The following tables, extracted from the Alcan filing, reveal that in one construction season, the summer of 1981, they require 24 mainline construction spreads, 18 compressor station crews, or a total of 42 separate crews.

48" Alternative

Mainline Spread Requirements 1/

Segment	Year/Season 1979 Summer	1979 Winter	1980 Summer	1980 Winter	1981 Summer	1981 Winter
Alcan	-	-	6	-	6	-
Foothills-Yukon	2	2	2	1	-	-
Foothills-Saskatchewan	-	-	1	-	1	-
Westcoast:						
48"	-	2	2	1	2	-
36"	-	-	-	-	1	-
AGTL Canada	-	-	4	2	4	-
PGT-PGE	-	-	2	-	4	-
Northern Border	4	-	6	-	6	-
Total Mainline Spreads	6	4	23	4	24	-

Compressor Crews 2/

Segment	Year/Season 1980 Summer	1980 Winter	1981 Summer	1981 Winter	1982 Summer
Alcan	4	-	4	-	-
Foothills	4	-	4	-	-
Westcoast	2	-	2	-	-
AGTL Canada	-	-	4	-	4
PGT-PGE	-	-	-	-	-
Northern Border	4	-	4	-	-
Total Compressor Spreads	14	-	18	-	4

1/ Does not include catering.

2/ Does not include camp or catering--Alcan indicates eight camps will be needed for two seasons.

ALCAN PROJECT

48" Alternative

Manning Requirements

(Pipeline Spreads and Compressor Crews)

Type	1979 Summer	1979 Winter	1980 Summer	1980 Winter	1981 Summer	1981 Winter	1982 Summer
Welders	396	330	2,034	295	2,199	-	120
Welder Helpers	404	387	2,269	364	2,391	-	120
Subtotal	800	717	4,303	659	4,590	-	240
Foremen	86	60	407	60	440	-	20
Operators & Mechanics	835	867	4,802	700	4,910	-	120
Teamsters	240	224	1,389	220	1,434	-	20
Laborers	1,049	797	5,399	796	5,984	-	192
GRAND TOTAL	3,010	2,665	16,300	2,435	17,358	-	592

Their total pipeline manpower requirement during that construction season exceeds 17,000. This is far in excess of even the most optimistic estimates as to availability within the North American labor force. It may be recalled that even Arctic Gas has admitted that its project, requiring only 9 mainline construction spreads in any given season, depends upon marshalling manpower from Canada in a number never before imagined, a number which will require the "upgrading" of existing skills to meet the manpower requirements. Tr. 23/3,385 (Dau). Even accepting the manpower requirements posited by one of the Canadian partners (AGTL), the existing work force is woefully inadequate to meet the necessary manpower. The following table, at page 3.D.5-1 of AGTL's portion of Alcan's 48" alternate filing, makes that point even more clear than we could attempt to do. Note the disparity between the last two columns.

5. CONSTRUCTION RESOURCES

5.1 INTRODUCTION

The construction program will require the use of four construction spreads during the 1980 summer construction season. Manpower and equipment for this program are not extensive but must be included as a segment of a major project involving construction by other companies simultaneously.

5.2 MANPOWER REQUIREMENTS

The following table shows estimated peak manpower requirements for AGT (Canada) and the estimated manpower requirements for others for pipeline construction in connection with the Alaska Highway Project - 48" Alternative during the 1980 summer construction season and an estimate of the number of experienced people presently available in Canada.

	Applicant	Foothills (Y)	Westcoast	Total Required	Existing* Work Force
Supervision	150	120	150	420	250
Welders	260	210	190	660	350
Operators	505	430	580	1,515	800
Teamsters	195	160	170	525	525+
Skilled Labour	320	200	310	830	480
Others	770	450	700	1,920	1,920+
TOTALS	2,200	1,570	2,100	5,870	4,325+

* Construction Problems - Arctic Pipeline
W. Gant - R. D. Meeres
Canadian Northern Pipeline Research Conference (February 1972)

Upon receiving a permit the Applicant will initiate an extensive training program in conjunction with the Pipe Line Contractors Association of Canada, Unions, Canada Manpower and other government agencies utilizing construction of the AGTL system.

D. Environmental Considerations

At the end of the cross-examination on Alcan's 42" filing, their environmental testimony was left in a shambles. In describing their environmental case, El Paso Alaska wrote as follows:

> "The Alcan presentation in this proceeding shows that the environmental consultants did not have adequate input into the selection of the pipeline route. Further, the environmental consultants acknowledged that the collection of additional baseline data will lead to further environmental assessments which, in turn, may require changes in pipeline alignment. Such changes could affect the engineering design of the Alcan project; the likelihood that there will be such changes makes uncertain the reliability of Alcan's cost estimates. These points emerged during the cross-examination of nearly all the Alcan witnesses.
>
> "Alcan's hydrologist, Dr. R. F. Carlson, who undertook a hydrological reconnaissance between Delta Junction and the Canadian border (Tr. 194/32,748 (Carlson)), testified that about a year would be needed to do the necessary hydrological work at major crossings. Tr. 194/32,767 (Carlson). Such data is necessary both to determine where to cross a river and how to design the crossing. Dr. Carlson had not participated in the costing of the Alcan pipeline. Tr. 194/32,755 (Carlson). In the stretch between Delta Junction and the Yukon Border, Alcan fisheries' biologists have catalogued the streams but have not gathered baseline information on the fish using them. Tr. 193/32,676-32,678 (Holden and Van Hyning). Such information is necessary to arrive at a construction plan that mitigates impact on fish. It could also affect the siting of stream crossings.
>
> "The Alcan environmental witnesses (Gordon, Foster, and Mathewes), who addressed both

Alaskan and Canadian portions of Alcan's environmental report (Tr. 194/32,780 (Mathewes)), had no input into the routing of the pipeline in Canada. Tr. 195/33,039 (Gordon). Alcan did not offer other witnesses to fill this gap. As a result, the alignment in Canada, as far as the record reflects, did not take into account sensitive environmental areas in Canada. If further studies uncover such areas, costly realignments could be the result. Further, the Alcan witnesses could not address the issue of proper construction timing in Canada, as they lacked proper baseline data. Tr. 194/32,984 (Gordon). Dennis E. Baker, of the environmental consulting firm of F. F. Slaney & Co. (Tr. 195/33,067 (Baker)), who discussed land use along the Alcan pipeline (Tr. 195/33,074 (Baker)), testified that there 'has not been sufficient work done on the specific line location' to permit him to make site-specific recommendations on relocation, except that he had advised Alcan to stay generally within existing corridors. Tr. 195/33,112 (Baker). Dr. L. W. Mottus, of C. D. Schultz & Co. (Tr. 195/33,318 (Mottus)), who testified about Canadian impacts, admitted that he lacked the underlying data to advise the engineers on the timing of construction, on mode of construction, on gravel sources, and on blasting schedules. Tr. 196/33,361 (Mottus).

"The foregoing review shows that Alcan has a great deal of site-specific environmental data to collect before it can proceed to final design. Alcan's notion that it can be in operation more quickly than El Paso Alaska in view of the amount of baseline environmental work ahead of it, is just a notion. It has no predictive meaning." Reply Brief of El Paso Alaska Company on the Environmental Issues, filed November 18, 1976, pp. 61, 62.

Judge Litt completely concurred. Describing Alcan's environmental presentation in his Initial Decision, he wrote:

"As far as this record is concerned, Alcan's descriptions on brief of the story it has to tell on its environmental preparation

> far exceeds the contents of the story. From Prudhoe Bay to Delta Junction, as of now, it simply relies on Alyeska work as supervised by JFWAT and a literature search by its consultants (Rebuttal Br. 23). From Delta Junction to the U.S.-Canadian border, it 'follows the Haines pipeline and highway,' even though its environmental witnesses were not sure where the pipeline would go. The corridor concept is argued as if it were on a common pipeline right-of-way -- which it is not -- leaving Delta Junction and as if merely saying the magic word 'corridor' eliminates the problems of site-specific work. In both its Environmental Rebuttal Brief and Economic Brief, Alcan argues that its ongoing studies on environment will be more complete by May 1, 1977, when the Commission's decision will be entered -- an almost bald admission that the record showing it has made so far is deficient on its face. There are no JFWAT studies east of Delta Junction, and there simply is not sufficient biological evidence in this record to find that Alcan has met the Commission's requirements under NEPA. The environmental showing made as to the Canadian portions of its project were not even used by the engineers in Canada in designing the line. On the basis of this record, the only advantage that Alcan can be found to have is that it crosses neither the Wildlife Range nor the Chugach Forest. Other than that, which is a philosophical finding, it has not made a case sufficient to make appropriate environmental findings that it is as satisfactory, and certainly not that it is superior, on environmental grounds as either Arctic Gas or El Paso." I.D. 245 (footnotes omitted) (emphasis supplied).

That description was accurate then and it remains an accurate description of Alcan's 48" alternative. They have done nothing to improve their previous environmental submissions. They were defective then and they are defective now. Moreover, to the extent that Alcan utilizes a new 500-mile

alignment through British Columbia and Alberta, even the preliminary studies made with respect to their 42" alternative are of no help to them. That 500 miles is unstudied, a fact which must disqualify the Alcan project on NEPA considerations.

Indeed, a review of the Alcan environmental filing shows that its environmental consultants are by no means persuaded that the pipeline is routed or that compressor stations are located to avoid environmentally sensitive areas in Canada. The consultants therefore recommend that management undertake further studies, that management either reroute or consider rerouting the pipeline in certain sensitive areas, and that management either relocate or consider relocating compressor stations in certain areas. Our review of the Alcan material suggests that there are a considerable number of miles of pipeline which may have to be significantly realigned and a number of compressor stations that may have to be relocated. These realignments and relocations could result in substantial redesign of the pipeline, with significant cost and schedule impacts.

We here give some specific examples illustrating our comments.

In Document 50, filed by Alcan on March 22, 1977, page 243, it is stated that compressor station C5-64 should be relocated from Hackel Hill (MP 258.5) to a less environmentally sensitive location. On the same page, it is stated that the pipeline should be rerouted around the Ibex River Valley (MP

235.75) to a less environmentally sensitive region. At page 653, it is stated that the proposed alignment from MP 45-175 should be examined to see if alternative routes are available which would avoid the proposed ecological reserves and the Kluane Game Sanctuary. In Addendum C to Volume 3, Section B, filed February 28, 1977, relating to the section of the Alcan line to be built by Westcoast Transmission Co., it is stated at page 418 that:

> "With the construction of the pipeline, a signigicant area of land east of the [Liard] hotsprings that is presently isolated will be opened up. Of special significance is the Grand Canyon of the Liard, an area of high scenic quality . . . . An item of serious concern is the possibility of a compressor station and an all-weather access road into the Nordquist Lake area, a critical winter range for elk, and a waterfowl nesting and possible carnivore denning area. If these concerns are not resolved through avoidance or mitigation measures, a highly negative impact could result, both in the short-term and the long-term."

Indeed, at pages 424-425, this report makes the point that a detailed environmental study is needed along the southern portion of the Alcan route in British Columbia.

Except for minor adjustments, the final alignments of El Paso Alaska and Arctic Gas are known. Their compressor stations have been located to minimize, to the extent practicable, environmental impact. Alcan, on the other hand, is still engaged in the process of aligning its pipeline; the location of many

compressor stations is subject to doubt and change. This uncertainty is one of several reasons that makes suspect the engineering, cost, and schedule proffered by Alcan for its pipeline.

E. Financing the 48-Inch Alternative

1. Negative Impact on Financial Feasibility on All Counts

The Alcan sponsors stated that their 48" alternative proposal "does result in increased capital costs."[3/] More importantly, as capital costs have increased, related external financing needs have increased more than proportionately. Financing difficulties have therefore been generally aggravated. Further, those markets least able to support higher capital demands bear the larger share of these required increases under the new Alcan plan.

The 48" alternative circumvents none of the basic impediments to financeability which beset the earlier proposal. Available capital is still limited. No new financing entities or new sources of capital have been suggested. Other major Canadian federal and municipal government projects would still compete for funds, as would privately financed Canadian natural resource projects. A sound basis of project credit support has

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3/ Proposal of Alcan Pipeline Company for a 48-Inch Express Line Alternative for an Alaska Natural Gas Transportation System, III A, p. 5.

still not been set forth nor have any significantly stronger assurances been given that the Maple Leaf Project would not compete for labor, materials and capital.

2. Higher Capital Costs

The overall system cost estimate for the 48" alternative is $9,630.6 million, or $583.1 million higher than the 42" alternative. In addition, except for Northwest Pipeline, whose pipeline system would not be expanded under the 48" proposal, none of the component operating and project companies has significantly lower capital costs under the 48" proposal, and most have higher amounts. Both the Canadian and the U.S. portions of the new alternative require increases in capital costs. (See Table 1.)

3. Higher External Financing Requirements

More dramatic than the greater cost of the 48" proposal is the resultant $1.46 billion increase in overall funding requirements. As Table 2 sets forth, the new plan provides no significant decreases in external financing needs for any security category either in the U.S. or Canada. No capital market has been relieved under the new proposal, but the pressure on several has grown significantly.

AGO 668092

Table 1

SUMMARY OF COMPOSITE SYSTEM COST ESTIMATES FOR THE ALCAN PROJECT

Comparison of the 42-Inch and 48-Inch Alternatives

(Dollars in Millions)

	48" Alt. (a)	42" Alt. (b)	Change (c)
Canadian			
Foothills Pipe Lines Ltd. (Yukon)	$1,309.8	$1,366.3	$ (56.5)
Foothills Pipe Lines Ltd. (Saskatchewan)	192.2	-	192.2
The Alberta Gas Trunk Line Co. Ltd.	971.6	978.1	(6.5)
Westcoast Transmission Co. Ltd.	1,293.5	1,201.4	92.1
Canadian Subtotal	3,767.1	3,545.8	221.3
U. S.			
Alcan Pipeline Co.	3,498.5	3,116.3	382.2
Northwest Pipeline Corp.	-	350.7	(350.7)
Pacific Gas & Electric Co.	387.8	366.9	20.9
Pacific Gas Transmission Co.	363.9	140.4	223.5
Northern Border Pipeline Co.	1,613.3	1,527.4	85.9
U.S. Subtotal	5,863.5	5,501.7	361.8
Total	$9,630.6	$9,047.5	$ 583.1

(a) Source: Alcan Pipeline Project 48 Inch Alternative Proposal, Section 6, Exhibit 6-2, p.2.

(b) Source: AP-15, Schedule F2.

(c) Increase (decrease) of the 48-Inch Alternative as compared with the original 42-Inch Proposal.

AGO 668093

Table 2

SUMMARY OF TOTAL ESTIMATED FINANCING REQUIREMENTS OF COMPANIES ASSOCIATED WITH THE ALCAN PROJECT (BY SOURCE OF FUNDS)

Comparison of the 42-Inch and 48-Inch Alternatives (1978-1983)

(Dollars in Millions)

	Canadian Funds			
	48" Alt.(a)	42" Alt.(b)	Change(c)	% Change
Bank Loans	$1,265	$1,306	$(41)	(3.1)%
Long-Term Debt	1,025	1,005	20	2.0
Preferred Stock	525	310	215	69.4
Common Stock	543	448	95	21.2
Total	$3,358	$3,069	$ 289	9.4

	U.S. Funds			
	48" Alt.(a)	42" Alt.(b)	Change(c)	% Change
Bank Loans	$ 966	$ 955(d)	$ 11	1.2%
Long-Term Debt	6,003	4,947	1,056	21.3
Preferred Stock	246	265	(19)	(7.2)
Common Stock	1,410	1,287	123	9.6
Total	$8,625	$7,454	$1,171	15.7

	Total Funds			
	48" Alt.(a)	42" Alt.(b)	Change(c)	% Change
Bank Loans	$ 2,231	$ 2,261	$ (30)	(1.3)%
Long-Term Debt	7,028	5,952	1,076	18.1
Preferred Stock	771	575	196	34.1
Common Stock	1,953	1,735	218	12.6
Total	$11,983	$10,523	$1,460	13.9

(a) Source: Alcan Pipeline Project 48-Inch Alternative Proposal, Section 8, Exhibit C, as amended with Supplemental Financing Information.

(b) Source: AP-15, Schedule C.

(c) Increase (decrease) of the 48-Inch Alternative as compared with the original 42-Inch Proposal.

(d) Adjusted to exclude $400 million of U.S. bank debt for Northern Border Pipeline, originally included in AP-15, Schedule C.

AGD 668094

4. **Required Financing Expanded Most in Weaker Markets**

Not only does the 48" proposal entail $1.46 billion (13.9%) in increased total estimated external financing requirements, but the shift in overall financing burden mix is also unfavorable. Three particularly restricted capital markets would have to supply disproportionately larger amounts of funds under the 48" alternative. Table 2 shows increases in funds to be raised via sale of (1) U.S. long-term debt, primarily representing increased borrowings by Canadian participants (up 21.3%), (2) Canadian preferred stock (up 69.4%), and (3) Canadian common stock (up 21.2%). Northwest Pipeline, among the more financeable of the Alcan project participants, is not among the companies requiring external financing under the 48" alternative. However, this reduced financing requirement is offset several times over the increased capital needs of Alcan Pipeline, a U.S. project company, and the three Canadian project and operating company participants. The increased financing burden of the revised project falls, therefore, on the weaker shoulders.

The U.S. long-term debt market available to Canadian borrowers is severely restricted by the Canadian basket limitation which impacts all major U.S. life insurance companies. In spite of Alcan's arguments that a U.S. funding vehicle could circumvent the 10% Canadian basket limitation, there is no evidence in the record to support the supposition that such a

gimmick would work. This consideration, along with the probability that Alberta Gas Trunk and Westcoast would have to pre-commit first mortgage bond financing in the private market[4/] means that the 21.3% increase in long-term debt to be raised by Canadian entities in the U.S. would be even more difficult and probably impossible to obtain.

As pointed out previously, the original 42" proposal, along with associated Maple Leaf Project financings, would have placed financing requirements on the Canadian equity market which would have been more than 300% larger than the total amounts of equity raised by all Canadian pipelines in all markets during the six years 1970-1975. The increases in preferred and common stock financing needs required by the change from the 42" to 48" project would by themselves approximately equal the total amount of external equity funds raised by Canadian pipelines in that same six-year period. This enormous demand on the Canadian equity markets is clearly unprecedented and is in no way supported by any Alcan market capacity study.

5. Previous Criticisms Still Valid

It has been shown that the 48" proposal would produce no significant decreases in external financing requirements for

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4/ See Brief of El Paso Alaska Company Concerning Financing, pp. 91-94.

(1980-1983)
(Dollars in Millions)

	Total Basic Requirements			Estimated Contingency Requirements			Total Estimated Requirements		
	48" Alternative(a)	42" Alternative(b)	Change(c)	48" Alternative(a)	42" Alternative(b)	Change(c)	48" Alternative(a)	42" Alternative(b)	Change(c)
Alcan Pipeline Co.									
U.S. Banks	$ 563	$ 567	$ (4)	$ 113	$ 113	$ -	$ 676	$ 680	$ (4)
U.S. Long-Term Debt	1,900	1,530	370	380	310	70	2,280	1,840	440
U.S. Common Stock	840	710	130	168	145	23	1,008	855	153
Total	3,303	2,807	496	661	568	93	3,964	3,375	589
Foothills Pipe Lines Ltd. (Yukon)									
Canadian Banks	325	301	24	65	60	5	390	361	29
U.S. Long-Term Debt	475	361	114	95	72	23	570	433	137
Canadian Long-Term Debt	200	200	-	40	40	-	240	240	-
U.S. Preferred Stock	205	171	34	41	34	7	246	205	41
Canadian Common Stock	140	115	25	28	23	5	168	138	30
Total	1,345	1,148	197	269	229	40	1,614	1,377	237
The Alberta Gas Trunk Line Co. Ltd.									
Canadian Banks	300	255	45	400	400	-	700	655	45
U.S. Long-Term Debt	615	275	340	-	-	-	615	275	340
Canadian Long-Term Debt	400	405	(5)	-	-	-	400	405	(5)
Canadian Preferred Stock	300	160	140	-	-	-	300	160	140
Canadian Common Stock	225	110	115	-	-	-	225	110	115
Total	1,840	1,205	(635)	400	400	-	2,240	1,605	635
Westcoast Transmission Co. Ltd.									
Canadian Banks	123	20	103	52	270	(210)	175	290	(115)
U.S. Long-Term Debt	865	740	125	-	-	-	865	740	125
Canadian Long-Term Debt	385	360	25	-	-	-	385	360	25
Canadian Preferred Stock	225	150	75	-	-	-	225	150	75
Canadian Common Stock	150	200	(50)	-	-	-	150	200	(50)
Total	1,748	1,470	278	52	270	(210)	1,800	1,740	60
Northwest Pipeline Corp.									
U.S. Banks	-	-	-	-	- (d)	-	-	- (d)	-
U.S. Long-Term Debt	-	280	(280)	-	-	-	-	280	(280)
U.S. Preferred Stock	-	60	(60)	-	-	-	-	60	(60)
U.S. Common Stock	-	50	(50)	-	-	-	-	50	(50)
Total	-	390	(390)	-	-	-	-	390	(390)
Pacific Gas & Electric Co.									
U.S. Banks	-	-	-	-	-	-	-	-	-
U.S. Long-Term Debt	388	367	21	-	-	-	388	367	21
U.S. Common Stock	-	-	-	-	-	-	-	-	-
Total	388	367	21	-	-	-	388	367	21
Pacific Gas Transmission Co.									
U.S. Banks	-	-	-	-	-	-	-	-	-
U.S. Long-Term Debt	364	141	223	-	-	-	364	141	223
U.S. Common Stock	-	-	-	-	-	-	-	-	-
Total	364	141	223	-	-	-	364	141	223
Northern Border Pipeline Co.									
U.S. Banks	290	275	15	-	-	-	290	275	15
U.S. Long-Term Debt	921	871	50	-	-	-	921	871	50
U.S. Common Stock	402	382	20	-	-	-	402	382	20
Total	1,613	1,528	85	-	-	-	1,613	1,528	85
Total Alcan System (Before Duplications)									
U.S. Funds	7,828	6,780	1,048	797	674	123	8,625	7,454	1,171
Canadian Funds	2,773	2,276	497	585	793	(208)	3,358	3,069	289
Total	$10,601	$9,056	$1,545	$1,382	$1,467	$(85)	$11,983	$10,523	$1,440

(a) Source: Alcan Pipeline Project 48-inch Alternative Proposal, Section 8, Exhibit C, as amended with Supplemental Financing Information.
(b) Source: AP-15, Schedule C.
[illegible] of the 48-inch Alternative as compared with the 42-inch Proposal.

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any security category in either the U.S. or Canada. In several security categories and on an overall basis, the external funding requirements have been significantly increased.

It follows, therefore, that all of the arguments set forth in EP-279 and in Brief of El Paso Alaska Company Concerning Financing questioning the financial feasibility of the Alcan project can be made even more strongly in the 48" case:

> "Unlike El Paso Alaska, which will finance solely in U.S. markets, the participants in the Alcan Project are U.S. and Canadian entities which must rely upon a wide variety of markets and financing vehicles to supply their very substantial capital needs. Great dependence is placed upon the availability of capital to Canadian-based companies from private and public Canadian markets and from that portion of the U.S. private market available to Canadian companies. Since these are relatively limited sources of capital, the requirement to tap these markets, year after year, raises questions about the financial feasibility of the Project.
>
> "Projected funding requirements for Alcan would press the limits of the U.S. and Canadian private placement markets. It would do as much to the U.S. and Canadian banking systems, as well as the Canadian equity market. In the absence of governmental guarantees from the United States, currently of uncertain definition and availability, there is no proof by Alcan that adequate financing will be forthcoming. Even in markets where adequate capacity seems to exist, Alcan's cost of capital, which must ultimately be borne by the American gas consumer, would be substantially higher than the cost to an American-only project of similar credit standing. Finally, the plan involves timing and coordination among a large number

> of companies having various financing requirements and making competing demands in the U.S. and Canadian capital markets." 5/

No significant changes in suggested plans for implementation or in proposed credit support have been set forth by the Alcan project sponsors. The complexity of plan implementation remains. As before, no information has been filed which would suggest that key parties in Alcan's credit support scheme would feel obliged to participate in the manner which Alcan's financial advisers have proposed.

Finally, the competition for funds from the Maple Leaf Project would be even more intense, now that the Alcan project's external financing needs have been increased. The Administrative Law Judge's "Initial Decision" correctly points out that:

> "While Alcan espoused a 13- to 22-month timing gap between projects as a minimum to avoid direct financing competition, the investment and lending communities could well require actual Alcan operations and cash flow before the construction of Maple Leaf to avoid the aggregation of the capital requirements of the two projects. This would mean at least a 4-year timing difference." 6/

In conjunction with this, it should be noted that:

> "Recognition of Maple Leaf's first-born status is set forth for all to see in the agreement

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5/ Brief of El Paso Alaska Company Concerning Financing, pp. 71-72.

6/ F.P.C. Initial Decision, p. 378.

among the Alcan sponsors; and, even toned down as it was before the record closed, it represents an additional set of risks to the American consumer." 7/

In light of these considerations, the most noticeable recent cosmetic addition to the Alcan Definitive Agreement, stating that the participants "contemplate" a 13-month interval between the two projects, is not compelling. 8/ It certainly does not assure that an Alaska gas delivery system would receive the priority treatment and corporate commitment it deserves.

THE ARCTIC GAS PROJECT

A. New Frost Heave Design

Despite the reassuring words of counsel for the Arctic Gas project, the new so-called frost heave design filed with this Commission is in reality a new construction plan for almost 2,000 miles of their line in Canada. Simply as an example, we note that all of their compressor stations in Alberta have been derated from 55,000 HP to 38,000 HP, that the Caroline to Coleman lateral has been resized from 30" at 1680 psi to 36" at 1440 psi, that gas heaters and propane refrigerator systems have been added. In addition, cursory analysis reveals that in the northern portion of the line, immediately

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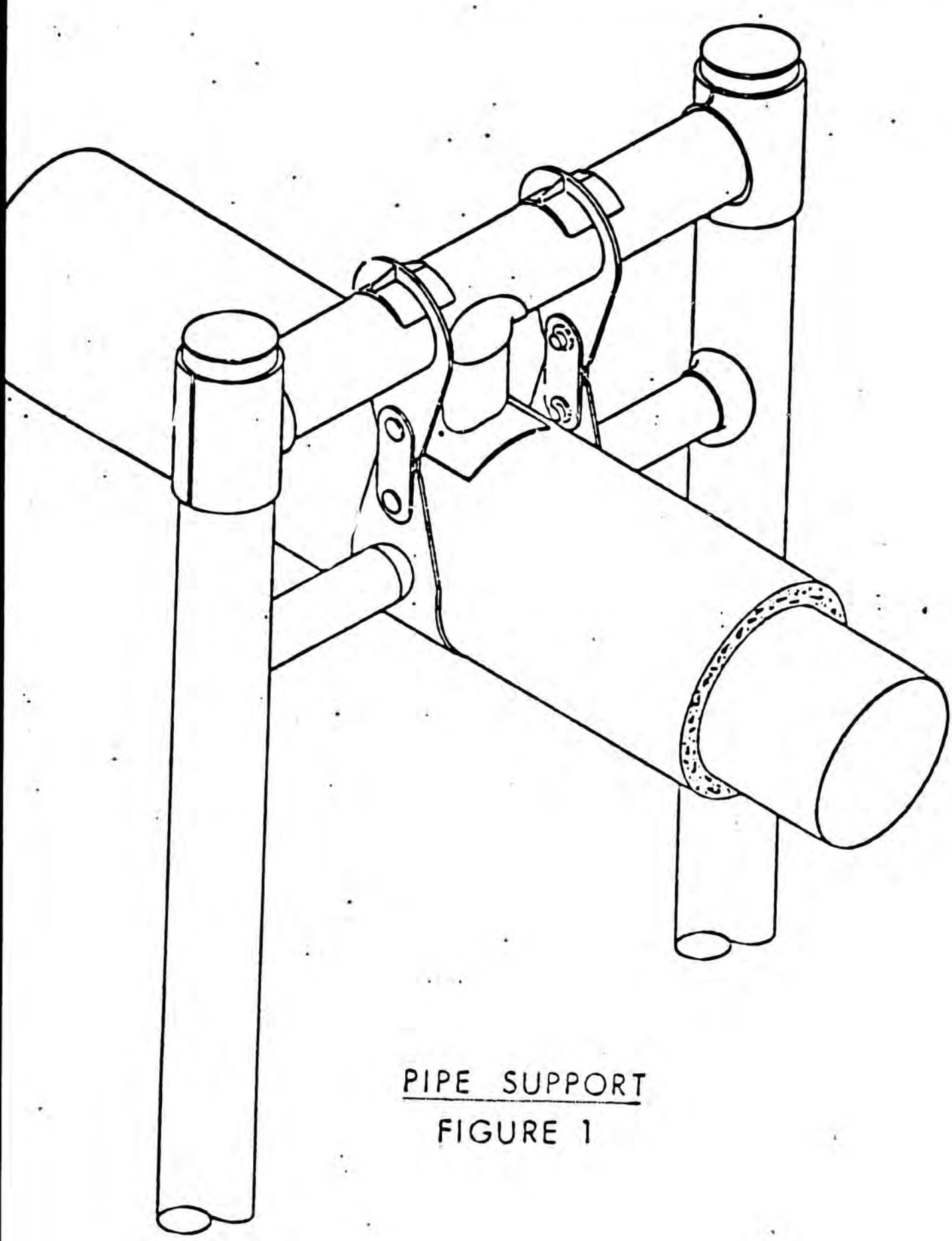
7/ Ibid., App. I-21.

8/ Alcan Pipeline Project 48-Inch Alternative Proposal, Section 10, 2.1(d), p. 5.

south of Tununuk Junction, they have added 400 miles of above-ground power transmission cable and several hundred miles of cable transmission line. In the same 400 mile-stretch of line, there are no fewer that 1,800 mode changes between insulated and heat-traced pipe and non-insulated pipe. The average mode length is no more than 700 feet. Over yet another 200 miles of line, directly to the south, they are installing more than 1,000 underground VSMs similar to those of the Alyeska project. What these changes do to their construction schedule, to their manpower requirements, to their hydraulics and to their overall energy balance cannot be tested. One need only look at the Rube Goldberg design of the underground VSMs to conclude, notwithstanding the facile assertions of Arctic Gas counsel, that the installation of a thousand of them over 200 miles of line must necessarily have an adverse impact upon their already too tightly constricted construction schedule. The following page, extracted from the Arctic Gas filing with this Commission of March 22, shows the design of the underground VSMs.



PIPE SUPPORT

FIGURE 1

In connection with their frost heave filing, Arctic Gas continues the assertion that El Paso Alaska still must confront the frost heave problem. In this regard, we repeat what we have previously said. Judge Litt was plainly wrong when he said, at I.D. 111, that "El Paso has . . . not yet specifically addressed frost heave avoidance in its design." All parties agree that frost heave occurs only under certain discreet soil conditions. There must be a combination of freezing temperature, frost-susceptible soil and an appropriate source of water. To sketch the parameters of this problem, Arctic Gas confronts the type of soil conditions susceptible to frost heave over 200 to 300 miles of its line. This is not the assertion of counsel; this is the testimony of one of the Arctic Gas geotechnical consultants, Dr. John Ivor Clark. Tr. 20/3,148 (Clark). By contrast, El Paso Alaska encounters such conditions for but 50 miles of its line. Tr. 42/6,331 (Wright), Tr. 169/27,758

(Winn).[9/]

El Paso Alaska examined the Alyeska alignment, the mode of Alyeska construction and the Alyeska core logs to make estimates of the mileage of pipeline where frost heave potential may exist. Tr. 169/27,759 (Wright). El Paso Alaska acknowledges that site-specific examination and testing will have to take place prior to final design, id., and time and money have been provided to effect such site-specific analysis.

El Paso Alaska has recognized the potential for frost heave. At the time of final site-specific design, the suspect areas within that 50-mile range will be assessed utilizing a

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9/ It should be noted that Arctic Gas witness Clark stated that El Paso Alaska would encounter 100 miles of frost-susceptible soils along its route. Tr. 154/25,302-06, 25,501-02 (Clark). Dr. Clark's opinion in this regard is apparently based on his review of the USGS open-file maps, Tr. 154/25,317 (Clark), input from his staff, some of whom had done some work on the Alyeska project but none of whom had even assessed the actual El Paso Alaska alignment in the field, Tr. 154/25,317-24 (Clark), and a limited fixed-wing flight over the Alyeska route for purposes admittedly other than analyzing El Paso Alaska's pipeline route. Tr. 154/25,318 (Clark). Dr. Clark had not reviewed any additional Alyeska core hole information. It is clear that neither Dr. Clark nor any member of his staff conducted anywhere near the analysis of El Paso Alaska's route that Mr. Wright and Pipeline Technologists did. El Paso Alaska witness Wright reached his conclusion with respect to the existence of 50 miles of frost-susceptible soil after extensive field work along the El Paso Alaska route, and after reviewing USGS open-file maps, the Alyeska project description and some 1,200 Alyeska core holes. Tr. 43/6,408 (Wright). Mr. Robert Winn, the Dames & Moore partner who directed Dames & Moore's efforts as Alyeska's geotechnical consultant, confirmed Wright's judgment. Tr. 169/27,758 (Winn).

mathematical model consisting of a series of proven components to determine if, and to what extent, frost heave will exist and what measures may be taken to abate any predicted frost heave. Tr. 41/6,902-04, 6,104 (Wright). The effectiveness of each of the components of this mathematical model have been proven. Tr. 41/6,093, 6,184, 6,185 (Wright). For example, the conduction component has been used to predict the migration of the Mackenzie River, the depression of permafrost in the new channels and the rebuilding of the permafrost in the channels from which the river migrated. Id. Such a conduction component accurately predicted the thickness of the active layer on the North Slope. Tr. 42/6,283 (Wright). The pipe stress component was utilized as the basis for the Alyeska stress analysis. Tr. 42/6,280 (Wright). The soil stress component has been used in the development of projects for the U.S. Navy and other governmental entities. Id. The convection component has been used to trace contaminants in contained aquifiers for the USGS. Tr. 41/6,094 (Wright).

The model enables the pipeline designer to synthesize all aspects of the environment through which the pipeline will be constructed. The operation of the pipeline can then be superimposed on the synthesized environment to determine if the pipeline's operations will cause alterations to the environment, such as frost heave, which will require special design, construction or operation features. Remedial measures to accommodate any alterations to the environment can be proposed and synthesized

by the model to determine their effectiveness. Tr. 41/6,109-10, 42/6,277 (Wright).

When areas of frost heave are predicted by the mathematical model, any of several remedial measures can be examined through the model to determine their effectiveness. One such measure would be to replace the frost-susceptible soils with non-frost-susceptible granular backfill. Tr. 41/6,134, 169/27,758 (Wright); 246/42,918 (Dau). The granular material would be placed in the ditch to completely surround the pipeline (Tr. 42/6,326 (Wright)) and would provide soil with larger pore spaces so that migration of water to the freeze front, would not occur. This method would not necessarily prevent the formation of a frost bulb but would interrupt the exact mechanism needed to produce frost heave. Tr. 42/6,327 (Wright). Although Mr. Wright has ascertained only 50 miles of frost heave potential along the El Paso Alaska route, he had provided enough granular backfill to replace completely over 400 miles of ditch. Tr. 41/6,137, 6,268 (Wright).

Another remedial measure proposed by El Paso Alaska to abate frost heave is deeper pipeline burial. Tr. 41/6,104 (Wright), 169/27,758 (Winn). This method will be particularly effective at locations where the permafrost table is deeper than the normal depth of the ditch. This method will be utilized wherever it is determined to be appropriate and at all road crossings. Tr. 42/6,276 (Wright). Even after the recently

announced Arctic Gas test failures, they still propose to counteract frost heave by increasing the overburden "on some of the soils". Tr. 246/42,916 (Dau).

Insulating the pipe is another method proposed both by El Paso Alaska and by Arctic Gas for abatement of frost heave. Tr. 41/6,104 (Wright); 246/42,916-17 (Dau). This method alters the heat transfer from the soil to the pipeline so that the frost heave mechanism would be interrupted. Tr. 42/6,327 (Wright).

In situations where the frost heave forces are predicted to be of certain magnitude, pipeline anchors could be used to abate the frost heave. Tr. 42/6,323, 6,327 (Wright); 246/42,917-18 (Dau).

We should note at this point that proposals put forth by El Paso Alaska in the Spring of 1975 were once adopted by Arctic Gas to handle its frost heave problems. See Tr. 246/42,916-19 (Dau). One distinction is that while El Paso Alaska has 50 miles with which to cope (Tr. 42/6,331 (Wright)) Arctic Gas has 250 miles. Tr. 246/42,915 (Dau).

Arctic Gas has sequentially proposed three separate and distinct types of frost heave solution. They initially proposed a berm construction mode. They vigorously defended that construction mode through 16 months of hearing, denigrating anyone with the temerity to suggest a different solution. Abruptly, in November of last year, almost at the close of the hearing, they reluctantly and with some embarrassment admitted some insecurity

with the berm construction method. They recommended five other procedures, some of which, as the foregoing text demonstrates, had been planned by El Paso Alaska all along. Now, with the hearing completed, and with no opportunity to cross-examine, they have proposed yet another "solution". Whatever can be said about the Arctic Gas frost heave "solution", one thing is clear. Despite their justifiable pride in the amount of engineering and geotechnical experimentation which they have conducted, they themselves still do not feel comfortable with whatever "solution" they have proposed. And, even if we were to assume (for that is all we can do) that the new "solution" will work, a layman's review of it must suggest that it will have to result in higher cost and lower progress rate.

Moreover, the adverse environmental impacts resulting from these new design concepts include the formation of thermokarsts and thaw ponding along a heat-traced pipeline, together with the easily recognizable aesthetic impact of 400 miles of overhead transmission cables. It is obvious that this heat tracing will create ponding above the pipeline. This ponding could create problems of erosion and siltation. El Paso Alaska is unable to evaluate the extent, if any, of the impact caused by ponding. There has, of course, been no examination of this problem on the record compiled before Judge Litt.

B. **Financing**

The financial implications of the frost heave filing by the Arctic Gas project are adverse to their overall case. The $475,000,000 estimated additional capital cost simply adds to the bloated demands which Arctic Gas makes on its numerous capital markets, aggravating its already infeasible financial plan. In addition, the frost heave problem's solution highlights the difficult nature of Arctic Gas' construction problems which suggest to all who have made a study of it that the construction schedule of Arctic cannot be met and massive cost overruns are most probable.

C. Mackenzie Delta Gas Supply

El Paso Alaska here comments on the response of the Arctic Gas project to gas supply interrogatories of El Paso Alaska and on the Sproule NEB study Arctic Gas filed with the Commission.

Arctic Gas made no effort to respond to the interrogatories that El Paso Alaska Company filed. It is apparent from a review of the Arctic Gas answers that Arctic Gas did not really undertake to answer the questions that were posed in any meaningful way, but rather dodged the questions by making a reference to nonresponsive materials. For example, in Interrogatory 26, El Paso Alaska asked Arctic Gas to state whether it had any documents in its possession or under its control which reflect

that a Mackenzie Delta producer or operator is, as of this time, unwilling to invest in development wells for field processing facilities necessary to market reserves under its control. Arctic Gas was obviously aware of the statement of counsel for the producers before the NEB of February 17, 1977 that the producers have not made a commitment to invest in the necessary processing facilities. NEB Tr. 24,176 (Ballem). We think this Commission should give no weight to the Arctic Gas answers.

Even on the basis of the Arctic Gas answers, it is clear that all recent wildcat wells have been failures. There have been ten such wells since June 1, 1976; all have been dry and abandoned. This includes two wells in the Beaufort Sea. El Paso Alaska lacks specific information on the well drilled by the Dome Petroleum Corporation, but believes the report to be true that Dome in fact abandoned the well it was drilling in deep water in the Beaufort Sea. While El Paso Alaska concedes that the advent of a pipeline would spur development drilling, El Paso Alaska does not believe that the advent of a pipeline would result in increased discoveries from wildcat drilling. The more promising structures, both onshore and offshore, have already been drilled.

The Mackenzie Delta is clearly a disappointment. We would observe that no new commercial field has been found in

the Mackenzie Delta since April of 1973.[10/] Indeed, as of this time, there are only three fields of questionable commerciability -- Taglu, Parsons Lake, and Niglintgak. The remaining fields are clearly noncommercial. Further, raw gas from these fields cannot be piped to processing facilities in the three fields where processing facilities might be built. There are technical difficulties of significant magnitude if raw gas is piped for any distance in the Mackenzie Delta. Hydrates in the raw gas, for example, could freeze the line; unprocessed gas could corrode the line. Therefore, it would be necessary to develop special engineering techniques to transport raw gas for any significant distance. There is no suggestion in this record that it is technically and economically feasible to develop and implement such techniques. El Paso Alaska adheres to its view, therefore, that it is absurd to schedule gas from the clearly noncommercial fields in the Mackenzie Delta. There is simply no reason to believe that it can be marketed.

Sproule, in scheduling gas reserves, did not make a forecast of gas production based upon the ability of the reservoirs to produce. Like D&M, Sproule scheduled gas on a contract rate-of-take basis. El Paso Alaska in its Brief on Exceptions

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10/ The discovery dates for the Taglu, Parsons Lake and Niglintgak fields were August 18, 1971, April 19, 1972, and April 7, 1973, respectively.

has adequately discussed the glaring deficiency of this approach. But Sproule carried the methodology that it used to an even further, absurd extreme. The methodology is stated on page 189 of the Sproule report:

> "Because the test data available indicated a high degree of damage around the wellbore, it was not possible to use this test data directly to identify the well productivities to be expected from future wells. Deliverability characteristics to be expected from undamaged wells in the Parsons Lake and Taglu areas were calculated from permeability data from cores and logs for the various zones. Insufficient data was available from wells in the other areas to develop their deliverability characteristics."

We make four criticisms. First, as seen, Sproule did not schedule deliverability on a reservoir basis. Second, Sproule ignored all well tests in the Mackenzie Delta. One wonders why the producers ran the tests in the first place if they were to be ignored in calculating reserves. Third, Sproule assumed that wells could be drilled and completed without wellbore damage. There is no reason to believe that the producers can in fact accomplish this with development wells. They have not been able to do so to date. Fourth, Sproule applied theoretical deliverability characteristics; one zone in the Taglu field is applied to all zones in all fields except Parsons Lake. This is apparent from a review of footnote 2 appearing on the deliverability forecast for each of the areas. This is nothing short of astounding. The Commission can, and should, ignore the Sproule deliverability report.

El Paso Alaska does not accept the new, assertedly proved level of reserves at Parsons Lake. The reason is that Gulf has been surprised in the past with development drilling. The L-60 dry hole, a development well, was drilled in an area where D&M had assigned significant proved reserves, and resulted in a net reduction of proved reserves in the Parsons Lake area of about 200 Bcf. The recently drilled F-38 well, a less-than-a-mile step-out, was a dry hole. On the basis of these wells, El Paso Alaska does not think it is prudent to assign large acreage to reservoirs appearing in already drilled wells. Yet, for example, Sproule in the Cretaceous A-1 field studies has assigned 9860 acres -- more than 15 square miles -- to this sandstone found in the F-09 well. Because Parsons Lake is highly faulted, it is imprudent to assign as proven such large acreage to reservoirs on the basis of sparse drilling.

El Paso Alaska adheres to its view that about 500 million a day is all that can be expected from the Mackenzie Delta.[11/] This Commission should know that El Paso Alaska alone scheduled gas production on a reservoir-by-reservoir basis. Further, El Paso Alaska was not niggardly in its approach. El Paso

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11/ This figure is endorsed by the Department of Interior/ Aerospace Study Team in a recent update to DOI's Report to Congress (Exhibit EP 231), as is hereinafter discussed.

Alaska scheduled gas from all gas-bearing reservoirs. The Commission should understand, however, that the fields in the Mackenzie Delta are lenticular. The producing sands are thin. This is confirmed by the Taglu Field-Dual Induction Lateral Log for the P-03 well appearing at EP 241, Tab 4. Thus, no producer will find it economically attractive to complete in all reservoirs. Many of the stringers are no doubt uneconomic to complete in. El Paso Alaska remains firm in its view, therefore, that this Commission should assume no more than 500 Bcf in actual production from the Mackenzie Delta. See Gas Supply Reply Brief of El Paso Alaska filed before Judge Litt.

D. Risk Analyses

The Commission should have the benefit of the three recent analyses, attached as Tabs A, B, and C hereto.

The first is an excerpt from a preliminary discussion draft of a report prepared by Resource Planning Associates, Inc., for the Environmental Protection Agency. The preface states that this discussion draft has been circulated to federal and state agencies for review and comment. El Paso Alaska assumes that the Federal Power Commission has already received a copy, but in the event that the Commission has not, a copy is attached hereto under Tab A. The important conclusions of this paper

appear on page 12. It finds that schedule slippage is significantly more likely for Arctic Gas than for El Paso,[12/] and that there is a 20% to 40% chance that Arctic Gas will not be able to construct in the manner proposed by it, and may be required to abandon its project. This conclusion is clearly warranted in view of Alyeska's inability to construct in the middle of the Alaskan winter, as well as the inaccessibility of much of Arctic Gas' alignment to permanent roads.

The second is an update (March 1977 Supplement) to the early submission of the Department of Interior to the Congress (Exhibit EP 231). EP 231 is the Department of Interior study discussed by Judge Litt at p. 425 of his decision. It is therefore especially important that this Commission have the update, and it is for that reason that the update is submitted under Tab B.

In the update, the Department of Interior/Aerospace Study Team, after reviewing the Arctic Gas comments and criticisms, expressly reconfirms (p. 3-21) the conclusions pertaining to schedule delay and cost overrun appearing in its risk analysis in EP 231, pp. 128-147. In EP 231, p. 143, the study team estimated that an Alaska-LNG system could slip 6-18 months, whereas an Alaska-Canada system could slip 12-36 months. The

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12/ The draft discussed Alcan's 42" proposal, and therefore is not relevant to Alcan at this stage.

average difference in delay is, therefore, one year. This again confirms the position of El Paso Alaska that schedule slippage, with attendant cost overrun, is considerably more likely for an Alaska-Canada system than it is for an Alaska-LNG system, essentially because the former lacks the construction accessibility (roads) of the latter.

In the update, the Department of Interior/Aerospace Study Team summarizes the NNEB of Alaska-Canada at 7.865 billion, Alaska-LNG at 6.87 billion, and Fairbanks-Alcan at 6.660 billion. In evaluating these figures, however, it is important to remember that the Alaska-Canada system does not include the western leg proposed by Arctic Gas and does not take into account the conclusions of the DOI/Aerospace Study Team estimate that "the average change in NNEB per year of schedule slip and including cost overrun at one billion per year of delay is approximately 1.7 billion." Thus, it is apparent that when schedule slip and cost overrun, as well as the cost of the western leg facilities, are deducted from the 7.865 billion NNEB for an Alaska-Canada system, the real NNEB of that system falls significantly behind that for an Alaska-LNG system. This confirms the argument of El Paso Alaska that it is in the national interest to prefer an Alaska-LNG system over an Alaska-Canada system with or without a west coast leg.

Finally, the DOI/Aerospace Study Team studied reserves in the Prudhoe Bay area and in the Mackenzie Delta area. USGS

geologist Max Taves testified for the DOI/Aerospace Study Team in this proceeding. He was a disinterested evaluator of reserves. He expressed the same skepticism toward Mackenzie Delta reserves that El Paso Alaska has in this proceeding. It is interesting that the DOI/Aerospace Study Team, in its update, has concluded (pp. 1-3) that only 500 million per day will be available from the Mackenzie Delta over twenty years. This is precisely the figure that El Paso Alaska said was reasonable in oral argument before this Commission and also in Exhibit EP 241, tab 5. El Paso scheduled slightly lesser volumes.

El Paso Alaska also attaches a cost overrun analysis which was recently filed before the NNEB by Foothills Pipeline, Ltd. Curiously, Alcan did not file that document before this Commission. We suspect, but do not know, that the reason is that the criticisms of Arctic Gas contained therein could be turned against Alcan. It is filed here under Tab C. It fully supports the Alaska, Department of Interior, and Green risk analyses.

EL PASO ALASKA COMPANY

By: J. Alan Galbraith
J. Alan Galbraith

CERTIFICATE OF SERVICE

I hereby certify that I have this 8th day of April, 1977, served a copy of the foregoing Response of El Paso Alaska Company to the Submissions of Arctic Gas and Alcan, upon each person designated on the official restricted service list compiled by the Secretary in this proceeding in accordance with the requirements of Section 1.17 of the Rules of Practice and Procedure.

Copies of the attached tabbed documents have been served on counsel for Arctic Gas, Alcan, Northern Border, Western LNG, Northwest Pipeline, State of Alaska, State of California, California Public Utilities Commission, and the Conservation Intervenors. Copies of the tabbed documents will be made available to other counsel upon request.

J. Alan Galbraith

One of Counsel

El Paso ALASKA COMPANY

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PHONE 201-873-8193

JOHN C. BENNETT VICE PRESIDENT

May 19, 1977

The Honorable John L. Rader
Alaska State Senator
State Capitol Building
Pouch V
Juneau, Alaska 99811

Dear John:

As the nation approaches the decision on how best to move Alaskan natural gas to U.S. markets, a question frequently arises which is as easily answered as it is important: How will the El Paso "All-American" project deliver gas to the Midwest and Northeast?

Although no one will ever accuse the Federal Power Commission (including Judge Litt and the Commission staff) of bias in favor of El Paso, the ability of El Paso to deliver the gas to <u>all</u> U.S. markets has been repeatedly supported throughout the two years of hearings. To quote from Judge Litt's decision:

> "No challenge has been made to the technical feasibility of El Paso's displacement proposal...Consultants for Arctic Gas have studied the feasibility...(and confirmed) the viability of the general concept."

To quote the Federal Power Commission staff counsel on April 6th:

> "We've studied El Paso's displacement, we've listened to the testimony of their witnesses, we've listened to the testimony of Arctic Gas' experts analyze the El Paso displacement, the El Paso displacement was thoroughly analyzed...while they came to a slightly different manner of doing it, they agreed it has been and could be done. As a matter of fact, they agreed it could be done for approximately the cost overall that El Paso thinks it can be done for.
>
> So I think El Paso's displacement on the merits is not really in dispute."

Also on April 6th, Commissioner Holloman referred to the "Commission's experience in this past winter emergency and our demonstrated capability to move gas eastward from the West Coast through Texas..." He further observed, "Well, there's obviously going to be a great deal of excess capacity as the years go on."

AGO 668119

The enclosed explanation of how El Paso can move Alaska's natural gas to Middle West, East, and Northeast succinctly describes the plan, which in fact did--on a few days notice--transfer California's gas to Atlantic Coast markets last winter.

Another pertinent fact is that all proposals--including the two trans-Canadian projects--will deliver Alaska's gas to markets east of Chicago only through existing facilities and exchanges. No new pipeline construction is proposed east of Chicago by any applicant.

Why, one may ask, does El Paso "protest so much" on this subject? Again, the answer is as simple as it is factual: proponents of the trans-Canadian projects have repeatedly created the completely erroneous impression that El Paso, if it can move the gas East of California, will encounter all sorts of complex difficulties. The following is a direct quote from the Northwest Pipeline Corporation (proponent of Alcan):

> "The LNG system is dependent upon a complicated nation-wide displacement "theory" for transferring the gas from the West Coast to the rest of the United States."

Again, a quote from an elected official who supports Arctic Gas:

> "The entire El Paso project rests upon the concept of displacement, one which is without doubt physically possible given sufficient pipeline investment, but one which will surely create a legal and contractual night-mare." (emphasis added)

The falsity of that prediction was amply demonstrated last winter, when a "complicated theory" became a functioning system almost overnight and without any time for preparatory planning!

Once Americans throughout our nation realize that all three proposals can deliver gas to all domestic markets, they can focus on the very real differences among those projects--which one will deliver the gas at the earliest date, with greatest economic benefit to the United States, with complete U.S. control of what consumers pay for the gas, with minimal environmental damage, without governmental financing, and with minimal risk of schedule and cost overruns. On all these counts, El Paso is superior to the trans-Canadian proposals. More important, all of these factors are of great importance to all Americans, whether living in Maine or California.

If you have any questions at all concerning El Paso's project, we stand ready to respond immediately.

Thank you for your continued interest in which proposal best serves the nation's interest.

Sincerely yours,

John

AGO 668120

U. S. DELIVERIES OF GAS

In recent years, the U. S. natural gas industry has not been able to find new supplies of gas in quantities sufficient to offset the decline in reserves. This fact has resulted in increasing idle or unused capacity in the existing 1.1 million mile pipeline system crisscrossing the nation.

By 1980, pipelines extending northward from major natural gas production areas in Texas and Louisiana will have over 10 billion cubic feet/day of spare capacity. At the request of the Natural Gas Supply Committee, a study was prepared by the Energy Division of Foster Associates, Inc. to appraise the impact of declining gas supply on interstate pipeline transportation costs. This study reported that if the idle capacity is not filled, natural gas consumers will have to pay between 19¢ and 44¢ more per MCF of gas in order to amortize those facilities. El Paso's Trans-Alaska Gas Project will utilize this idle capacity to deliver Prudhoe Bay natural gas, either directly or through exchange of gas supplies, to markets throughout the nation.

After landing on the West Coast, Alaskan natural gas will be connected to existing major transmission systems in California and then delivered directly to markets in that state. How then, will Alaskan gas be delivered to markets in the Northwest, Middle West, and Eastern U. S.? The procedure is really quite simple. It is also inexpensive and efficient, and will cause an absolute minimum of environmental damage.

Approximately three billion cubic feet of natural gas are presently shipped each day from Texas and New Mexico to California. To the extent that this lower 48 supply can be replaced by volumes of gas delivered from Alaska, an equivalent amount of gas need not move from Texas to California. Instead, this gas can be put into existing pipeline systems for movement to other markets throughout the United States. This process is called displacement. As lower 48 supplies diminish, Alaskan gas will physically move from California to other markets by reversing the flow in the pipeline systems which currently serve California.

At most, the El Paso Trans-Alaska Gas Project will require construction of a few hundred miles of new interconnecting pipelines in California and Texas to facilitate this delivery system. In contrast, both of the trans-Canadian projects propose to build thousands of miles of new pipeline in the South 48, compounding the problem of pipeline under-utilization.

SCOMM

#21:23

Cubic foot - at what pressure?

ROYALTY GAS SALES AGREEMENT

THIS AGREEMENT, made and entered into as of this _____ day of _____, 1976, by and between the Commissioner of Natural Resources of the STATE OF ALASKA, acting pursuant to AS 38.05.183(d), hereinafter referred to as "Seller," and Tenneco Alaska, Inc., an Alaskan 1/ corporation, hereinafter referred to as "Buyer";

WITNESSETH:

WHEREAS, Seller hereby represents to Buyer that Seller has the right under each of the leases identified in Exhibit A to this Agreement to be paid by the lessee thereunder a royalty of twelve and one-half percent (12.5%), unless otherwise stated in Exhibit A, in-kind (amount) or in value of the natural gas produced and saved and sold or used off of the lands covered by each such lease; and

WHEREAS, Seller hereby represents to Buyer that under each of the leases identified in Exhibit A to this Agreement Seller has reserved the right to elect to take either in-kind (amount) or in value its royalty gas; and

1/ An explanation of the footnotes is appended as the last page of this document.

WHEREAS, Seller represents to Buyer that Seller is authorized by AS 38.05.183(d) to sell royalty gas surplus to the intrastate domestic and industrial needs of the State of Alaska; and

WHEREAS, Buyer represents to Seller that it is or will be a natural gas company subject to the jurisdiction of the Federal Power Commission and desires to purchase natural gas from Seller so as, at the earliest possible date, to increase the supply of natural gas available to its customers or its affiliated pipeline companies in the contiguous 48 states; and

WHEREAS, Seller desires to sell royalty gas to Buyer and Buyer desires to purchase royalty gas from Seller under the terms and upon the conditions hereinafter set forth; and

WHEREAS, Buyer and Seller each desire certification and construction of a trans-Alaska gas pipeline system for movement of natural gas from Prudhoe Bay, Alaska to the contiguous 48 states;

NOW, THEREFORE, in consideration of the representations, covenants, and conditions herein contained, Seller and Buyer hereby agree as follows:

Article I

Support for Trans-Alaska Pipeline

In consideration of the obligations assumed by each herein, Buyer and Seller agree to actively support and seek before the Federal Power Commission, and any and all other involved federal, state and local authorities, representatives and individuals, the ultimate selection and implementation of a trans-Alaska gas pipeline system. "Pipeline" shall mean a large diameter gas pipeline (including expansion thereof) commencing at Prudhoe Bay, crossing Alaska in approximately the same route as the present Trans-Alaska Pipeline System oil pipeline, and terminating at a site in the Prince William Sound area (without limitation to others, the pipeline route sought by El Paso Alaska Company in Federal Power Commission Docket No. CP75-96 is a trans-Alaska gas pipeline system within the meaning of this Article).

Article II

Seller's Royalty Gas

2.1 Seller warrants that under the leases identified in Exhibit A of this Agreement, Seller has the right to take its royalty natural gas in-kind which amount it

represents is twelve and one-half percent (12.5%), unless otherwise stated in Exhibit A, and agrees that it will exercise this right at a time sufficient to deliver gas to Buyer on the date the pipeline is ready to receive gas. If the laws, rules or regulations of the United States of America, or any agency thereof, prevent Seller from exercising its right to take its royalty gas in-kind, this Agreement shall be void.

2.2 In addition to the price as provided in Article VI hereof, Buyer shall reimburse Seller for Buyer's pro rata share of any costs attributable to the preparation and transportation of gas to be delivered hereunder which costs Seller may incur as a result of Seller's election to take its royalty gas in-kind and which costs would not have been incurred by Seller if Seller had not elected to take its royalty gas in-kind. Seller shall use its best efforts to minimize any costs incurred by Seller by reason of Seller's taking royalty gas in-kind, such best efforts shall include but not be limited to litigation in cooperation with Buyer to the extent necessary to contest the imposition of unwarranted and/or improper charges.

2.3 In the event Buyer is unable to obtain approval of the Federal Power Commission (or any successor governmental agency having jurisdiction in the premises) to

include in Buyer's cost of service the costs Buyer is obligated to pay Seller under Section 2.2 herein, Buyer may terminate this Agreement six (6) months after receipt by Seller of written notice of Buyer's termination notice; provided, however, that any costs identified in Section 2.2 herein becoming due and payable by Seller prior to termination of this Agreement shall be reimbursed to Seller by Buyer regardless of approval of the Federal Power Commission to include such costs in Buyer's cost of service.

Article III

Quantity

3.1 Subject to the terms and conditions set forth in this Agreement, Seller hereby agrees to sell and deliver or cause to be delivered to Buyer and Buyer hereby agrees to purchase and receive or cause to be received from Seller on each day commencing with the date of first delivery hereunder and continuing during the term of this Agreement, fifty percent (50%) 2/ of Seller's royalty gas available at the point of delivery described in Article IV hereunder.

3.2 It is agreed that the base volume of gas to be sold by Seller and purchased by Buyer during the term of this Agreement (excluding gas that might be made available under Subsection 3.7(b)) may be less than but under no conditions shall it be in excess of one (1) trillion, three hundred (300) billion cubic feet. 3/

3.3(a) Commencing on the date of first delivery of royalty gas hereunder and continuing each day thereafter until the fifth (5th) anniversary date thereof, Seller shall have the right to reduce the quantity of royalty gas otherwise available for sale and delivery to Buyer under Section 3.1 above by up to and including twenty-five percent (25%).

3.3(b) Commencing on the fifth (5th) anniversary date of first deliveries and continuing each day thereafter until the tenth (10th) anniversary date thereof, Seller shall have the right to reduce the quantity of royalty gas available for sale and delivery to Buyer as set forth in Section 3.1 by up to and including fifty percent (50%).

3.3(c) Commencing on the tenth (10th) anniversary date of first deliveries and continuing each day thereafter until the fifteenth (15th) anniversary date thereof, Seller shall have the right to reduce the quantity of royalty gas available for sale and delivery to Buyer as set forth in Section 3.1 by up to and including seventy-five percent (75%).

3.3(d) Commencing on the fifteenth (15th) anniversary date of first deliveries and continuing each day thereafter until termination of this Agreement, Seller shall have the right to reduce the quantity of royalty gas available for sale and delivery to Buyer as set forth in Section 3.1 by up to and including one hundred percent (100%).

3.3(e) Reductions by Seller of the quantity of royalty gas as provided in this Section 3.3 shall not become effective prior to twelve (12) months following Seller's written notice to Buyer thereof.

3.4 Buyer hereby agrees that Seller shall have the right and power at any time during the term of this Agreement to change the percentages set forth in Subsections 3.3(a), 3.3(b), 3.3(c) and 3.3(d) above; provided, however, that no such change or changes shall become effective prior to twenty-four (24) months following Seller's written notice to Buyer thereof.

3.5 The reservation of gas by Seller by way of its exercising its rights of gas reductions pursuant to Sections 3.3 and 3.4 hereof shall be for the sole purpose of Seller meeting the intrastate domestic and industrial needs of the State of Alaska including the right to exchange reserved gas for other natural gas produced or delivered into Alaska, provided such exchanged gas is used for the sole purpose of meeting the intrastate domestic and industrial needs of the State of Alaska. However, this provision shall not limit the right to export from the State any products manufactured from said gas.

3.6 Seller agrees that reservations similar to those available to Seller under Sections 3.2, 3.3, 3.4 and

3.5 shall be made in any contract providing for the sale of Seller's royalty gas from the leases identified in Exhibit A under contract for sale outside of Alaska and that the changes, up or down, in the amount of gas reserved for use in Alaska pursuant to this Article shall be made ratably from all such contracts.

3.7(a) Should Seller, through the exercise of its rights under Sections 3.3 and 3.4, in fact diminish the volume of gas otherwise available to Buyer hereunder and should Seller during the term of this Agreement and five (5) years thereafter have additional royalty gas which in Seller's sole discretion is surplus to the intrastate domestic and industrial needs of the State of Alaska, and will be transported by the Pipeline, Seller shall offer to sell to Buyer under the provisions of this Agreement, except as to price and term, ratably with other eligible purchasers of Seller's royalty gas from the leases identified in Exhibit A such additional royalty gas equivalent to Seller's prior reductions under Sections 3.3 and 3.4. Buyer shall have the right to purchase such gas at the highest price available to Seller for such gas from any other interstate bona fide purchaser. In the event there are no other interstate bona fide purchasers, the price shall be the price then being paid by Buyer for gas purchased under this Agreement. Buyer shall as soon as possible, but in no event later than twelve (12) months after receipt of Seller's offer to sell

such gas, give notice that it desires to purchase such gas or such right is waived by Buyer and Buyer shall have no further right to purchase that quantity of gas offered to Buyer by Seller. After receipt of such notice by Seller, Seller shall make available and Buyer shall take the necessary steps to receive such gas within two hundred ten (210) days.

3.7(b) In addition to the right granted Buyer under Subsection 3.7(a) and after all eligible purchasers of royalty gas from the leases identified in Exhibit A have had an opportunity to exercise such right, Seller grants to Buyer the right of first refusal to purchase additional royalty gas from Seller to the extent of one-half (1/2) times the volume that Seller's exercise of its rights under Sections 3.3 and 3.4 in fact diminishes the amount of gas Buyer otherwise would have purchased and received hereunder. Such right is granted during the term of this Agreement and five (5) years thereafter. This right of first refusal shall apply to royalty gas which becomes available to Seller and which in Seller's sole discretion is determined to be surplus to the intrastate domestic and industrial needs of the State of Alaska. This right of first refusal applies only to gas which will be transported by the Pipeline. 4/

3.8 Buyer hereby acknowledges that at any time after the effective date of this Agreement and prior to the

date of first deliveries hereunder, Seller shall have the right and power to initiate the taking of its royalty gas in-kind under the leases identified in Exhibit A hereto and to utilize, market or otherwise dispose of all or any portion of said royalty gas in any manner as Seller in its sole discretion, and at its sole expense, may determine; provided, however, that Seller agrees that any such arrangement shall not prevent Seller from making available for sale to Buyer on the date of first deliveries the quantity of gas committed to Buyer hereunder and not reserved by Seller pursuant to Sections 3.3 and 3.4.

3.9 Seller will provide Buyer at the beginning of each calendar year its best estimate of volumes under this Agreement which will be available during each calendar year of the next succeeding five (5) calendar years. This estimate shall not constitute the notices required by Subsection 3.3(e) and Section 3.4.

3.10 Buyer and Seller will cooperate to minimize any charges levied on gas liquefied and transported from Alaska to the contiguous 48 states. This Section shall not apply to any tariff established by the State of Alaska as owner of any portion of the transportation facilities.

3.11 Seller shall reimburse Buyer, at such time as Seller takes reserved gas pursuant to this Article, for a

percentage of any then undepreciated investment made by Buyer in any facilities upstream of the Pipeline. Such percentage of reimbursement shall be the same as the percentage the Seller s reserved gas is of the total gas which otherwise would have been sold to Buyer hereunder. Depreciation shall be calculated using generally accepted accounting principles.

Article IV

Delivery Point(s) and Delivery Pressure(s)

4.1 Delivery of Seller's royalty gas shall be at the point(s) the working interest owners of the leases identified in Exhibit A make delivery of gas to their purchasers or at any other point mutually agreed upon by the parties hereto.

4.2 Should Seller be required to take delivery of its royalty gas from the working interest owners of the leases described in Exhibit A at a point upstream from the delivery point as determined in Section 4.1 after exerting its best efforts to receive such gas at the delivery point as determined in Section 4.1, Buyer shall accept delivery at the point Seller receives its royalty gas. Seller shall have no obligation under this Section to enter into any agreement (except the leases identified in Exhibit A) regarding delivery points that will result in Seller's incurring any costs which Buyer will not reimburse.

4.3 Gas sold and delivered by Seller to Buyer hereunder shall be received by Buyer at the delivery point at the same pressure as the pressure the working interest owners deliver their gas to their purchasers, or at the pressure Seller receives its gas from the working interest owners if delivery is made under Section 4.2 hereof.

4.4 Seller shall retain the right to receive all liquids removed from the gas prior to its delivery to the Pipeline, whether removed before or after delivery of the gas to Buyer.

Article V

Quality

5.1 The gas to be delivered by Seller to Buyer at the delivery point(s) hereunder shall conform to the quality specifications applicable to the gas sold by the working interest owners from the leases identified in Exhibit A deliverable at the same delivery point(s).

Article VI

Price

6.1 Buyer and Seller recognize that as of the date of this Agreement, the price which Buyer may be allowed to pay and include in its jurisdictional resale rates has

AGO 668133

not been determined. In consideration thereof, the price which Buyer shall pay Seller for gas purchased hereunder shall be determined in accordance with Section 6.2 or Section 6.3 or Section 6.4 or Section 6.5 and shall be subject to the adjustment as provided by Section 6.6; however, the price paid Seller for gas which Buyer reflects in its rates to jurisdictional customers shall never be higher than the price Buyer is permitted to retain in its jurisdictional resale rates as long as such rates are subject to regulation by the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises).

6.2 Seller represents that Seller is not a "Person" as defined in the Natural Gas Act and therefore not subject to the provisions of said Act. Buyer is a natural gas company subject to the regulations of said Act. If at the time of first deliveries of gas hereunder the price of gas purchased hereunder is subject to the regulation of the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises) because of the Commission's authority to regulate the rates at which Buyer resells such gas, then the initial price to be paid by Buyer to Seller hereunder shall be the highest area, national or ceiling rate allowed to be paid by any interstate gas purchaser to any working interest owner in the leases identified in Exhibit A under contracts of at least fifty (50) billion cubic feet and providing for substantially the

AGO 668134

same quality and conditions of delivery as in this Agreement. The price to be paid thereafter, shall be subject to all periodic changes permitted in accordance with the applicable and governing portions of the Rules and Regulations of the Federal Power Commission, (or of any successor governmental authority having jurisdiction in the premises), or such other changes in price as may be permitted by any new area, national or ceiling rates applicable to the gas sold under the leases identified in Exhibit A, which may subsequently be established. Such price shall include all applicable adjustment provisions prescribed or permitted; provided, however, such price adjustment provisions which relate to charges for which Seller is reimbursed pursuant to Article II hereof shall be excluded. If Buyer is subsequently unable to obtain approval of any portion of such price in Buyer's cost of service and required to refund that portion of such price to its customers, Seller shall refund such portion of the price to Buyer.

In the event gas sold by a producer or producers from the leases identified in Exhibit A is permitted a price higher than the area, national or ceiling rates, under Federal Power Commission regulations relating to Optional Pricing, Temporary or Emergency Sales, Commission Order Nos. 481 or 533, as amended, or other similar regulations or orders, then the price paid for Seller's royalty gas attributable to such production will be increased to that higher price.

In no instance shall the price paid Seller be less than the price paid producers for their gas from the same reservoir for same or similar sales in interstate commerce.

6.3 If at the time of first deliveries of gas hereunder the price of gas sold from the leases identified in Exhibit A is not regulated by the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises), then the initial price for gas delivered hereunder shall be the highest price being paid by any interstate gas purchaser for gas under contracts of at least fifty (50) billion cubic feet and providing for substantially the same quality and conditions of delivery as in this Agreement and produced from the leases identified in Exhibit A.

6.4 If the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises) shall at any time after commencement of the first delivery cease (after commencing) to regulate the price applicable to natural gas of any vintage produced from the leases identified in Exhibit A and sold in interstate commerce, which deregulation would prevent the Federal Power Commission from excluding the price Buyer pays under this Agreement from its cost of service and would have applied to Seller had Seller been subject to governmental regulation, then upon notice of written election given by Seller or Buyer to the other not later than sixty (60) days after the

AGO 668136

effective date of such deregulation, the price of gas sold by Seller to Buyer hereunder shall be redetermined in accordance with the provisions of Section 6.5.

The redetermined price shall be agreed to by the parties and become effective within ninety (90) days after the notice has been given as aforesaid, or if the parties shall fail to agree, the redetermined price shall be established by arbitration. The redetermined price shall remain in effect until later changed in accordance with the pricing provisions of this Agreement.

6.5 Seller or Buyer shall have the option to cause the price being paid for the gas sold hereunder to Buyer to be redetermined every twelve (12) months, such to be effective on the anniversary of such redetermination under Section 6.4 hereof. The request for a price redetermination shall be given in writing not later than one hundred twenty (120) days prior to the beginning of the period for which the price redetermination is requested.

Within the same one hundred twenty (120) days following such request for a price redetermination, the parties shall meet to redetermine such price. Such redetermined price shall be the higher of (1) the highest price being paid for gas sold in interstate commerce from the North Slope of Alaska set out in a contract selling at least

fifty (50) billion cubic feet executed in the one (1) year period immediately preceding said notice and providing for substantially the same quality and conditions of delivery and having a term of at least five (5) years, or (2) the highest price being paid under a renegotiation or price redetermination clause of any contract for gas sold in interstate commerce from the North Slope of Alaska selling at least fifty (50) billion cubic feet and providing for substantially the same quality and conditions of delivery and having a term of at least five (5) years. In the event there are no comparable contracts executed in the one (1) year period, or no contracts under which the price has been renegotiated or redetermined, the parties shall meet to agree upon a price. If the parties are unable to agree, the matter shall be submitted to arbitration as provided in Article VII.

It is agreed that the parties shall have the full one hundred twenty (120) days to reach voluntary agreement on the redetermined price. However, at any time after negotiations have been in process more than thirty (30) days but less than one hundred twenty (120) days, either party may request in writing that the matter be submitted to arbitration as provided in Article VII of this Agreement.

A redetermined price established by arbitration shall become effective as of the later of (1) the date the

Board renders its decision, or (2) one hundred twenty (120) days after the giving of notice of the request for a price redetermination.

In no event shall the redetermined price be less than the price being paid to Seller by Buyer immediately preceding the initial redetermination.

6.6 If it is found upon tests that the gas being delivered hereunder shall have a gross heating value of more or less than one thousand (1000) British thermal units per cubic foot, then the price payable for such gas shall be increased or reduced. Such increased or reduced price shall be determined by multiplying the price otherwise payable for such gas by a fraction the numerator of which is the actual gross heating value of the gas delivered, expressed in British thermal units per cubic foot, and the denominator of which is one thousand (1000).

Article VII

Arbitration

7.1 In the event either party shall request arbitration of any dispute arising under this Agreement, there shall be established a board of three (3) arbitrators to be selected as follows: either Seller or Buyer may, at

the time such board of arbitration is desired, notify the other of the name of an arbitrator, and such other party shall, within ten (10) days thereafter, select an arbitrator and notify the party desiring arbitration of the name of such arbitrator. If such other party shall fail to name a second arbitrator within ten (10) days, then the party which first served the notice may, on three (3) days' notice to the other party, apply to the person who is Chief Judge of the United States District Court for the District of Alaska for the appointment of such second arbitrator. The two (2) arbitrators chosen as above shall, within ten (10) days after the appointment of the second arbitrator, choose a third arbitrator, and in the event of their failure to do so within said ten (10) days, either of the parties hereto may in like manner, on three (3) days' notice to the other party, apply to the person who is such Judge for the appointment of a third arbitrator and in such case the arbitrator appointed shall act as the third arbitrator. The arbitrators selected hereunder shall be qualified by education and experience to consider the question involved. The Board shall promptly fix a reasonable time and place for the hearing, at which time each of the parties hereto may submit such evidence as it may see fit. If within such thirty (30) days a decision is not rendered by the board, new arbitrators may be named, at the election of either Seller or Buyer, and shall act hereunder in like manner as if none had been previously named. The action of a majority of the members of the board shall govern and their decision in

writing shall be final and binding on the parties hereto. Each party shall pay the compensation and expenses of its own counsel, witnesses and employees. All other costs of the arbitration shall be equally divided between Seller and Buyer.

Article VIII

Term

8.1 This Agreement shall become effective upon the execution and approval as provided in Section 11.6 hereof and, except as provided in Subsection 3.7(a) hereof, shall continue and remain in force and effect for a period of twenty (20) years from the date of first deliveries or until the base volume of gas as set forth in Section 3.2 hereof has been delivered, whichever is earlier; provided that if, prior to the expiration of the term hereof, the volumes of gas available for delivery hereunder shall be so reduced by the decline in production that further production of gas for delivery hereunder would no longer be profitable for Seller or that further operation of the facilities used to transport such gas by or for the account of Buyer would no longer be profitable to Buyer, then the party for whom continued operation under this Agreement is no longer profitable may give notice to the other, which notice shall give the reason for such non-profitability and on the two

hundred tenth (210th) day after the giving of such notice this Agreement shall terminate unless the parties before that time agree to extend the terms hereof prior to the end of that two hundred ten (210) day period. This Article is not applicable to gas which Seller makes available to Buyer under Subsection 3.7(b) hereof.

Article IX

Seller's Reservation

9.1 Seller shall retain the right to process the gas or have the gas processed, before and/or after delivery to Buyer, for the recovery of liquefiable hydrocarbons other than methane, (propanes, ethanes, butanes and heavier hydrocarbons) except such minimum quantities of methane as must necessarily be removed in such processing (including the right to use the gas for fuel in the operation of any processing plant). Gas so processed in a plant shall be delivered, redelivered, measured and accounted for in accordance with procedures mutually satisfactory to Buyer and Seller. Seller shall not reduce the heating content of the gas remaining after processing below one thousand (1000) British thermal units per cubic foot. Seller shall reimburse Buyer for all transportation charges, liquefaction charges and regasification charges attributable to the volume removed by processing, including fuel and shrinkage. Should such processing occur downstream of the delivery

AGO 668142

point hereunder, appropriate adjustment shall be made to the volume of gas delivered by Seller to Buyer to give effect to all reduction of delivered volumes as a result of such processing.

Article X

Notices

10.1 Notices to be given hereunder shall be deemed sufficiently given and served when and if deposited in the United States mail postage prepaid and certified or registered, addressed to Seller at _____ _____, or to Buyer at _____ _____, as the case may be, or to such other address as either party shall respectively hereafter designate in writing.

10.2 Routine communications, including monthly statements and payments shall be considered as duly delivered when mailed by either registered mail or ordinary first class mail, postage prepaid.

Article XI

Conditions Precedent

11.1 Seller acknowledges that Buyer shall have no obligation to perform any of its undertakings set forth in this Agreement, other than its undertaking to actively

AGO 668143

support the ultimate (government) selection of the Pipeline for the movement of natural gas from the North Slope of Alaska to market, until and unless all governmental approvals necessary for initiation and implementation of the Pipeline are granted; provided however, that costs incurred by Seller by reason of Seller's election to take its royalty gas in-kind shall be reimbursed to Seller by Buyer as provided in Section 2.2 herein.

11.2 In the event that on or before December 31, 1978, all regulatory approvals have not been issued and been accepted by Buyer or the applicant to construct the Pipeline which Buyer or Seller deems necessary to enable Buyer or Seller to perform its obligations under or receive the benefits of this Agreement, either party may thereafter terminate this Agreement by giving written notice to the other party not less than ten (10) days prior to the effectiveness of said action.

11.3 Promptly after approval of this Agreement by concurrent resolution of a majority of each house of the Alaska State Legislature, Buyer shall proceed with diligence in the preparation, filing and prosecution of such applications, petitions, pleadings and other filings with the Federal Power Commission as may be required to obtain all necessary rate, tariff, and/or certificate authorizations, approvals and rulings, as the case may be, related to Buyer's undertakings set forth in this Agreement.

11.4 Prior to the time that a Federal Power Commission order granting a Certificate of Public Convenience and Necessity to the Pipeline becomes final and non-appealable, the Governor of Alaska may give written notice to Buyer of his decision, and reasons therefor, to support a project other than the Pipeline and such notice shall not be deemed a default of Seller's obligations under Article I hereof. Should Buyer elect to support the project designated in the Governor's notice, such project shall be considered the "Pipeline," and Buyer's rights hereunder shall continue. If Buyer does not give notice of its decision to support the project designated in the Governor's notice within thirty (30) days after receipt of the Governor's notice, this Agreement and all rights and obligations hereunder shall terminate.

11.5 This Agreement may be terminated by directive of the Governor of Alaska to the Commissioner of Natural Resources and the serving of a written notice to Buyer by said Commissioner, which notice may be given anytime after a Federal Power Commission order denying El Paso Alaska in Docket No. CP75-96 a Certificate of Public Convenience and Necessity, becomes final and non-appealable, or after an order of the Federal Power Commission granting a Certificate of Public Convenience and Necessity to a project or system other than the Pipeline becomes final and non-

appealable. Such termination shall not prejudice Buyer's position in negotiations for subsequent purchases of gas from Seller.

11.6 This Agreement shall not take effect until approved by concurrent resolution of a majority of each house of the Alaska State Legislature.

Article XII

Exhibits and General Terms and Conditions

12.1 Exhibit A and the General Terms and Conditions attached to this Agreement are by this reference incorporated into and made a part of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in four (4) original counterparts on this day and year first above written.

"BUYER"	COMMISSIONER OF NATURAL RESOURCES OF THE STATE OF ALASKA
_____	_____
ATTEST:	ATTEST:
_____	_____

This "General Terms and Conditions" is attached and made part of Royalty Gas Sales Agreement dated _____ 1976, by and between _____ as Buyer, and _____ as Seller.

SECTION 1	Definitions	2
SECTION 2	Responsibility.	4
SECTION 3	Meters.	4
SECTION 4	Units of Volume	7
SECTION 5	Gas Measurement	8
SECTION 6	Billing and Payment	11
SECTION 7	Receipt of Available Gas.	12
SECTION 8	Title	12
SECTION 9	Force Majeure	13
SECTION 10	Rules and Regulations	15
SECTION 11	Successors and Assigns.	16
SECTION 12	Conformity with Producer Sales Contract.	16
SECTION 13	Miscellaneous	17

I. DEFINITIONS

The following terms, when used in this General Terms and Conditions and in the foregoing portion of this Royalty Gas Sales Agreement, shall have the following meanings, regardless of capitalization:

1.1 The term "lease or leases" shall mean the oil and gas leases and portions thereof which are described in Exhibit A hereto attached and made a part hereof.

1.2 The term "lessee" shall mean the party or parties owning working interest in the lease or leases.

1.3 The term "gas" shall include casinghead gas produced with crude oil, gas well gas, and residue gas resulting from processing either casinghead gas or gas well gas or both.

1.4 The term "casinghead gas", as used herein, excludes gas cap gas and shall mean gas produced with crude petroleum from an oil well, all or substantially all of which is indigenous to the oil strata from which such crude petroleum oil is produced, together with gas lift gas produced with oil whether originally produced from the same oil stratum or not.

1.5 The term "gas well gas" shall mean all other gas, including gas cap gas, or the mixture of hydrocarbon gases produced from the leases other than that includable within the definition of casinghead gas.

1.6 The term "day" shall mean a period of twenty-four (24) consecutive hours beginning at 7:00 o'clock A.M. Alaska Standard Time. The reference date for any day shall be the date of the beginning of such day.

1.7 The term "month" shall mean the period beginning at 7:00 o'clock A.M. Alaska Standard Time on the first day of a calendar month and ending at the same time on the first day of the next succeeding calendar month.

1.8 The term "cubic foot of gas" means the volume of gas contained in one cubic foot of space at a standard pressure base and a standard temperature base. The standard pressure base shall be fourteen and sixty-five one hundredths (14.65) pounds per square inch absolute and the standard temperature base shall be sixty (60) degrees Fahrenheit.

1.9 The term "year" shall mean each successive period of twelve (12) consecutive months beginning on the first day of the month in which deliveries of gas are commenced to Buyer hereunder and any anniversary of such date.

1.10 The term "anniversary date of first delivery" shall mean the same date of each succeeding year as the date of first deliveries.

1.11 The term "domestic and industrial needs of the State of Alaska" shall mean those present and projected residential, commercial and industrial uses for gas within Alaska as determined by the Alaska Royalty Oil and Gas Development Advisory Board in accordance with AS 38.05-.183(d).

2. RESPONSIBILITY

2.1 Buyer shall not be responsible for the gas prior to its delivery hereunder and Seller shall hold Buyer harmless against any damage or injury caused thereby until same has been delivered to Buyer at the delivery point or points hereunder, after which delivery Buyer shall be deemed in exclusive control and possession thereof and responsible for said gas and shall hold Seller harmless against any injury or damage caused thereby, except that while the gas is being processed by or on behalf of Seller, Buyer shall not be deemed in control or possession thereof and shall not be responsible for said gas.

3. METERS

3.1 Buyer, at its sole cost and expense, shall install, maintain and operate, or cause to have installed, maintained, and operated, at each delivery point, a standard

type orifice meter or meters for the measuring of the quantity of gas delivered hereunder. Orifice meters shall be installed and operated in accordance with the specifications prescribed in Gas Measurement Committee Report No. 3, as revised and reprinted September 1969, of the Natural Gas Department of the American Gas Association, as supplemented and modified from time to time. Buyer shall cause the charts on such meters to be changed each day, or at such other times as may be agreed upon by the parties hereto. The meters, meter readings and meter charts shall be accessible at all reasonable times to inspection and examination by Seller.

3.2 From time to time and at least once each month, the accuracy of Buyer's measuring equipment shall be verified by and at the expense of the Buyer. If either party at any time shall notify the other that it desires a special test of any meter, the other party shall cooperate to secure an immediate verification of the accuracy of such meter and joint observation of any adjustments. If any such test shall be requested by Seller and upon such test, the measuring equipment shall be found to be registering correctly, the cost of such test shall be charged to Seller, otherwise the cost of all such tests shall be borne by Buyer. Buyer shall give notice to Seller of the time of all tests made pursuant to this Section in order that Seller may conveniently have its representative present. Calibration and

adjustment of Buyer's meters and changing of charts shall be done only by Buyer.

3.3 If, upon any test, the percentage of inaccuracy shall be two percent (2%) or more, the registration of such meter shall be corrected at the rate of such inaccuracy for any period which is definitely known or agreed upon, but in case the period is not definitely known or agreed upon, then for a period extending back one-half (1/2) the time elapsed since the date of the last calibration. Following any test, metering equipment found inaccurate shall be immediately restored by Buyer as closely as possible to a condition of accuracy. If, for any reason, any meter is out of service or out of repair so that the amount of gas delivered cannot be estimated or computed from the reading thereof, the amount of gas delivered through the period such meter is out of service or out of repair shall be estimated and agreed upon by the parties hereto upon the basis of the best available data, using the first of the following methods which is feasible:

a. By using the registration of Seller's check meter if installed and accurately registering.

b. By correcting the error if the percentage of error is ascertainable by calibration test or mathematical calculation.

c. By estimating the quantity of deliveries by deliveries during preceding periods under similar conditions when the meter was registering accurately.

3.4 Seller may, at its option and expense, install and operate or cause to be installed and operated check meters to check Buyer's meters, but measurement of gas for the purpose of this Agreement shall be by Buyer's meter, except as hereinabove specifically provided to the contrary. Such check meters and equipment shall be so installed as not to interfere with the operation of the meters to be installed and maintained by Buyer at or near the points of delivery.

4. UNITS OF VOLUME

4.1 The unit of volume for all purposes hereunder (except as otherwise specified in Subsection 4.2 of this Section 4) shall be one thousand (1000) cubic feet at an absolute pressure of fourteen and sixty-five hundredths (14.65) pounds per square inch at a temperature of sixty (60) degrees Fahrenheit.

4.2 The unit of volume for the determination of the gross heating value of the gas purchased hereunder shall be the amount of gas, saturated with water vapor, which would occupy a volume of one (1) cubic foot at a temperature of sixty (60) degrees Fahrenheit and under a pressure equivalent to thirty (30) inches of mercury at thirty-two (32)

AGO 668153

degrees Fahrenheit. Such gross heating value shall be expressed in British thermal units per cubic foot.

5. GAS MEASUREMENT

5.1 The volumes of gas delivered hereunder shall be computed in accordance with the specifications prescribed in Gas Measurement Committee Report No. 3, as revised and reprinted September, 1969, of the Natural Gas Department of the American Gas Association, as supplemented and modified from time to time, applied in a practical and appropriate manner, and appropriate correction shall be made for deviation of the gas from Boyle's Law in accordance with said Gas Measurement Committee Report No. 3. Any additional data required to be developed in accordance with recommendations contained in such report shall be jointly determined by the parties hereto in a manner mutually agreeable.

5.2 For the purpose of measurement, the absolute atmospheric (barometric) pressure shall be agreed upon for each point of delivery hereunder based on the actual elevation or location of the delivery point above sea level and shall thereafter be deemed to remain constant regardless of variations in the actual barometric pressure from time to time.

For meters of the orifice type the following factors shall be given due consideration:

a. The temperature of the gas flowing through Buyer's meters shall be obtained by the use of a recording thermometer so installed by Buyer that it may properly re-record the temperature of such gas. The arithmetical average of the hourly temperature during the period gas passed shall be used to make proper computations of volumes hereunder.

b. The specific gravity of the natural gas shall be determined by Buyer by calculation (compensated for any difference between the specific gravity in the ideal state and in the real state in accordance with published procedures adopted by the Gas Measurement Committee of the American Gas Association) utilizing the analysis of the natural gas determined in accordance with Subsection 5.3 of this Section 5. The specific gravity so determined shall be utilized during the applicable period of time referred to in said Subsection 5.3.

5.3 Each three (3) months or as near the first of each three (3) months' period as practicable, Buyer shall sample and analyze the gas delivered hereunder at each delivery point for determination of its constituents and the total gross heating value thereof. The "Method for Natural Gas Analysis by Gas Chromatography, Revised and Adopted as Standard, 1964, by the Natural Gas Processors Association,"

as supplemented and modified from time to time, shall be used in making such determination. Copies of each such analysis shall be furnished by Buyer to Seller. Should Seller not be satisfied with the results of such analysis, it shall notify Buyer in writing. Promptly thereafter, representatives of the parties shall obtain simultaneously under normal operating conditions two (2) samples of the gas delivered hereunder at the point of delivery in question in appropriate sampling devices of the same type. Each of the parties shall take one (1) such sample and subject it to appropriate laboratory analyses to determine the total gross heating value thereof, reporting the results thereof in writing to the other. The average of the total gross heating value shown by such two (2) analyses shall be used for all purposes of this Agreement for the period covered by the analyses made by Buyer which gave rise to the joint determination.

5.4 Buyer reserves the right to install and utilize recording gravitometers and/or calorimeters at any and all delivery points for the determination of specific gravity and gross heating value in lieu of the testing procedures provided in Subsections 5.2(b) and 5.3 of this Section 5.

5.5 Buyer shall give notice to Seller of the time of all tests of gas delivered hereunder or of any equipment

used in measuring or determining the nature of quality of such gas, in order that Seller may conveniently have its representative present. Should Seller not be satisfied with any such tests, it shall so notify Buyer and Buyer shall perform such retests as may be necessary to assure an accurate test.

6. BILLING AND PAYMENT

6.1 On or before the fifteenth (15th) day of each month after deliveries of gas are commenced hereunder, Buyer shall render to Seller a statement showing the amount of gas delivered by Seller and the amount of gas purchased by Buyer hereunder during the preceding calendar month and payment for gas sold hereunder by Seller shall be made by Buyer to Seller on or before the twenty-fifth (25th) day of the calendar month in which such statement is rendered.

6.2 Upon request, Buyer shall furnish or cause to be furnished Seller the measurement charts applicable to any monthly statement. Seller shall return to Buyer all charts after thirty (30) days.

6.3 Any error or discrepancy in charts or statements furnished pursuant to the above shall be promptly reported to Buyer and Buyer shall make proper adjustment thereof within forty-five (45) days after final determination of the

AGO 668157

correct volumes or values involved; provided, however, that if no such errors or discrepancies are reported to Buyer within two (2) years from the date of such chart or statement the same shall be conclusively deemed to be correct.

6.4. Seller shall have access to Buyer's records and books at all reasonable hours so far as they affect measurement and settlement for gas sold hereunder.

7. RECEIPT OF AVAILABLE GAS

7.1 In accordance with the provisions hereof, Buyer shall proceed diligently to seek such authorization as required to receive gas then available for delivery by Seller hereunder. Thereafter, as additional gas becomes available for delivery to Buyer hereunder at additional points of delivery, Seller shall notify Buyer in writing, or cause Buyer to be so notified, of the availability of such additional gas, and thereafter Buyer shall proceed diligently to seek such authorization as required for Buyer to receive such additional gas.

8. TITLE

8.1 Seller hereby warrants title to the gas sold by it hereunder and its right to sell the same and warrants that all such gas is owned by Seller free from all liens, encumbrances and adverse claims.

9. FORCE MAJEURE

9.1 In the event of either Buyer or Seller being rendered unable by force majeure to perform a duty or an obligation under the Royalty Gas Sales Agreement, the performance of said duty or obligation by the party affected by such force majeure shall be suspended without liability to the other party to the Royalty Gas Sales Agreement during the continuance of the period of inability caused by force majeure but for no longer period, and the party whose performance is thus suspended shall, so far as possible, take all actions within its control to remedy the cause of its non-performance with all reasonable dispatch.

The term "force majeure" as employed herein shall mean acts of God, strikes, lockouts or other industrial disturbances, acts of the public enemy, wars, blockades, military action, insurrections, riots, epidemics, landslides, lightning, earthquakes, fires, storms, or storm warnings, crevasses, floods, washouts, arrests and restraints of governments and people, civil disturbances, explosions, breakage or accident to machinery or lines of pipe, or making repairs or alterations to machinery or lines of pipe, the necessity for testing (as required by law, governmental regulation or for safe operation thereof, in the judgment of the testing party), freezing of wells or lines of pipe, partial or entire failure of wells, inability of any party

hereto to obtain necessary materials, supplies or permits due to existing or future rules, regulations, orders, laws or proclamations of governmental authorities (both Federal and State), including both civil and military, any inability on the part of any purchaser or purchasers to receive gas from Buyer by reason of force majeure affecting such purchaser or purchasers, provided that such inability of Buyer to take gas because of force majeure affecting its purchasers, shall be fairly apportioned among its various sources of gas supply, and any other causes, whether of the kind herein enumerated or otherwise, not within the control of the party claiming suspension, and which by the exercise of due diligence such party is unable to prevent or overcome; such term shall likewise include (a) in those instances where either party hereto is required to obtain servitudes, right-of-way grants, permits or licenses to enable such party to fulfill its obligations hereunder, the inability of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such servitudes, right-of-way grants, permits or licenses, and (b) in those instances where either party hereto is required to furnish materials and supplies for the purpose of constructing or maintaining facilities, or is required to secure permits or permission from any governmental agency to enable such party to fulfill its obligations hereunder, the inability of such party to acquire, or the delays on the part of such party in acquiring, at reasonable cost and after the exercise of

reasonable diligence, such materials and supplies, permits and permissions; provided, however, Seller shall have the right but not the obligation to sell on a day to day basis free from this Agreement any gas which is committed to Buyer hereunder but which Buyer does not take because of force majeure. The word "party" as used in this Section 1 shall mean and include any person or persons, corporate or otherwise, with whom Seller enters into or has agreements for the conditioning, processing, compressing, or transportation, for its account, of the gas to be delivered hereunder from the point of delivery hereunder to Buyer's facilities.

9.2 It is understood and agreed that the settlement of strikes or lockouts shall be entirely within the discretion of the party having the difficulty, and that the above requirement that any force majeure shall be remedied with all reasonable dispatch shall not require the settlement of strikes or lockouts by acceding to the demands of the opposing party when such course is inadvisable in the discretion of the party having the difficulty.

10. RULES AND REGULATIONS

10.1 This Agreement is subject to all present and future valid laws and valid orders, rules and regulations of the United States, the State of Alaska, or any duly constituted agency thereof.

AGO 668161

11. SUCCESSORS AND ASSIGNS

11.1 This Agreement shall bind and benefit the parties hereto and their respective successors and assigns, provided that no conveyance or transfer of any interest of either party shall be binding upon the other party until such other party has been furnished with written notice and true copy of such conveyance or transfer; provided, further, that either Buyer or Seller, or both, may assign its right, title and interest in, to and by virtue of this Agreement, including any and all extensions, renewals, amendments and supplements thereto to a trustee or trustees, individual or corporate, as security for bonds or other obligations or securities, without such trustee or trustees assuming or becoming in any respect obligated to perform any of the obligations of the assignor, and if any such trustee be a corporation, without its being required by the parties hereto to qualify to do business in the State of Alaska, but no such assignment shall serve to relieve the assigning party of its obligations hereunder.

12. CONFORMITY WITH PRODUCER SALES CONTRACT

12.1 Seller and Buyer recognize that this Agreement is being entered into prior to sales agreements by the working interest owners. Each party further recognizes that Seller's royalty gas will be commingled with the gas of the working interest owners and that consequently Seller's gas will be produced, gathered and treated identically with the

gas of the working interest owners. It is therefore agreed between the parties that if terms, conditions, or clauses are included in contracts for the sale of gas from the leases identified in Exhibit A by the working interest owners which terms, conditions, or clauses are more favorable to the vendor than the terms, conditions or clauses of Sections 3, 5 and 6 of these General Terms and Conditions herein, Seller shall at its sole option have the right to include such term, condition or clause into this Agreement by giving Buyer written notice within ninety (90) days after approval by the Federal Power Commission of said working interest owner's contract for the sale of its gas.

13. MISCELLANEOUS

13.1 No waiver by either party of one or more defaults by the other in the performance of any of the provisions of this Agreement shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or of a different character.

13.2 This Agreement, and the construction and interpretation thereof, shall be governed by the laws of the State of Alaska.

13.3 Article headings used in this Agreement are for convenience only and shall not affect the construction of this Agreement.

AGO 668163

13.4 This Agreement may be supplemented, amended or modified only by a written instrument duly executed by the parties hereto.

13.5 Except in the cases for which arbitration is specifically provided herein, if either party shall fail to perform any of the covenants or obligations imposed upon it by this Agreement (except where such failure shall be excused under the force majeure provisions hereof), then and in that event, the other party may, at its option (without waiving any other remedy for breach hereof), by notice in writing specifying wherein the default has occurred, indicate such party's election to terminate this Agreement by reason thereof. The party in default shall have sixty (60) days from the receipt of such notice to remedy such default and to pay or indemnify the other party all loss or damage incurred as a result thereof, and upon failure so to do, this Agreement shall terminate from and after the expiration of such sixty (60) day period. Any such termination shall be an additional remedy and shall not prejudice the right of the party not in default to collect any amounts due it hereunder for any damage or loss suffered by it and shall not waive any other remedy to which the party not in default may be entitled for breach of this Agreement.

13.6 If any provision or clause of this Agreement or application thereof to any person or circumstances is held

AGO 668164

invalid, such invalidity shall not affect other provisions or applications of the Agreement which can be given effect without the invalid provision or application.

13.7 Seller and Buyer shall each preserve all test data, charts and other similar records as required by the Federal Power Commission.

Exhibit A

Attached to and Made a Part of a Royalty Gas Sales Agreement dated _____, 1976, Between _____ "Buyer" and _____ Seller", With Respect to Certain Royalty Gas Owned and Taken In-Kind by _____ _____ Under the Leases Described Herein Covering Lands in the State of Alaska.

Each of the following described Leases reserves to the State of Alaska a one-eighth (1/8) royalty interest, unless otherwise stated.

Lease Serial No.	Legal Description	Gross Acres

EXPLANATION OF FOOTNOTES

The preceding agreement for the sale of royalty gas is a copy of the Agreement between the State of Alaska and Tenneco Alaska, Inc. The Agreements between the State and El Paso Natural Gas Co. and the State and Southern Natural Gas Company are virtually identical. The differences which exist have been footnoted in this contract and the changes which are appropriate to the El Paso and Southern contract are explained in each footnote.

The contract is being made available in this manner as it facilitates comparison of the three contracts and avoids the necessity of distributing widely three copies of contracts which are virtually identical. These footnotes, of course, do not appear in the original contracts.

Footnotes:

1/ Instead of the words "Tenneco Alaska Inc., an Alaskan corporation" substitute the words "El Paso Natural Gas Co., a Delaware corporation" for the El Paso contract and the words "Southern Natural Gas Company, a Delaware corporation" for the Southern contract.

2/ Instead of the words "fifty percent (50%)" substitute the words "twenty-five percent (25%)" for both the El Paso and Southern contracts.

3/ Instead of the words "one (1) trillion, three hundred (300) billion cubic feet" substitute the words "six hundred fifty (650) billion cubic feet" for both the Southern and El Paso contract.

4/ An additional sentence is added at the end of Section 3.7(b) to the El Paso and Southern contracts. For the El Paso contract that sentence reads as follows:

> Buyer's right under this Section shall apply only to surplus royalty gas available after Seller has satisfied its obligations under Subsections 3.7 (a) and 3.7 (b) of that Agreement between the State of Alaska and Tenneco Alaska, Inc. dated_____.

For the Southern contract the added sentence reads as follows:

> Buyer's right under this Section shall apply only to surplus royalty gas available after Seller has satisfied its obligations under Subsections 3.7 (a) and 3.7 (b) of that Agreement between the State of Alaska and Tenneco Alaska, Inc. dated_____, and that Agreement between the State of Alaska and El Paso Natural Gas Co. dated_____.

STATE OF ALASKA
THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

POUCH Y - STATE CAPITOL
JUNEAU, ALASKA 99811
907-465-3800

MEMORANDUM

January 31, 1977

SUBJECT: Amendments/Changes to Royalty Gas Contracts

TO: The Honorable John Rader

FROM: Elke Kallab
Research Analyst

I have just been advised by Billy Berrier that it appears impossible to amend the contracts.

The reasons given are as follows:

1. Alaska Statutes

   38.06.040, particulary subsection (2),

   38.06.050, particularly subsection (d), and

   38.06.055 appear to prevent amendment to the contracts while waiting approval in the legislature.

2. General Contract Law

   In general contract law one party cannot unilaterally amend a contract.

Mr. Berrier suggested the possibility of a concurrent resolution making the legislative approval conditional upon whatever changes were considered important to the contracts. He said that such a move, however, would bring with it the very "ticklish" subject of the separation of power argument.

I asked that he pursue the matter further for you, and he will do so. In addition, he will keep you advised of any other alternative solutions he is able to think of.

EK:mo

AGO 668169

STATE OF ALASKA
THE LEGISLATURE
LEGISLATIVE AFFAIRS AGENCY

POUCH Y · STATE CAPITOL
JUNEAU, ALASKA 99811
907-465-3800

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I asked that he pursue the matter further for you, and he will do so. In addition, he will keep you advised of any other alternative solutions he is able to think of.

EK:mo

AGO 668170

EXPLAINATION OF FOOTNOTES

The preceding agreement for the sale of royalty gas is a copy of the Agreement between the State of Alaska and Tenneco Alaska, Inc. The Agreements between the State and El Paso Natural Gas Co. and the State and Southern Natural Gas Company are virtually identical. The differences which exist have been footnoted in this contract and the changes which are appropriate to the El Paso and Southern contract are explained in each footnote.

The contract is being submitted to you in this manner to avoid unnecessary duplicating expenses. Exact copies of each individually signed contract have been submitted to the President of the Senate and the Speaker of the House.

Footnotes:

1/ Instead of the words "Tenneco Alaska Inc., an Alaskan corporation" substitute the words "El Paso Natural Gas Co., a Delaware corporation" for the El Paso contract and the words "Southern Natural Gas Company, a Delaware corporation" for the Southern contract.

2/ Instead of the words "fifty percent (50%)" substitute the words "twenty-five percent (25%)" for both the El Paso and Southern contracts.

3/ Instead of the words "one (1) trillion, three hundred (300) billion cubic feet" substitute the words "six hundred fifty (650) billion cubic feet" for both the Southern and El Paso contract.

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> Buyer's right under this Section shall apply only to surplus royalty gas available after Seller has satisfied its obligations under Subsections 3.7 (a) and 3.7 (b) of that Agreement between the State of Alaska and Tenneco Alaska, Inc. dated_____.

For the Southern contract the added sentence reads as follows:

> Buyer's right under this Section shall apply only to surplus royalty gas available after Seller has satisfied its obligations under Subsections 3.7 (a) and 3.7 (b) of that Agreement between the State of Alaska and Tenneco Alaska, Inc. dated_____, and that Agreement between the State of Alaska and El Paso Natural Gas Co. dated_____.

STATEMENT REQUIRED RE: NON-COMPETITIVE SALE

Findings and Conclusions of the Commissioner
Pursuant to Alaska Statute 38.05.183(c) -
North Slope Royalty Gas Sale

For a sale of Alaska royalty oil or gas to be completed through a procedure not utilizing competitive bid, AS 38.05.183(c) requires that the Commissioner of Natural Resources must make public, in writing, the specific findings and conclusions upon which a determination not to use competitive procedures is based. Publication is to follow approval of the determination by the Alaska Royalty Oil and Gas Development Advisory Board. On November 22, 1976, the Royalty Board did approve the Commissioner's determination to waive the competitive bidding requirement for three proposed sales of royalty gas to El Paso Natural Gas Company, Tenneco Alaska Inc., and Southern Natural Gas Company. Accordingly, these written findings and conclusions are submitted in fulfillment of the requirement of AS 38.05.183(c).

1. Both through consideration of available alternatives and through affirmative action to solicit proposals, the Commissioner and Royalty Board acted to define existing interest in the purchase of Alaska royalty gas conditioned upon the construction of a processing facility or other use of the gas in Alaska. Since no specific proposals for such purchases were made, and even general expressions of interest were insubstantial, it indicated that adequate competition did not exist for a competitive sale where a requirement of the sale would be that the purchaser obligate itself to build a processing facility or undertake other use of the natural gas within Alaska.

2. Under present legal and regulatory circumstances, a competitive sale based on price competition is not feasible because the price at which natural gas may be sold in interstate commerce is controlled by the Federal Power Commission. Investigation of the possibility that potential purchasers would be able or willing to pay a premium price above the regulated price set by the FPC indicated a lack of interest in such procedure. It therefore was concluded that inadequate price competition existed for an interstate sale. Insufficient interest also appears to exist at this time for a competitive intrastate sale of any substantial magnitude; and in any event, such a sale at a later date is not precluded by the present proposed sales.

3. Whatever sale of royalty natural gas is pursued by the State, it will be essential to identify and adopt primary and secondary objectives for that sale. Such objectives could include maximum or premium price, the establishment of facilities desirable in the overall interest of the State, or the primary objective of the presently proposed sales - to improve and strengthen the position of the State with respect to the decision process for the system to transport North Slope natural gas. The retention of increased support for the State's position on the gas pipeline route issue through the sale of royalty gas necessarily involves a substantial amount of subjective judgment as to those purchasers having the greatest capability to reinforce the State's position

through technical expertise, legislative capabilities, the geographical and political distribution of the purchasers and their consumers, the technical experience and financial capability of each purchaser and other factors. The design of competitive terms to satisfy such criteria is not possible under the circumstances prevailing at this time.

4. A second primary objective of the presently proposed sales is to offer full protection of future in-state use of Alaska royalty gas. This objective has the capability to act in substantial conflict with the objective of gaining increased support for the State's route position as such increased support would likely require the actual and final commitment of royalty gas to those purchasers adding support to the State's position. The existing contracts of sale avoid this conflict by providing for a unique "take-back" provision allowing the State to gain both the support and flexibility deemed essential to this transaction. Such a contract is necessarily the product of negotiation rather than design followed by competitive sale. Such a contract would not only have been difficult, if not impossible, to prepare for competitive sale, but would have been extremely unlikely to yield the best combination of potential purchasers to bring assistance to the State's position.

EXHIBIT A
PRUDHOE BAY GAS SALES CONTRACT *1
STATE OF ALASKA

ADL NO.	DESCRIPTION	NO.ACRES	EFFECTIVE DATE	BASIC ROYALTY	LESSEE OF RECORD AND INTEREST OWNERSHIP*
28238	T12N,R11E,UM Secs.25,26,35,36	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28239	T12N,R11E,UM Secs.27,28,33,34	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28240	T11N,R11E,UM Secs.1,2,11,12	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28241	T11N,R11E,UM Secs. 3,4,9,10	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28244	T11N,R11E,UM Secs.15,16,21,22	2560	10/1/65	1/8	ARCO -50% Exxon - 50%
28245	T11N,R11E,UM Secs.13,14,23,24	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28246	T11N,R11E,UM Secs.25,26,35,36	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28256	T12N,R12E,UM Secs.15,16,21,22	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28257	T12N,R12E,UM Secs.25,26,35,36	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28258	T12N,R12E,UM Secs.27,28,33,34	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28259	T12N,R12E,UM Secs29,30,31,32	2459	10/1/65	1/8	ARCO - 50% Exxon - 50%
28260	T11N,R12E,UM Secs. 1,2,11,12	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%

*Current to 12/28/76

AGO 668/76

ADL NO.	DESCRIPTION	NO.ACRES	EFFECTIVE DATE	BASIC ROYALTY	LESSEE OF RECORD AND INTEREST OWNERSHIP
28261	T11N,R12E,UM, Secs. 3,4,9,10	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28262	T11N,R12E,UM, Secs.17,18,19,20	2480	9/1/65	1/8	Socal - 100% (Secs.17,18,19) Socal - 33 1/3% (Sec. 20) Mobil - 33 1/3% (Sec. 20) Phillips - 33 1/3% (Sec. 20)
28263	T11N,R12E,UM, Secs.15,16,21,22	2560	9/1/65	1/8	Mobil - 50% (Secs. 15,16) Phillips - 50% (Secs. 15,16) Mobil - 33 1/3% (Secs. 21,22) Phillips - 33 1/3% (Secs. 21,22) Socal - 33 1/3% (Secs. 21,22)
28264	T11N,R12E,UM, Secs.25,26,35,36	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28265	T10N,R12E,UM Secs. 1,2,11,12	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28277	T12N,R13E,UM Secs.25,26,35,36	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28278	T12N,R13E,UM Secs.27,28,33,34	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28279	T12N,R13E,UM Secs.29,30,31,32	2459	9/1/65	1/8	Sohio Petroleum Co. - 100%
28280	T11N,R13E,UM Secs. 1,2,11,12	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28281	T11N,R13E,UM Secs. 3,4,9,10	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28282	T11N,R13E,UM Secs. 5,6,7,8	2469	9/1/65	1/8	Sohio Petroleum Co. - 100%
28283	T11N,R13E,UM Secs.17,18,19,20	2480	9/1/65	1/8	Sohio Petroleum Co. - 100%
28284	T11N,R13E,UM Secs.15,16,21,22	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28285	T11N,R13E,UM Secs.13,14,23,24	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28286	T11N,R13E,UM Secs.25,26,35,36	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%

ADL NO.	DESCRIPTION	NO.ACRES	EFFECTIVE DATE	BASIC ROYALTY	LESSEE OF RECORD AND INTEREST OWNERSHIP
28287	T11N,R13E,UM Secs.27,28,33,34	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28288	T11N,R13E,UM Secs.29,30,31,32	2491	9/1/65	1/8	Mobil - 50% Phillips - 50%
28289	T10N,R13E,UM Secs. 5,6,7,8	2501	9/1/65	1/8	Mobil - 50% Phillips - 50%
28290	T10N,R13E,UM Secs.15,16,21,22	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28299	T12N,R14E,UM Secs.29,30,31,32	2459	10/1/65	1/8	Arco - 50% Exxon - 50%
28300	T12N,R14E,UM Secs27,28,33,34	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28301	T12N,R14E,UM Secs.25,26,35,36	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28302	T11N,R14E,UM Secs.1,2,11,12	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28303	T11N,R14E,UM Secs. 3,4,9,10	2560	10/1/65	5%*	Arco - 50% Exxon - 50%
28304	T11N,R14E,UM Secs. 5,6,7,8	2469	10/1/65	1/8	Arco - 50% Exxon - 50%
28305	T11N,R14E,UM Secs.17,18,19,20	2480	9/1/65	1/8	Sohio Petroleum Co. - 100%
28306	T11N,R14E,UM Secs.15,16,21,22	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28307	T11N,R14E,UM Secs.13,14,23,24	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28308	T11N,R14E,UM Secs.25,26,35,36	2560	10/1/65	1/8	Arco - 50% Exxon - 50%

*5% Discovery Royalty Rate - 1/8% applies After 1/1/78

AGO 668178

ADL NO.	DESCRIPTION	NO.ACRES	EFFECTIVE DATE	BASIC ROYALTY	LESSEE OF RECORD AND INTEREST OWNERSHIP
28309	T11N,R14E,UM Secs.27,28,33,34	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28310	T11N,R14E,UM Secs.29,30,31,32	2491	9/1/65	1/8	Sohio Petroleum Co. - 100%
28311	T10N,R14E,UM Secs. 1,2,11,12	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28312	T10N,R14E,UM Secs. 3,4,9,10	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28313	T10N,R14E,UM Secs. 5,6,7,8	2501	10/1/65	1/8	ARCO - 50% Exxon - 50%
28314	T10N,R14E,UM Secs.15,16,21,22	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28315	T10N,R14E,UM Secs.13,14,23,24	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28316	T10N,R14E,UM Secs.25,26,35,36	2560	9/1/65	1/8	Socal - 100% (Secs. 26,35,36) Socal - 33 1/3% (Sec. 25) Mobil - 33 1/3% (Sec. 25) Phillips - 33 1/3% (Sec. 25)
28320	T11N,R15E,UM Secs. 1,2,11,12	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28321	T11N,R15E,UM Secs.17,18,19,20	2480	10/1/65	1/8	ARCO - 50% Exxon - 50%
28322	T11N,R15E,UM Secs.15,16,21,22	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28323	T11N,R15E,UM Secs.13,14,23,24	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28324	T11N,R15E,UM Secs.25,26,35,36	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28325	T11N,R15E,UM Secs. 27,28,33,34	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28326	T11N,R15E,UM Secs.29,30,31,32	2491	10/1/65	1/8	ARCO - 50% Exxon - 50%

ADL NO.	DESCRIPTION	NO.ACRES	EFFECTIVE DATE	BASIC ROYALTY	LESSEE OF RECORD AND INTEREST OWNERSHIP
28327	T10N,R15E,UM Secs. 1,2,11,12	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28328	T10N,R15E,UM Secs. 3,4,9,10	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28329	T10N,R15E,UM Secs. 5,6,7,8	2501	10/1/65	1/8	Arco - 50% Exxon - 50%
28330	T10N,R15E,UM Secs.17,18,19,20	2512	9/1/65	1/8	Sohio Petroleum Co. - 100%
28331	T10N,R15E,UM Secs.15,16,21,22	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28332	T10N,R15E,UM Secs.13,14,23,24	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28333	T10N,R15E,UM Secs.25,26,35,36	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28334	T10N,R15E,UM Secs.27,28,33,34	2560	9/1/65	1/8	Mobil - 50% (Secs. 33,34) Phillips - 50% (Secs. 33,34) Mobil - 33 1/3% (Secs. 27,28) Phillips - 33 1/3% (Secs. 27,28) Socal - 33 1/3% (Secs. 27,28)
28335	T10N,R15E,UM Secs. 29,30,31,32	2523	9/1/65	1/8	Sohio Petroleum Co. - 100%
28343	T11N,R16E,UM Secs.29,30,31,32	2491	9/1/65	1/8	Sohio Petroleum Co. - 100%
28345	T10N,R16E,UM Secs. 5,6,7,8	2501	10/1/65	1/8	Arco - 50% Exxon - 50%
28346	T10N,R16E,UM Secs.17,18,19,20	2512	10/1/65	1/8	Arco - 50% Exxon - 50%
28349	T10N,R16E,UM Secs.29,30,31,32	2523	9/1/65	1/8	Sohio Petroleum Co. - 100%
34631	T12N,R15E,UM Secs.29,30,31,32	2459	4/1/67	1/8	Arco - 50% Exxon - 50%

ADL NO.	DESCRIPTION	NO.ACRES	EFFECTIVE DATE	BASIC ROYALTY	LESSEE OF RECORD AND INTEREST OWNERSHIP
34629	T12N,R15E,UM Secs.27,28,33,34	2560	4/1/67	1/8	Arco - 50% Exxon - 50%
34631	T11N,R15E,UM Secs. 3,4,9,10	2560	4/1/67	1/8	Arco - 50% Exxon - 50%
34632	T11N,R15E,UM Secs. 5,6,7,8	2469	4/1/67	1/8	Arco - 50% Exxon - 50%
47446	T12N,R11E,UM Secs.17,18,19,20	2448	10/1/69	1/8	Mobil - 50% Socal - 50%
47447	T12N,R11E,UM Secs.15,16,21,22	2560	10/1/69	1/8	Mobil - 50% Socal - 50%
47448	T12N,R12E,UM Secs.13,14,23,24	2560	10/1/69	1/8	Mobil - 66 2/3% Phillips - 33 1/3%
47449	T12N,R11E,UM Secs.29,30,31,32	2459	10/1/69	1/8	Mobil - 50% Socal - 50%
47450	T11N,R12E,UM Secs. 5,6,7,8	2469	10/1/69	1/8	Mobil - 33 1/3% Phillips - 33 1/3% Socal - 33 1/3%
47451	T11N,R12E,UM Secs.13,14,23,24	2560	10/1/69	1/8	Mobil - 33 1/3% Phillips - 33 1/3% Socal - 33 1/3%
47452	T11N,R12E,UM Secs.27,28,33,34	2560	10/1/69	1/8	Mobil - 33 1/3% Phillips - 33 1/3% Socal - 33 1/3%
47453	T11N,R12E,UM Secs.29,30,31,32	2491	10/1/69	1/8	Mobil - 33 1/3% Phillips - 33 1/3% Socal - 33 1/3%

ARL NO.	DESCRIPTION	NO.ACRES	EFFECTIVE DATE	BASIC ROYALTY	LESSEE OF RECORD AND INTEREST OWNERSHIP
47454	T10N,R12E,UM Secs 3,4,9,10	2560	10/1/69	1/8	Mobil - 33 1/3% Phillips - 33 1/3% Socal - 33 1/3%
47471	T10N,R13E,UM Secs. 3,4,9,10	2560	10/1/69	1/8	Amerada Hess - 27% Getty - 30.5% LL&E - 13.25% Placid - 9.125% N.B. Hunt - 6.3625% Hunt Ind. - 3.8625% Caroline Hunt Tr. - 3.3% W.H. Hunt Tr. - 3.3% Lamar Hunt Tr. - 3.3%
47472	T10N,R13E,UM Secs. 1,2,11,12	2560	10/1/69	1/8	Amerada Hess - 50% Getty - 50%
47475	T10N,R14E,UM Secs.17,18,19,20	2512	10/1/69	1/8	Amerada Hess - 25% Getty - 25% Marathon - 25% Placid - 7.5% N.B. Hunt - 5% Hunt Ind. - 3.125% Caroline Hunt Tr. - 3.125% W.H. Hunt Tr. - 3.125% Lamar Hunt Tr. - 3.125%
47476	T10N,R13E,UM Secs.13,14,23,24	2560	10/1/69	1/8	Amerada Hess - 94.031250% N.B. Hunt - 5.968750%
47477	T10N,R13E,UM Secs.17,18,19,20	2512	10/1/69	1/8	Amerada Hess - 25% Getty - 30.625% LL&E - 16.5625% Placid - 8.90625% N.B. Hunt - 5.703125% Hunt Ind. - 3.828125% Caroline Hunt Tr. - 3.125% W.H. Hunt Tr. - 3.125% Lamar Hunt Tr. - 3.125%
47478	T10N,R14E,UM Secs.27,28,33,34	2560	10/1/69	1/8	Amerada Hess - 100%
	TOTAL ACRES	223,132			

*1 The leases identified in this exhibit contain the main continuous producing reservoir of the Prudhoe Oil Pool as defined by the Oil and Gas Conservation Committee. Royalty production from all pools under these leases is committed to this contract. The parties agree that should additional leases be included in the final Prudhoe Bay Unit agreement approved by the State of Alaska such additional leases will be added to this exhibit.

They are buying 100% of the supply gas & there is never a "take back."

SUMMARY

Prudhoe Bay Royalty Gas Sales Contracts
Tenneco, Southern and El Paso

The following summary sets out a series of the key points in the sales contracts, along with a basic statement of the policy followed and a citation to the contract term.

I. Support for the Trans-Alaska Route

The contract requires the buyer to support a trans-Alaska route which is defined as one from Prudhoe Bay to Prince William Sound. (Article I) A strong incentive to work hard for that route is built into the contract since the Governor may terminate the contract if any other route is certified. (Section 11.5)

II. Only Surplus Royalty Gas is Sold.

Because of the difficulty of estimating future demand for gas, it would be difficult or impossible to enter into a long term contract if a specific quantity of gas had to be committed irretrievably to the contract. The State resolved this issue through a provision which is unique in gas sales contracts. The State has the right to "take back" whatever gas it needs for in-State use--including the exchange of Prudhoe Bay gas for gas located elsewhere in Alaska if the exchanged gas is used in Alaska and including liquefaction of the gas, provided the liquefied gas is used in Alaska. (Section 3.5)

The "take back" provision is in two parts. The first part establishes a step schedule under which the State may take back its gas on one year's notice. During the first five years of the contract, the State may take back up to 25 percent of the daily flow of gas with only one year's notice of the quantity it desires. During the next five years, it may take back up to 50 percent; after ten years the State may take back 75 percent and after fifteen years the full 100 percent may be reclaimed. (Section 3.3)

Overriding the above schedule is the right to change the schedule in any way with two years' notice. (Section 3.4) Thus, in effect, the full 100 percent may be reclaimed with two years' notice. The idea is that almost any in-State use will have a one or two year lead time.

The royalty gas sold is that from the Prudhoe Bay field as it ultimately will be established in the unit agreement for that field. (Exhibit A)

III. Price.

Although the price provision in the contract is complex, the basic principle behind the term is simple--under all reasonably foreseeable circumstances the State will receive the highest price being paid for gas from the same reservoir and never less than would have been received had the State taken its royalty in-value.

Three basic situations are addressed by the price term. The first is where the price of gas sold by producers is regulated by the FPC. (Section 6.2) The second is where the price becomes deregulated after the effective date of this contract, but prior to first deliveries (Section 6.3), and the third is where deregulation occurs after gas has begun to flow. (Section 6.4) In the case of FPC regulation, the contract requires the buyer to pay the highest price it is permitted to retain (pass-through) in its jurisdictional rate base. In the case of deregulation, the price to be paid by the purchaser is the highest price paid in the field. This price can be redetermined every year and may either increase or decrease, provided it shall never fall below the price being paid just prior to the first price redetermination.

The contract does not provide for front end money (a lump sum payment) and does not require a premium in the sense of a payment above what otherwise is the highest price in the field.

IV. Volume of Gas Sold and Term of the Contract

The volume of gas sold is stated as a percentage of the daily production of royalty gas. For example, Tenneco is purchasing 50 percent of the daily production of royalty gas. (Section 3.1) (El Paso--25 percent; Southern--25 percent)

To provide certainty as to how much gas is being sold in total, the contract also specifies a maximum quantity of gas committed over the total life of the contract. Again, using Tenneco as the example, the figure is 1.3 tcf. of gas.

(Southern and El Paso--650 bcf. each) (Section 3.2) Under Section 3.7 (b) the extra 50 percent replacement term (discussed below) can increase this amount, but within definable limits.

The term of the contract is for twenty years with the proviso that should the maximum amount of gas committed be delivered in less than twenty years, the contract terminates at that time. (Section 8.1)

Thus, in sum, the contract could be for less than twenty years but it cannot be for more, and it could be for less than a specified amount of gas but never more, with the one exception that certain replacement of gas could begin during an additional five year period after the 20 years. (Section 3.7 and 8.1)

V. Buyer's Right to Replace "Taken Back" Gas.

Under the "take back" provisions described above, the buyer might never receive any gas if there is total in-State use for State royalty gas prior to completion of the gas pipeline. Practically speaking, it is unlikely the State will ever call back all its gas, but it may take back a substantial portion of that gas. To address this situation, a term is included which allows buyer a chance to replace (or recoup) the gas taken back, but only from later available surplus gas. The buyer's recoupment provision has two basic ingredients. Under one aspect of this term, the buyer may recover on a one-for-one basis up to 100 percent of the gas previously taken back by the State. Under the second aspect of the term, the buyer may recover an additional one-half for one (50 percent recovery) of gas taken back by the State. (Sections 3.7(a) and 3.7(b))

There are, however, several significant limitations on the buyer's right to recover. First and foremost, the buyer's recovery right applies only to surplus gas. Thus, if in-State use is great enough to require all new discoveries, buyer has no claim to newly found royalty gas. Second, the buyer's right applies only to royalty gas which will move through the same pipeline. Third, for the 100 percent replacement gas, the buyer must meet the highest price then available to the State and for the additional 50 percent gas the buyer must meet all terms of a contract for the sale of that gas.

The buyer's right to receive replacement gas exists during the twenty-year term of the contract plus an additional five years. If the State offers buyer replacement gas at some time and buyer refuses it, buyer waives his right to it.

The "take back" of gas, and the replacement under Section 3.7(a), for the first 100 percent is to be on a pro-rata basis among buyers. The replacement option under Section 3.7(b), for the final 50 percent is given, in order, to Tenneco, El Paso and Southern.

VI. Flexibility on Route.

Should the situation ever arise where it is advisable for the State to switch its position on the route issue, this is possible under the contract. Should a switch occur, by action of the Governor, the buyer may either terminate the contract or shift its support to the new route supported by the State. (Section 11.4) Interest in the gas is lost if the State position is not followed.

VII. Gas Liquids.

The State retains the right to receive the LPG's whether they are removed in Alaska or in the lower 48 states. The State is obligated to pay transportation and processing costs attributable to the LPG's, if it takes them. (Section 9.1) The location of their removal is not yet set, but the State will have LPG access wherever it is eventually located, and will seek to have that location in Alaska.

VIII. Delivery Point, Delivery Pressure and Quality.

At this time the State does not know where the producers will make delivery of their gas to their purchasers or where the State will receive delivery of its gas as royalty in-kind. To deal with these uncertainties the contract is drafted to provide that such matters as delivery point, delivery pressure and quality for State royalty gas will be the same as for producer gas. The objective is to receive delivery of royalty gas from the producer and immediately convey title to the buyer, thus the State will not have to participate or assume responsibility for such matters as transporting or cleaning royalty gas. (Articles IV and V)

The State is also protected from costs (if any) associated with preparation or transportation of the gas which are attributable to taking in-kind and which would not have been incurred if royalty had been taken in-value. (Section 2.2)

IX. Costs Resulting from Taking In-Kind.

Because the producer's full plan for developing the field is not known and because certain provisions in the State's oil and gas lease are subject to varying interpretations, there are uncertainties associated with the cost of taking our royalty gas in-kind. Specifically, the producers may attempt to impose certain changes for transporting or processing of the State's royalty gas when that gas is taken in-kind which would not have been chargeable against the State if royalty was taken in-value. If this happened, the total net revenues received by the State from the sale of gas would be less than had the State taken royalty in-value.

To protect against this possibility the State negotiated for a blanket provision which obligated the Buyer to reimburse the State for all costs incurred as a result of taking in-kind which would not have been incurred had the State taken royalty in-value. No purchaser would agree to such a provision because of the fear that the FPC might not permit inclusion of the cost in the purchaser's rate base. The present provision obligates the purchaser to reimburse costs attributable to preparation and transportation of the gas. (Section 2.2) If the FPC does not approve such cost in the purchaser's rate base the purchaser has the right to terminate and pay only costs incurred up to the time the termination is effective. (Section 2.3)

X. Conditions Precedent.

The contract does not become effective until two specific conditions are met. First, the contract must be approved as provided by AS 38.06. (Section 11.6) Second, all regulatory approvals for the pipeline route must be granted by December 31, 1978, or either party may thereafter terminate. (Section 11.2) Buyer, however, has the obligation to support the route and to pay certain costs, if they are incurred, even prior to regulatory approval. (Section 11.1)

XI. Termination.

This contract may be terminated for several specific reasons. First, if necessary regulatory approvals are not granted by December 31, 1978, either party may terminate. (Section 11.2) Second, if the El Paso route is denied a certificate and that denial is final and nonappealable the contract may be terminated. (Section 11.5) Third, if the Governor elects to support a route other than the El Paso route, Buyer may terminate the contract by refusing to support the route supported by Alaska. (Section 11.4)

SCOMM

#21:24

STATEMENT

of

SOUTHERN NATURAL GAS COMPANY

before

ALASKA ROYALTY OIL AND GAS DEVELOPMENT ADVISORY BOARD



NOVEMBER 22, 1976

AGO 668192

WRITTEN STATEMENT BEFORE
ALASKA ROYALTY OIL AND GAS DEVELOPMENT ADVISORY BOARD
NOVEMBER 22, 1976

Southern Natural Gas Company (Southern) is the major supplier of natural gas in the southeastern United States, providing service to numerous markets in Louisiana, Alabama, Georgia, South Carolina and Mississippi and portions of Tennessee. It also supplies gas to a portion of northern Florida through its wholly-owned subsidiary, South Georgia Natural Gas Company.

Southern Natural Gas Company is a wholly-owned subsidiary of Southern Natural Resources, Inc., which is a diversified, billion dollar company. Its publicly held stock is listed on the New York Stock Exchange, and it has stockholders in all 50 states.

Pipeline System and Operations of Southern Natural Gas Company

Southern operates a 7,700-mile pipeline system traversing the southeastern portion of the United States. Attached is a map depicting Southern's pipeline system. (Attachment No. 1).

Southern sells gas for resale to 9 distributing companies, to 102 municipalities and gas districts and to 3 connecting interstate pipeline companies. The population of the area served by Southern is about 7,000,000.

Southern also makes direct sales of gas to industrial customers located throughout the southeast. These industrial customers are very important to the economy of the southeast, and some are major U. S. companies. Attached is a list of Southern's major resale customers and its direct industrial customers (Attachment No. 2).

Southern, through a subsidiary, is a 50% owner of a major gas supply system, known as Sea Robin Pipeline Company, which consists of 335 miles of pipeline extending into the Gulf of Mexico from Louisiana.

Southern is a participant in a trailblazing project to import liquefied natural gas (LNG) into the United States from Algeria. This is the first (and only) major base load LNG project which has received all necessary governmental approvals. Through a subsidiary, Southern is constructing and will operate an LNG terminal on an island near Savannah, Georgia (see page 3, infra) for further details regarding this extraordinary project.

In 1976, Southern will sell about 575 billion cubic feet of gas from its pipeline system. The rated delivery capacity of the pipeline system is 2.230 billion cubic feet per day.

AGO 668193

Southern's Gas Supplies

Southern presently obtains its gas supplies from fields in south Louisiana, the Gulf of Mexico offshore Louisiana, north Louisiana, east Texas, Mississippi and from one source in Alabama. Southern presently purchases over 50% of its gas supplies in the Gulf of Mexico and this percentage is increasing each year.

Since the late 1960's, Southern has been unable to acquire enough gas to replace that used on its system each year. Because of this, the Company notified all of its customers in 1970 that it could not accept any new customers or increase the contractual volumes it was obligated to deliver to existing customers until the gas supply situation improved. Unfortunately, this situation has not improved, either on Southern's system or nationwide.

Recognizing that the natural gas shortage was developing, Southern in the late 1960's intensified its efforts to obtain new gas supplies and undertook bold and innovative gas supply programs.

In recent years, Southern has made major investments, at a cost of about $243 million, in offshore natural gas pipeline systems in the Gulf of Mexico and has relied on that area for virtually all of its new gas reserve additions.

Prior to 1970, Southern and its affiliates owned interests in 13 offshore Gulf of Mexico blocks. Since 1970, Southern and its affiliates have made successful bids, totaling approximately $69,000,000, for interests in 33 additional offshore federal blocks.

Southern also aggressively pursued the FPC's advance payment program as a means of obtaining new domestic gas supplies. During that program's existence, Southern made a cumulative total of $151,000,000 in advance payments.

Another major and significant step was Southern's development of the Muldon Gas Storage Field in northeastern Mississippi several years ago. Developed at an initial cost of over $45,000,000, this field is one of the largest underground gas storage fields in the U. S. which is owned by a single company. It has become a major factor in helping Southern meet its winter peak delivery obligations. Expansion of this facility is in progress at a cost of approximately $18,000,000. This expansion will increase Southern's storage capacity from 20% to 34% of its winter peak-day requirements. This underground gas storage facility can be of great utility in accomplishing the distribution by substitution and exchange of the Prudhoe Bay gas into Southern's service area.

As the Company saw the gas supply shortage beginning to threaten in the late 1960's, it initiated studies, internally and through outside consultants, to determine the most appropriate means of supplementing the depleting domestic gas supplies. The studies concluded that, over and above the major initiatives described above, Southern must undertake non-conventional, non- traditional gas supply efforts if it hoped to supply the existing requirements of its customers in future years. The studies also concluded that, at that time, the first, most immediate, viable non-traditional supplementary supply available to Southern was the importation of liquefied natural gas from overseas.

LNG Project

In 1970, Southern contracted to purchase LNG to be imported from Algeria.

It is interesting to note that a prime mover in this project is a subsidiary of El Paso Natural Gas Company, which had agreed to purchase the LNG from Sonatrach, the Algerian national oil company, and to transport it to the USA. Southern became one of three east coast USA purchasers to contract, in turn, for the purchase of the LNG from El Paso.

This was the first base load LNG project ever proposed for the USA -- and, although others have since been proposed, it is the only one which has received all of the necessary governmental approvals. It is, in every sense, a trailblazing effort. However, the LNG to be supplied through this project represents a supplementary gas supply source and does not answer the nation's and the southeast's desperate need for significant new domestic gas supplies.

The type of effort, described below, put forth to obtain approvals for this LNG project is visualized as the type effort that will be required and undertaken in support of the Alaska project.

At the time of the project's inception, Southern realized that the project could only succeed through a concerted effort between Southern and many other people, and groups, including state and federal governmental officials, federal and state legislators, Southern's customers, environmental groups and state Public Service Commission officials. The project required the support and approval of all of these groups -- which was achieved as a result of concerted efforts spanning a period of nearly five years.

During this five-year period, Southern held many meetings and conferences with governors in the southeast, and their staffs. In particular, since the LNG terminal and facilities were to be constructed in the State of Georgia and the LNG would be used, in part, to meet natural gas requirements in that state, Southern consulted with then Georgia Gov. Maddox and with his successor, Gov. Carter, and their respective staffs. Since the State of South Carolina also would benefit from the gas and some of Southern's LNG facilities would be located in that state, Southern also met with then Gov. John C. West. These governors understood the importance of an adequate energy supply to the States of Georgia, South Carolina and the southeast and they demonstrated a keen interest in the project. Their backing was essential -- and it was forthcoming.

Southern concluded it should so design its LNG terminal that its construction and operation would cause absolute minimum degradation to the environment. It was Southern's view that it should cooperate with -- rather than confront -- environmental groups which might have a concern about the construction and operation of these facilities. Accordingly, Southern engaged highly regarded environmental experts from the Institute of Ecology of the University of Georgia system to advise the Company on ways to construct and operate its terminal facilities with the minimal possible adverse effects on the environment.

AGO 668195

The results of this approach were little short of spectacular! Potential objections from environmental groups were allayed, and wide recognition quickly developed among environmental groups, concerned citizens, and political forces in Georgia that Southern had approached the problem in an intelligent and statesmanlike fashion. There were no environmental problems with Southern's Savannah terminal facilities. This became a major factor in generating a substantial degree of political support for Southern's construction of these facilities.

Throughout the course of the LNG project, Southern held numerous meetings and conferences with its customers and with officials at many levels of the states within the market area. The Company conducted innumerable planned meetings with various civic groups, and kept the news media informed of the planning and development of the project.

Equally important, on the political front Southern carefully planned and put into effect a program during these five years to personally inform the U. S. Senators and Representatives in its service area of the project and to keep them personally up-to-date on its planning and progress. The Company conducted these same efforts with various State Senators and Representatives.

As a result of these joint efforts by Southern and these many other people, the LNG importation project has received all required local, state, and federal governmental approvals (which included about 90 permits and authorizations). The necessary facilities in Algeria, the required LNG tankers and Southern's receiving terminal at Savannah are now in advanced stages of construction.

Through advanced planning and cooperative efforts of all concerned, Southern overcame possible environmental and other problems related to this project. This result was quite unique, considering the problems which others have faced. The Company expects to receive the first shiploads of LNG in early 1978. The total investment of Southern in the LNG terminal and related pipeline facilities is in the order of $170,000,000.

Attached is an artist's rendition of how the LNG terminal will look when it is completed, and two recent aerial photographs showing the present stage of completion of these facilities (Attachments Nos. 3, 4 and 5).

Although this LNG project is essential to the southeast, it by no means diminishes the need of the nation and the southeast for new domestic gas supplies. In fact, the Southern – Algeria LNG project is expected to only supply 15% of the requirements of Southern's customers.

AGO 668196

Other Activities

The Company is studying the feasibility of purchasing additional LNG. For example, Southern is in close touch with every major potential source of new LNG that logically could come into the east coast -- such as Algeria, Venezuela, Nigeria, Iran, the Arabian Gulf, etc. The LNG terminal at Savannah, one of the only two base load LNG facilities approved by the FPC, puts Southern in an advantageous position to purchase LNG from these sources. Also, Southern is studying the feasibility of other synthetic fuels, such as coal gasification.

But, while LNG and other synthetic forms of energy are needed to supplement dwindling gas supplies, they do not take the place of new domestic gas supplies. Southern, its customers, and state officials and legislators representing its service area, are firmly convinced that the best source of gas for the southeastern United States is from new domestic sources -- such as Alaska royalty gas.

Southern's Need for a Portion of Alaska's Royalty Gas

In spite of its intensified efforts, Southern's domestic gas supply additions have diminished drastically in recent years. During the five-year period 1971-75, Southern was successful in adding under new contracts reserves amounting to only 40% of the total gas consumed during that period. Thus, Southern considers the Alaska royalty gas from the Prudhoe Bay Field to be a very significant and important source of new domestic gas supplies for its customers in the southeastern United States. No other Prudhoe Bay gas has been contracted for markets in the southeast.

Although Southern's farsighted gas supply efforts have enabled it to maintain service to its customers without curtailment of high priority users, that situation cannot continue unless Southern adds significant new gas reserves to its system. At the time of commencement of deliveries of the Prudhoe Bay gas, Southern will be serving only users of the very highest priorities. The addition of a portion of Alaska's royalty gas to Southern's supplies will, therefore, be vital to Southern's continuation of high priority gas service. This fact is completely demonstrable and will clearly substantiate Southern's vital need for this gas.

Southern's Action Plan

Southern has carefully reviewed the various gas pipeline proposals relating to the Prudhoe Bay gas reserves pending before the FPC and has concluded that the Trans-Alaska pipeline proposal is in the nation's best interest.

The Company will take vigorous action to assure that the Trans-Alaska pipeline is approved by governmental authorities. This action will take many forms. While circumstances may arise in the future which require action not specifically referred to below, the Company is confident from past experience, planning and contacts that it has the means and ability to take such additional action.

AGO 668197

Based upon the many contacts which Southern has had in the past with these Senators and Representatives, the Company is convinced that they are keenly aware of and understand the energy problems facing the nation and the southeastern United States. For example, during the last session of Congress the Company worked very closely with them on myriads of proposed legislation affecting the oil and gas industry. On such issues as gas price deregulation, divestiture and OCS amendments, the great majority of them supported the industry's position.

4. The Company holds regular meetings with its major customers. They support the Alaska royalty gas purchase. Southern will continue to meet with its customers and will urge them to actively support the Trans-Alaska pipeline. The Company is confident that their efforts will also make a meaningful contribution. In this connection, Southern's largest customer is Atlanta Gas Light Company, which is the major gas distributing company in Georgia. Atlanta Gas has stated its approval of the Company's purchase of a portion of the Alaska royalty gas and the Company will urge Atlanta Gas' active support of the Trans-Alaska pipeline project. This should be very helpful. Southern is important to the people of Georgia since it supplies more energy to Georgia than all other sources of energy combined. In 1975, the Company supplied about 89% of the total quantity of natural gas consumed in Georgia.

5. The Company maintains relationships with the governors of the southeastern states, their staffs and key state legislators. In the immediate future, officials of Southern plan to meet personally (or, where appropriate, have its customers meet) with them regarding this project. The Company expects to hold additional meetings with them as circumstances may require.

The Company fully expects to be able to enlist the support of the governors and the key state legislators.

6. The Company is active in numerous business and trade associations representing many varied business and industry segments of the southeastern United States. It has in the past sought support of these associations on matters affecting the oil and gas industry and the gas-consuming public and they have been very helpful in such matters. Southern will actively urge their support of the Trans-Alaska pipeline project.

AGO 668199



SOUTHERN NATURAL RESOURCES Annual Report 1975

Southern Natural Gas
South Georgia Natural Gas
Southern Deepwater Pipeline
Southern Energy

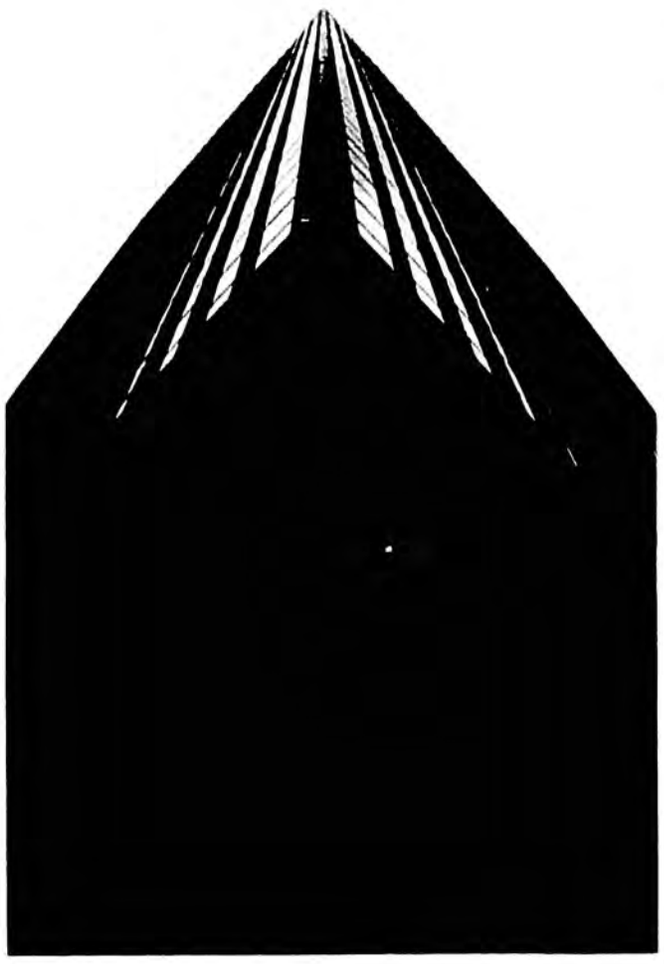
The Offshore Company
SONAT Exploration
Southern Forest Products

AGO 668201

Energy Is Our Prime Business

Your Company's trading symbol on the New York Stock Exchange is NRC—"energy." Nothing could be more appropriate.

Southern Natural Resources, Inc., with headquarters in Birmingham, Alabama, is the parent company for several energy-related and natural resource companies. Southern Natural Gas Company and its subsidiary, South Georgia Natural Gas Company, are natural gas pipeline companies. Southern Energy Company will own and operate a liquefied natural gas receiving terminal near Savannah, Georgia. Southern Gulf Offshore Pipeline Company has a 50% participant in Sea Robin Pipeline Company which operates a large offshore gas supply system in the Gulf of Mexico. In 1978, the Company's natural gas pipeline system was able to connect all the residential, commercial and essential industrial requirements of its customers.



The Offshore Company is one of the world's largest contract drilling firms and is principally engaged in drilling for oil and gas in offshore and onshore areas around the globe. SONAT Exploration Company is engaged in oil and gas exploration and production activities. Southern Forest Products, Inc. holds a 50% interest in Bowater Southern Corporation, a forest product joint venture.

We are committed to the thoughtful development and careful use of the country's vital natural resources.

Table of Contents

1 Highlights
2 Directors and Officers
3 President's Letter to Stockholders
6 Southern Natural Gas Company
13 The Offshore Company
17 SONAT Exploration Company
21 Southern Forest Products, Inc.
25 Financial Information
30 Offices of Subsidiaries

AGO 668202

Southern Natural Resources, Inc. and Subsidiaries

ANNUAL REPORT TO STOCKHOLDERS/YEAR ENDED DECEMBER 31, 1975

Highlights Years Ended December 31, 1975 and 1974

	1975	1974
Revenues:		
Pipeline	$442,625,000	$377,989,000
Contract drilling	141,743,000	109,300,000
Exploration and production	34,370,000	33,025,000
Forest products	3,133,000	5,081,000
Other	30,043,000	20,819,000
Intercompany sales of produced gas	(11,843,000)	(7,642,000)
Total	$640,071,000	$538,572,000
Earnings Applicable to Common Shares:		
Pipeline	$ 37,152,000	$ 35,063,000
Contract drilling	24,435,000	18,706,000
Exploration and production	2,136,000	1,217,000
Forest products	2,338,000	3,310,000
Other	2,523,000	196,000
Total	$ 68,584,000	$ 58,493,000

Revenue includes the equity in earnings of joint ventures accounted for by the equity method and the corresponding category of Earnings Applicable to Common Shares includes the related net income. For revenues of joint ventures, see Notes 3 and 6 of the Notes to Financial Statements.

Common Stock Data:		
Earnings Per Share		
Primary	$6.82	$5.82
Fully Diluted	$6.53	$5.65
Dividends Per Share	$1.65	$1.575
Net Assets Per Share	$40.54	$35.37
Number of Shares Outstanding	10,057,932	10,057,037
Capitalization Ratios:		
Stockholders' Equity	43%	42%
Minority Interest	1%	1%
Total Debt Including Amounts Due Within One Year	56%	57%

AGO 668203



Directors

JOHN S. SHAW, JR.
Chairman of the Board and President of the Company

HENRY C. GOODRICH
Manufacturing executive; Chairman, President and Chief Executive Officer, Inland Container Corporation

U. V. GOODWYN
Executive Vice President of the Company

HENRY R. LINDEN
Research engineer; President and Member Board of Trustees, Institute of Gas Technology, Chicago

EDWARD S. REDINGTON
Attorney, Senior Partner, Hughes Hubbard & Reed, New York

F. EDWIN SMART
Airline executive; Vice Chairman, Chairman of Finance Committee, Member Executive Committee, and Director, Trans World Airlines, Inc.

PETER G. SMITH
Executive Vice President and General Counsel of the Company

AUGUSTUS H. STERNE
Banker; Chairman and President, Trust Company of Georgia

CHARLES M. WILLIAMS
Professor, George Gund Professor of Commercial Banking, Graduate School of Business Administration, Harvard University

* Member Audit Committee

Officers

JOHN S. SHAW, JR.
Chairman of the Board and President

U. V. GOODWYN
Executive Vice President

PETER G. SMITH
Executive Vice President and General Counsel

JOHN F. AHEARN, JR.
Vice President

J. ROBERT DOODY
Vice President, Finance and Chief Financial Officer

CHARLES M. HUSTER
Vice President

W. F. MATTHEWS, JR.
Vice President

HUGH F. MORGAN, JR.
Vice President

ROSALIE E. PETTIS, JR.
Secretary

A. N. PRITZ
Comptroller

YVONNE BROCHART
Assistant Secretary and Assistant Treasurer

WILLIAM A. SMITH
Assistant Secretary

AGO 668204

To the Stockholders:

The Growth Continues
It was another record year for your Company, and the outlook continues bright.

Dear Stockholders:

The year 1975 was another year of record accomplishments for the Company. Consolidated earnings rose to $6.82 per share, compared with $5.82 per share in 1974. This represents an increase of 17% and 1975 was the sixteenth consecutive year in which your Company had earnings increases. Over the past sixteen years, our earnings have grown at a compound rate of 14.3%, a record which very few companies can claim.

Our earnings for 1975 include 50 cents per share primarily resulting from a $60,000,000 annual rate increase by Southern Natural Gas which became effective October 1, 1975, and which is pending before the Federal Power Commission. Any portion of the increased rates which might be disallowed will be refunded.

Sea Robin Pipeline Company, our 50%-owned joint venture offshore gas supply system, and South Georgia Natural Gas Company, a wholly owned subsidiary, have also filed annual rate increases of approximately $43,000,000 and $1,000,000, respectively, to become effective, subject to refund, on May 15 and April 10, 1976, respectively.

During 1975 deliveries of gas by our natural gas transmission companies were about 3% below the 1974 sales levels, but, unlike many gas transmission and distribution companies, we were able to meet all the residential, commercial and essential industrial requirements of our customers and expect to meet them again in 1976.

We have received authority to expand the working capacity of our Mobile Storage field at a cost of $12,500,000. By the 1976-1977 winter heating season, Mobile Bend will be able to supply 34% of our present peak day gas requirements.

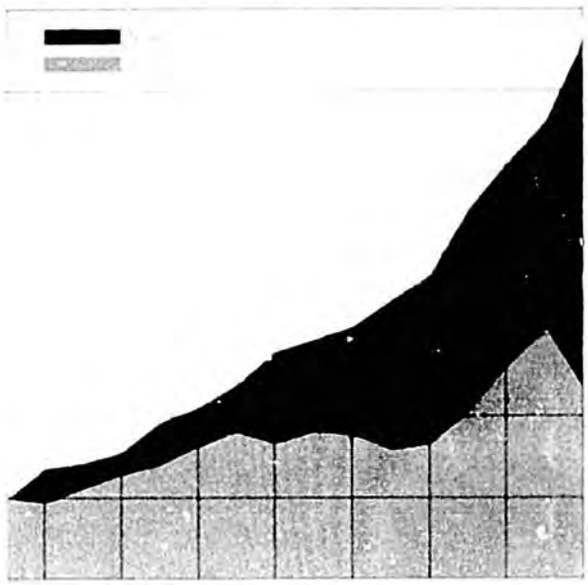
Maintaining our gas supply continues to be our top priority and we have spent over $300,000,000 in recent years on supply related facilities, including our investments in offshore pipelines and related transmission facilities, underground storage, liquefied natural gas and LNG and advance payments for gas. Our LNG project is scheduled to come on stream in 1977 or 1978.

AGO 668205

A Significant Increase
The Offshore Company's earnings increased more than one-third in 1975, and contributed $25,973,000 to consolidated earnings.

New Leases Acquired
During 1975 SONAT and Offshore acquired interests in 16 leases in the offshore Louisiana and Texas areas of the Gulf of Mexico.

15 Year Index of Earnings Per Share



We are continuing development drilling from a platform on East Cameron Block 231, in which we have a 47% interest; production will begin in late 1976.

Our consolidated revenues from production activities were $31,370,000 in 1975, as compared with $33,025,000 in 1974.

The general economic slump in the U.S. last year resulted in depressed markets in the forest products business and affected the performance of Boise Southern Company, our 50%-owned forest products joint venture. This activity contributed 25 cents per share to our 1975 consolidated earnings, as compared with 33 cents per share in 1974, a year when our largest paper mill operated only nine months due to a strike. While 1975 was relatively disappointing, there were definite signs of improvement in the last half of the year in the markets for linerboard and wood products, and newsprint markets continued strong.

In May 1975, the Board of Directors of The Offshore Company elected George L. Richardson as President and Chief Operating Officer, succeeding W. Henson Moore, who was named Vice Chairman of the Board



of Offshore. Robert W. Ryan was at the same time elected Executive Vice President of Offshore.

T. D. Pugh, Vice President – Exploration and Production of Southern Natural Gas Company, was elected President of SONAT Exploration Company.

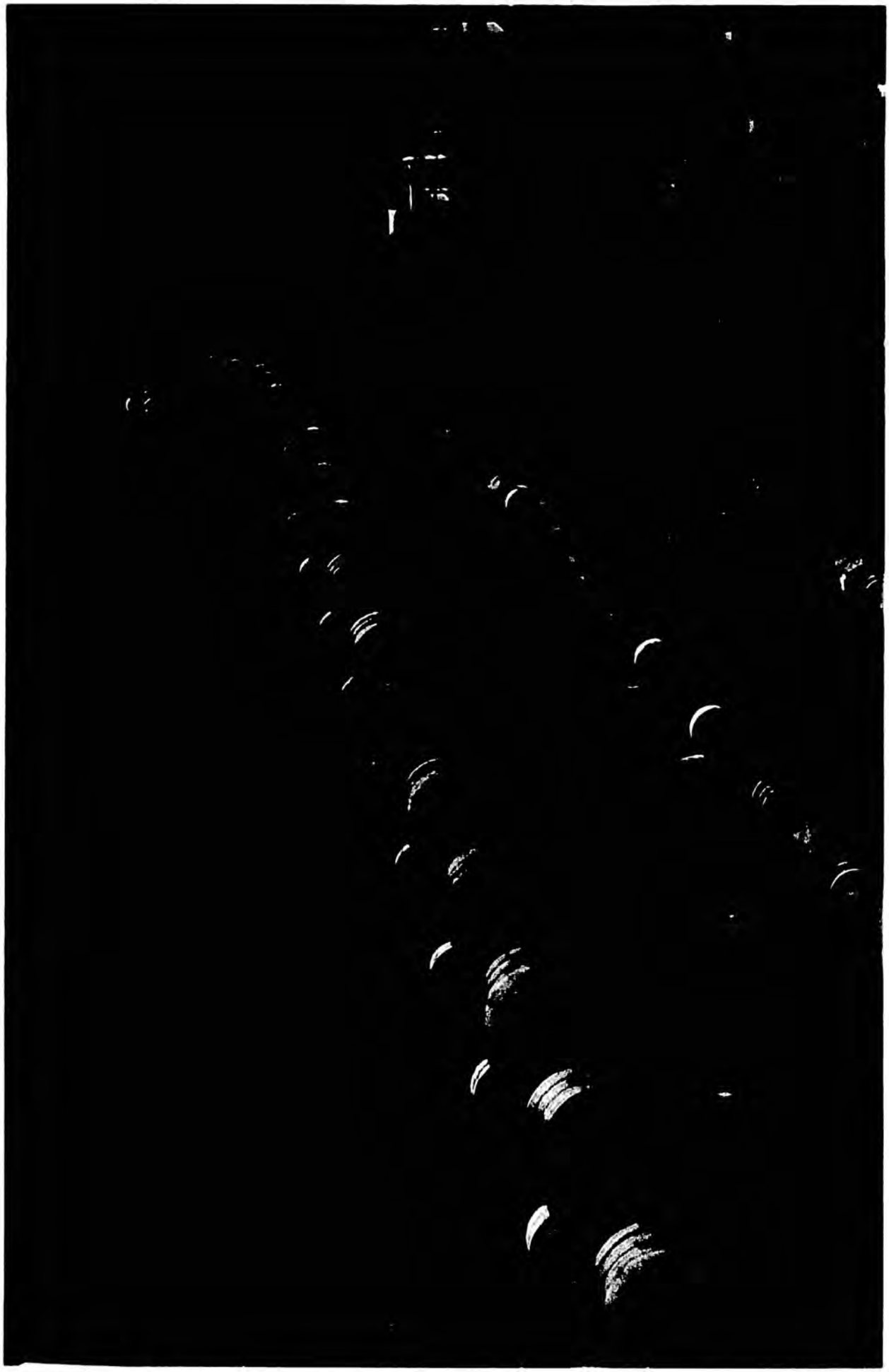
Mortimer H. Jordan retired as Vice President – Public Affairs in February 1976 after 22 years of service with Southern Natural Gas.



The long-term outlook for Southern Natural Resources continues bright and we believe that our diversified activities give your Company a solid base for continued future growth and success.

I would like to personally express my appreciation for the dedication and outstanding efforts of our employees, who made possible the record achievements your Company enjoyed in 1975. We will all work together to sustain in 1976 the consistent performance of the past.

March 1, 1976



AGO 668208

Southern Natural Gas Company and Subsidiaries

Southern Natural Gas Company, with its subsidiary, South Georgia Natural Gas Company, operates a 7,700-mile pipeline system extending from supply areas in the Gulf of Mexico, Texas, Louisiana, Mississippi and Alabama to numerous markets in Louisiana, Mississippi, Alabama, Georgia, South Carolina, Tennessee and Florida.

Southern Natural Gas, through Southern Deepwater Pipeline Company, is a 50% owner of Sea Robin Pipeline Company, which operates a $162,300,000 gas supply system with 335 miles of pipeline extending into the Gulf of Mexico. Southern Energy Company, a wholly owned subsidiary of Southern Natural Gas, is constructing and will operate a liquefied natural gas (LNG) terminal on an island near Savannah, Georgia.

Our pipeline operations contributed $37,152,000, or $3.70 per share, to consolidated earnings in 1975, of which $7,080,000, or 70 cents per share, was subject to refund pending the outcome of Southern Natural Gas' recent rate increases.

Rates. Southern Natural Gas' most recent annual rate increase of $60,000,000 went into effect on October 1, 1975, subject to refund of any portion not approved by the Federal Power Commission.

In this rate increase, Southern Natural Gas proposes an increase in the rate of return it is permitted to earn on its rate base from 8.75% to 10.7%, and an increase in depreciation rates from a composite rate of 3.7% to 6.1%. The rate increase also will recoup mounting operating and administrative expenses and taxes, as well as the additional costs incurred in recent gas acquisition activities.

South Georgia Natural Gas Company has filed a $1,600,000 annual rate increase which will become effective, subject to refund, in April 1976.

Sea Robin Pipeline Company filed a general rate increase of $13,000,000 annually with the FPC in November 1975. Sea Robin is contesting a December 1975 FPC order requiring a reduction of approximately $10,000,000 in this increase. The increased rates will become effective, subject to refund, in May 1976.



Offshore Pipeline System
Sea Robin Pipeline Company operates a $162,300,000 gas supply system with 335 miles of pipeline in the Gulf of Mexico.

Gas supply. We were able to meet all of the higher priority requirements of our customers during 1975, although deliveries of gas on our pipeline system were about 3% below last year's levels.

The purchase of new gas supplies continues to be a top priority of Southern Natural Gas. In 1975 we continued our aggressive gas acquisition efforts and increased our advance payment commitments for new gas. At the end of 1975, net outstanding advance payments amounted to $126,350,000. The advance payments, which are included in our rate base, gave us first call on gas delivered from a total of 308,000 acres. We look to gas supplies which will be developed from these properties to help us in meeting the high priority requirements of our customers in the future.

The Federal Power Commission has discontinued the advance payment program for gas as of December 31, 1975, except for previously existing commitments. We believe that the discontinuance of the advance payment program is favorable, as it will relieve us of the financial drain of financing producer exploration and development programs.

Moreover, we believe our large offshore gas supply systems, which extend into three areas offshore Louisiana in the Gulf of Mexico, put us in a good competitive position to purchase new reserves developed in this historically prolific gas supply area. During 1975 we received 53% of our gas supply from the Gulf of Mexico, as compared with only 16% in 1967 when we began our major supply line construction into the Gulf. We have invested approximately $241,000,000 in this offshore gas supply pipeline.

AGO 668209



AGO 668210

program and related gas facilities since the late 1960s.

Additional gas supplies will come from our project to import LNG in the amount of 320,000 Mcf per day. This is the equivalent of about 15% of our peak day delivery obligations. Sonatrach, the Algerian supplier of the LNG, has experienced delays in the construction of its facilities. Some Sonatrach recently hired a new contractor to complete its facilities and we now expect the LNG to come on stream in 1977 or 1978. Southern Energy Company's LNG receiving terminal near Savannah, Georgia, is approximately 90% completed. This facility, which can be readily expanded, and connecting pipelines are expected to cost $152,000,000.

We will expand our Muldon Storage field in 1976. This $75,000,000 expansion, when completed, will increase working storage capacity by approximately 30 billion cubic feet. During the 1976-1977 winter we will be able to supply as much as 700,000 Mcf per day, or about 31% of our present total peak day requirements, from Muldon.

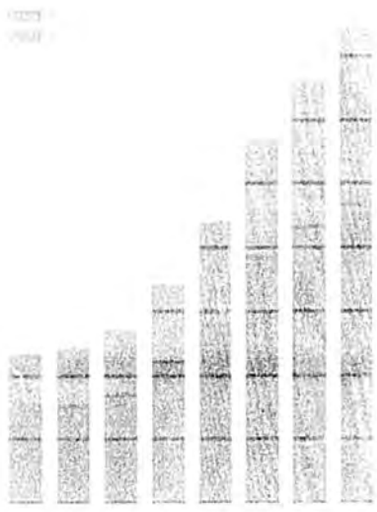
Southern Natural Gas has been operating under a curtailment plan since January 1972 in order to conserve available gas supplies. The plan is in effect until November 1975 curtailed available gas on the basis of end use, giving recognition to customers' contractual entitlements. In November 1975 Southern Natural Gas placed in operation a new plan, based solely on end use considerations, pursuant to a Federal Power Commission order. The Commission's order also required Southern Natural Gas to make refunds in an indeterminate amount for past periods extending back to July 1972. We are contesting the refund provisions of this order.

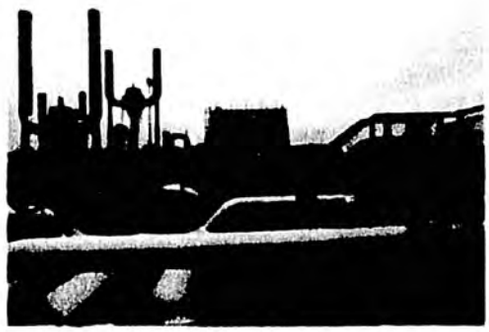
We are continuing our efforts to supplement gas supply from traditional sources with LNG and synthetic natural gas. However, regulatory delays and legislative obstacles have hindered these efforts. In October 1975 our supplier cancelled a contract for 100,000 Mcf per day of additional LNG after the FPC failed to act on our application in time to take advantage of the low price which the supplier had been holding for more than two years. Also, because of adverse FPC rulings, we did not exercise our option to purchase a large coal reserve in the Illinois Basin acquired in 1974; we had planned to obtain this coal as feedstock for a future coal gasification project. However, we continue to explore all possibilities to import additional LNG and to make synthetic gas from coal and liquid hydrocarbons.

While the present legislative and regulatory mood is discouraging, full development of our nation's natural resources and the implementation of supplemental LNG importation and synthetic gas projects, we believe that the current national shortage of natural gas, and the anticipated deepening of this shortage, will prompt our legislative leaders to take appropriate remedial action to create the proper incentives and atmosphere for the full development of all sources of gas supply.

Looking to the Future

Purchase of new gas supplies continues to be a top priority of Southern Natural Gas.

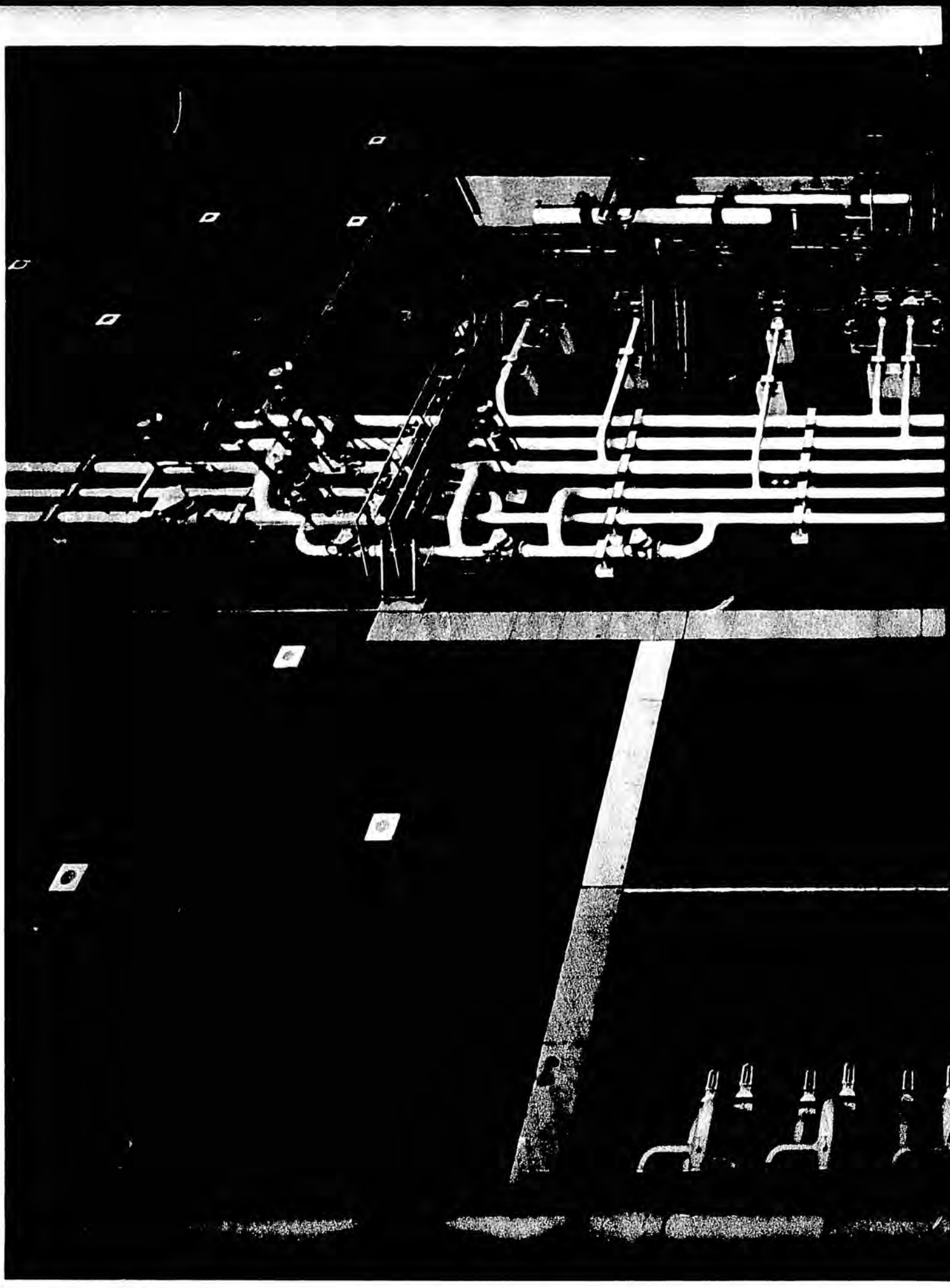


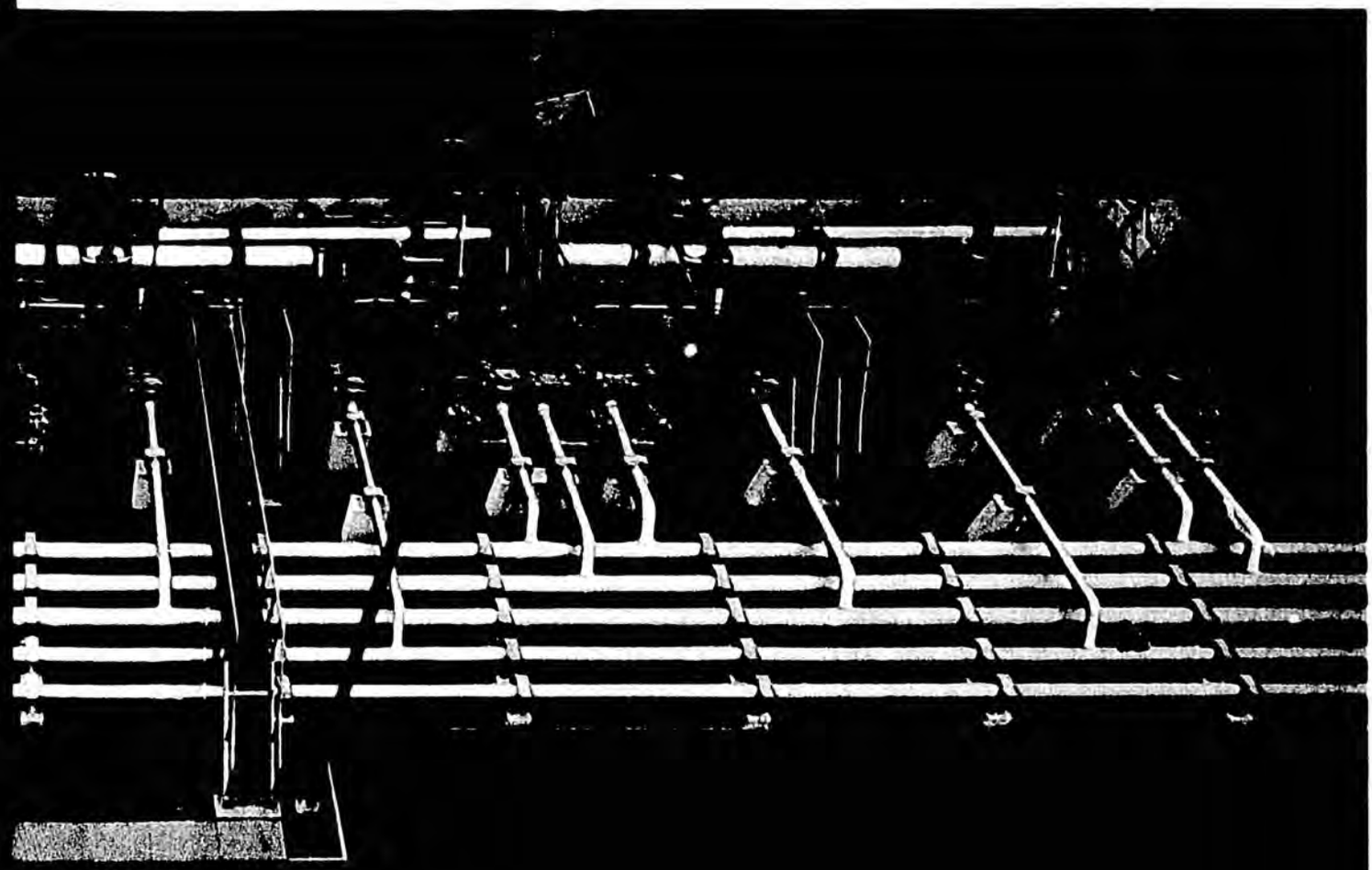


Pipeline Statistics

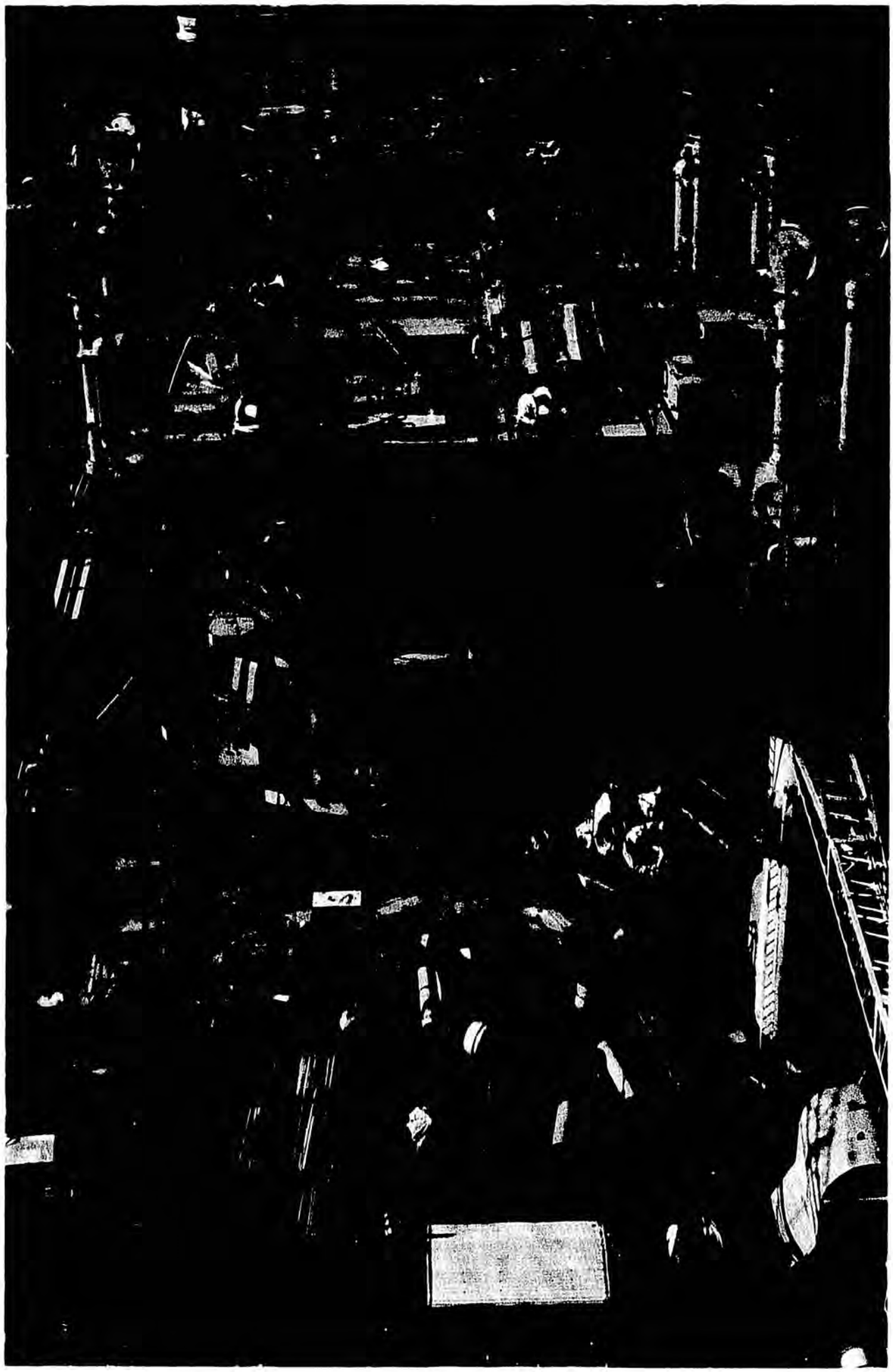
	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966
Total Pipeline System Gas Sales (Billion Cu. Ft.)	637.8	653.8	660.1	654.0	654.1	662.3	634.2	593.0	503.0	426.6
Field and Off-system Sales	23.8	28.4	23.6	19.2	11.0	21.3	0	8.4	2.2	0.1
Total Natural Gas Sales (Billion Cu. Ft.)	661.6	683.3	683.6	673.2	690.2	683.7	634.2	585.4	500.7	485.5
Daily Pipeline Delivery Capacity (Million Cu. Ft.)	2,230	2,230	2,230	2,230	2,230	2,052	2,085	1,908	1,883	1,532

AGO 668211



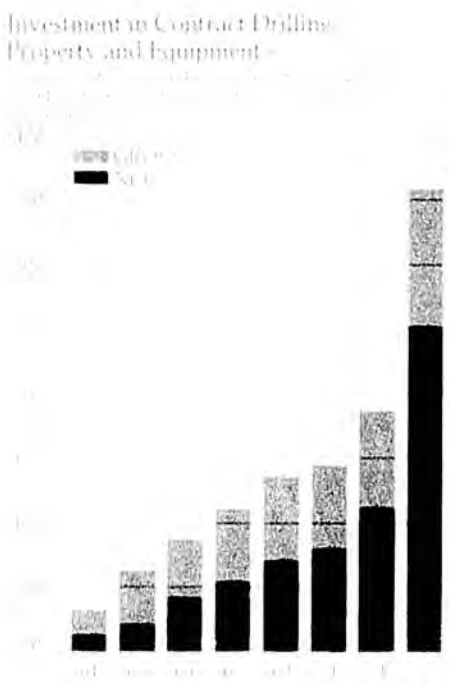






The Offshore Company

The Offshore Company, our 91%-owned subsidiary, is one of the world's largest contract drillers. It is principally engaged in drilling for oil and gas in offshore and onshore areas around the world under contracts with major producers. It also manufactures products and provides engineering, design and construction services relating to drilling and production equipment and rigs, and engages in exploration and production ventures for its own account.



Offshore-Around the World

The Offshore Company completed three major units which are now drilling in the North Sea, the Persian Gulf, and off Burma.

Left and following pages: During a power outage, one of the 1976 COBIA class wells was left with a drill string over 10,000 feet in length about 200 feet off the bottom and anchored by a tensioning system. Above: The $45,000,000 1976 WELL SERVICE unit was delivered to and put to work in the Persian Gulf for a major oil company. Right: Jean Price, a welder at the Avondale shipyard near New Orleans, takes a break from her work station on the 1976 COBIA unit.

Results of Operations. The Offshore Company's earnings increased 36% in 1975. Offshore contributed a record $25,973,000, or $2.58 per share, to our consolidated earnings, as compared with $18,362,000, or $1.83 per share, in 1974.

Although 1975 saw a slackening of petroleum activities throughout the world and the beginning of an oversupply of marine drilling equipment in certain areas, Offshore realized increased earnings principally from a high level of rig utilization from a larger fleet, improved day rates for its rigs, and improved margins and volumes in other operations.

Contract Drilling. Offshore owns and operates 29 marine units and 11 land units. During 1975 Offshore operated in or off the shores of 22 countries. Its principal areas of operation were the Arabian Gulf, Africa, Indonesia, the Gulf of Suez, the North Sea and South America.



Construction Program. At the beginning of 1975 Offshore had under way a construction program with a total estimated cost of $350,000,000, including $107,000,000 to be invested by joint venture partners. Three drilling units in this program were delivered during 1975.

In March 1975 we commissioned the *Chris Chenery*, a huge semi-submersible unit, which is now drilling in the Norwegian sector of the North Sea for a major oil company under a five-year contract.

We took delivery of the $48,000,000 *Discoverer 534* in mid-1975 and that unit began drilling offshore Burma under a five-year contract.

We received the $48,000,000 jack-up *Offshore Bahram* from the shipyard in November 1975. *Offshore Bahram* is now drilling under a five-year contract in the Persian Gulf.

Five additional drilling units are still under construction. The *Discoverer 511*, jointly owned with a major oil company, will commence work in mid-1976 under a five-year contract. A second *Discoverer 534*-class drillship, the *Discoverer Seven Seas*, being built in Japan, will be delivered in late 1976. This $61,000,000 unit will begin operations under a five-year contract.

Three other units, jointly owned with a major oil company, are expected to be delivered during 1976. The units, a *Discoverer III*-class drillship and two *Orion*-class jack-ups, are being built in Japan, at a total cost of approximately $100,000,000. Offshore will operate these units.

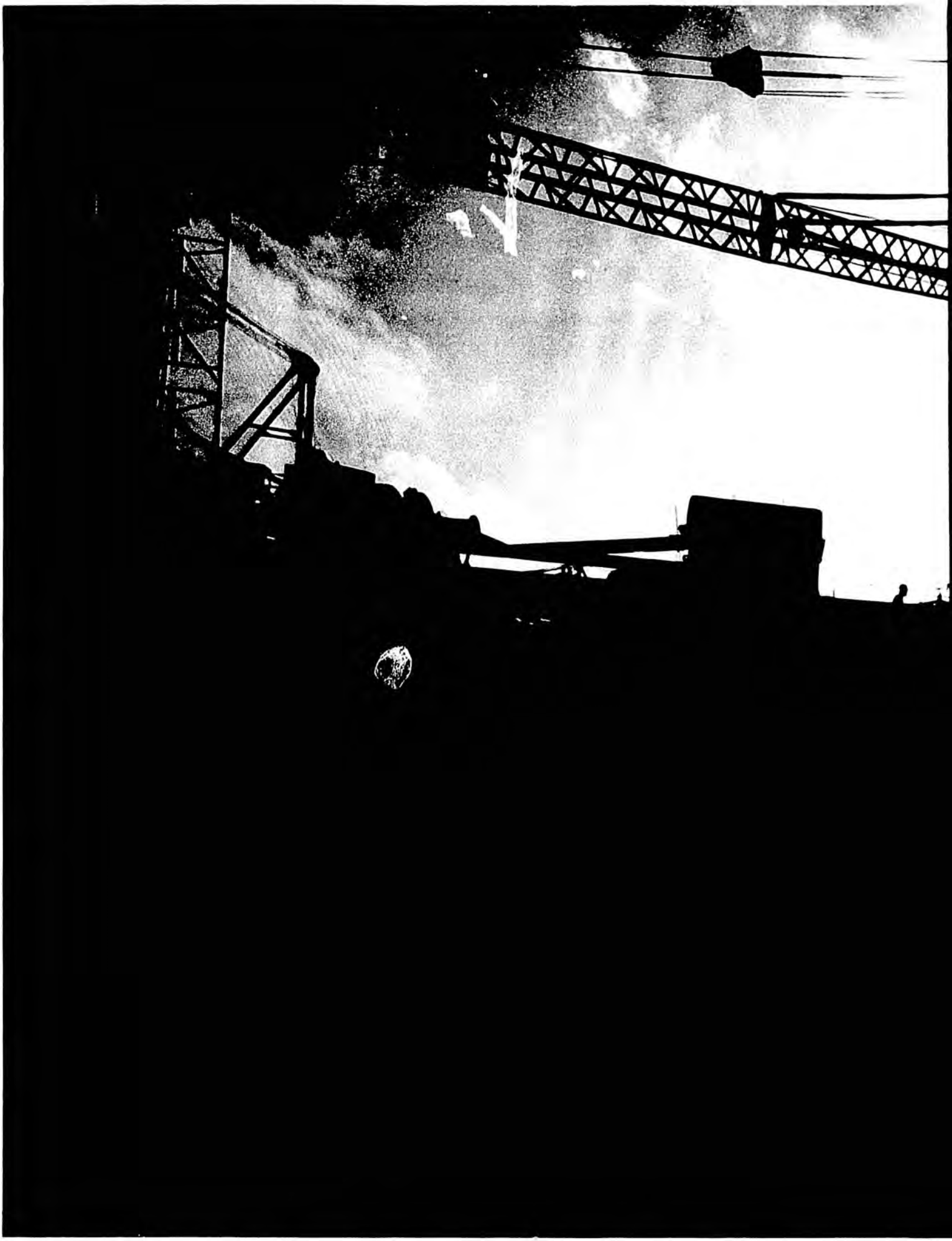


A joint venture, in which Norwegian interests own 75% and a subsidiary of Offshore owns 25%, has cancelled the construction contract for the *Skan-Shore I*, a semi-submersible unit under construction in Vigo, Spain, because of serious delays and other deficiencies at the shipyard. The joint venture has instituted legal proceedings to recover its investment to date and damages.

Manufacturing. Houston Systems Manufacturing Co., which primarily manufactures offshore drilling and production equipment, had record revenues of $29,059,000 in 1975, as compared with $15,354,000 in 1974, and contributed 12% of Offshore's 1975 net earnings.

In late 1975 Offshore increased its ownership of Houston Systems from 85% to 100%.

AGO 668215





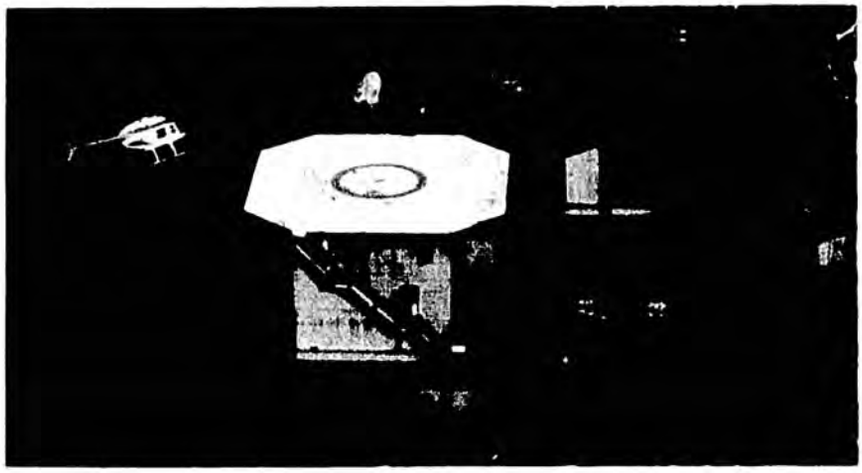
SONAT Exploration Company

We conduct our oil and gas exploration and production activities primarily through SONAT Exploration Company. The Offshore Company participates with SONAT in exploration and production activities.

Consolidated revenues of our exploration and production activities in 1975 were $34,370,000, as compared with $33,025,000 in 1974. Consolidated production of gas and liquid hydrocarbons during 1975 amounted to about 54,800,000 Mcf and 2,035,000 Barrels, respectively.

We supplied about 6.3% of Southern Natural Gas Company's 1975 pipeline requirements from our own production.

During 1975 we continued to expand our exploration and production activities. In February 1975 SONAT and Offshore participated in a group which acquired four leases in the Gulf of Mexico, offshore Texas. We acquired our consolidated interest, which varied from 25% to 30%, in the four leases, for a total investment of $2,156,000. In May 1975 SONAT and Offshore, bidding with a group led by a major oil company, acquired a 25% interest in six leases in the Louisiana-Texas offshore Gulf of Mexico lease sale. In that same lease sale, SONAT and Offshore, participating with another group, acquired a 12½% interest in a seventh tract.



Exploration and Production

SONAT began exploratory drilling on six of the twenty-eight leases acquired in the Gulf of Mexico since 1973.

Our total consolidated investment in these seven leases is $9,103,000.

SONAT and Offshore also participated in the July 1975 offshore Louisiana-Texas lease sale in the Gulf of Mexico, acquiring about a 25% interest in five leases at a total cost of $1,546,000.

SONAT and Offshore acquired interests in 12 tracts in the Gulf of Mexico in 1974 and 10 in 1975. Our consolidated subsidiaries now have an interest in a total of 43 Gulf of Mexico blocks. All of the blocks acquired in 1974 and 1975 should be tested by the end of 1978.

Last year test wells were drilled on six blocks in which SONAT and Offshore have an interest ranging from 8% to 25%.

A group led by Shell Oil Company, in which we have a 12½% interest, announced the discovery of commercial quantities of hydrocarbons in the Mobile South No. 2 area. The group plans to build and install the world's tallest offshore oil and gas platform in approximately 1,000 feet of water to develop the three deep water blocks purchased in the March 1974 lease sale. The platform is expected to cost in excess of $100,000,000. Additional testing on these blocks is continuing. The platform installation should be completed in 1978, and development drilling—which is expected to take an additional two years—will begin at that time. Production from this lease is not expected to begin before 1980.

A drilling and production platform has been ordered to develop South Marsh Island Block 149 and the adjoining Block 150. We have a 12½% interest in these blocks.

We have abandoned our 33⅓% interest in South Marsh Island Blocks 231, 238, acquired in the December 1973 lease sale for about $8,000,000, after drilling three unsuccessful test wells.

Development drilling is continuing from the platform installed at East Cameron Block 231, in which SONAT and Offshore have a combined 12½% interest. It is expected that natural gas will begin coming on stream late in 1976.

AGO 668219







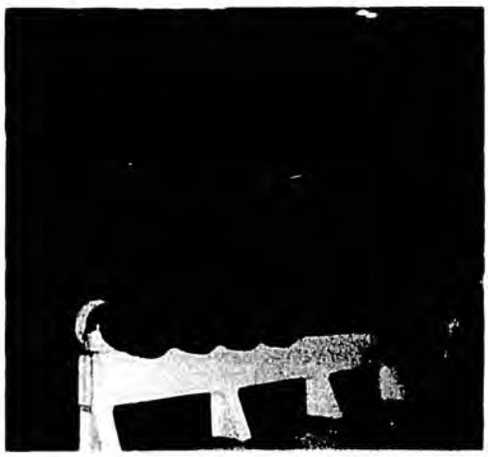


Southern Forest Products, Inc.

Our wholly owned Southern Forest Products, Inc. is a 50% participant in Boise Southern Company, a forest products joint venture. Boise Southern owns and operates a $105,000,000 mill in DeRidder, Louisiana, which produces newsprint, linerboard, fiber can stock, and bag paper, and also owns a pulp mill, a kraft paper mill and a wood products complex. Boise Southern also owns 50% of Vancouver Plywood Co., Inc., a plywood and wood products producer located in Louisiana.

Boise Southern is supported by about 780,000 acres of timberland owned or under lease in close proximity to its operations.

Production of newsprint at the DeRidder mill continued strong throughout the year, but Boise Southern's other operations were significantly curtailed in 1975 because of depressed markets resulting from the overall economic recession. In 1975 our forest products activities contributed $2,338,000, or 25 cents per share, to our consolidated net income, as compared with 33 cents per share in 1974.





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Markets Appear Favorable

Improved markets in the second half of 1975 enabled us to increase production of linerboard and wood products. Demand for newsprint continues strong.

During the second half of 1975, stronger markets enabled us to increase linerboard and wood products production at Boise Southern. The present outlook for continued strengthening of these markets appears favorable. During 1975 Boise Southern increased its linerboard production capacity by about [illegible].

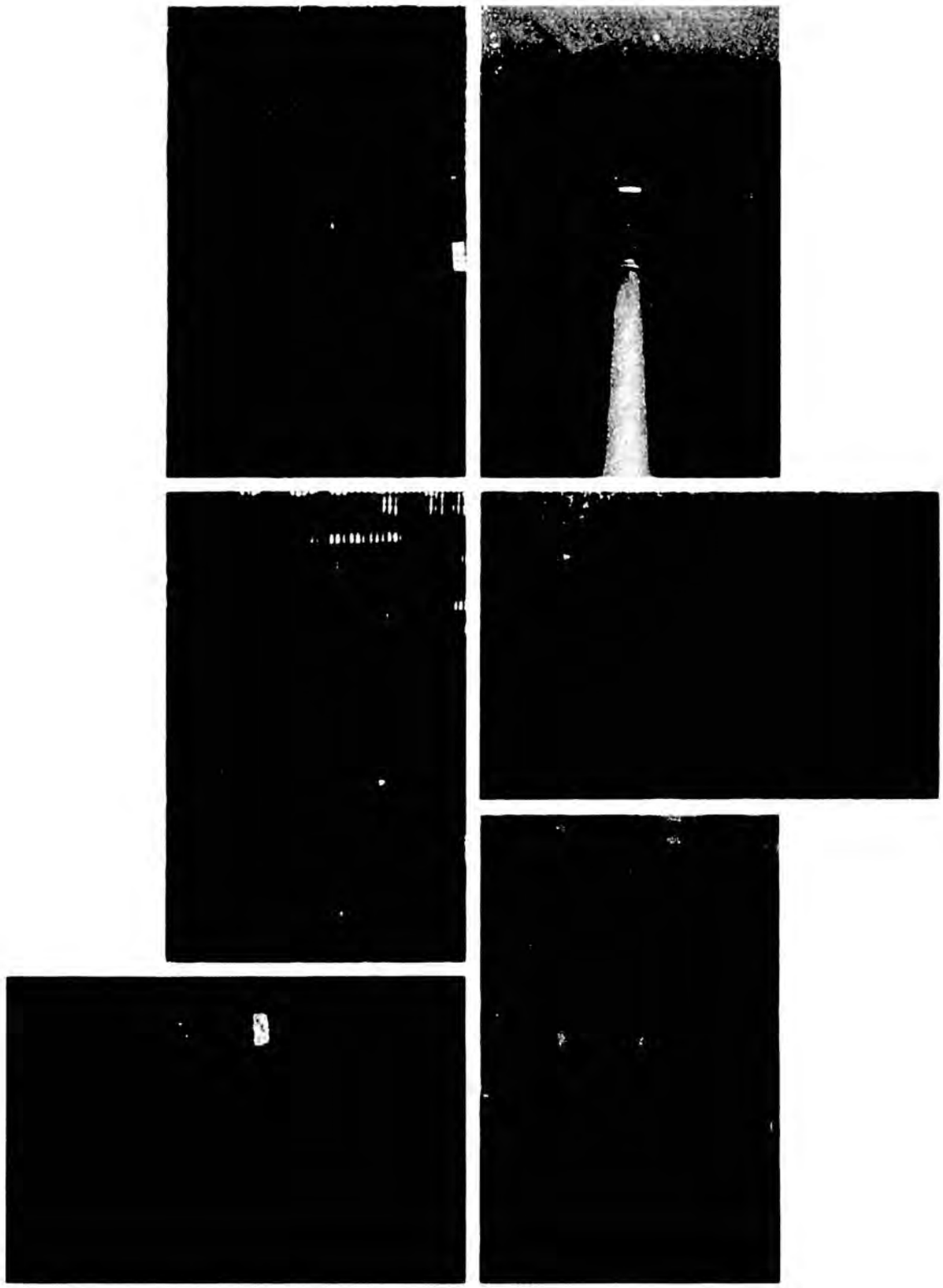
We are studying additional proposals to expand the operations of Boise Southern.

AGO 668223



AGO 668224





Financial Information

Table of Contents

26 Financial Review
28 Management's Discussion and Analysis
29 Consolidated Statements of Income
30 Consolidated Balance Sheets
32 Consolidated Statements of Changes in Financial Position
33 Consolidated Statements of Retained Earnings
33 Notes to Financial Statements
37 Report of Certified Public Accountants
38 Summary of Operations and Fifteen Year Statistical Review

Annual Report on Form 10-K

Each year Southern Natural Resources, Inc. is required to file an Annual Report on Form 10-K with the Securities and Exchange Commission. A copy may be obtained by stockholders without charge by writing to Ronald L. Kuehn, Jr., Secretary, Southern Natural Resources, Inc., Post Office Box 2563, Birmingham, Alabama 35202.

Stock Transfer and Dividend Paying Agents
Common Stock:
Manufacturers Hanover Trust Company
Four New York Plaza
New York, New York 10015

Series 1 and Series 2 Preference Stock:
Trust Company Bank, Post Office Drawer 4625
Atlanta, Georgia 30302

Stock Registrars
Common Stock:
The Chase Manhattan Bank
One Chase Manhattan Plaza
New York, New York 10015

Series 1 and Series 2 Preference Stock:
Trust Company Bank, Post Office Drawer 4625
Atlanta, Georgia 30302

AGO 668227

***Earnings*—Consolidated earnings were equivalent to primary earnings of $6.82 per share for 1975, compared with primary earnings of $5.82 for 1974.** Earnings for 1975 include 76 cents per share collected subject to refund principally as a result of a rate increase which became effective October 16, 1975, as compared with 1974 earnings which included 14 cents per share collected subject to refund.

Revenues for the fourth quarters of 1975 and 1974 were $180,284,000 and $141,960,000, respectively, while net earnings amounted to $20,575,000, equivalent to primary earnings of $2.05 per share, and $15,478,000, or $1.54 per share, respectively. These **quarter of 1975, provisions principally for gas storage expenses pursuant to an FPC order, project termination costs, bad debts and inventory adjustments, less related income tax effects, reduced earnings by approximately $4,586,000, or 46 cents per share. There were no similar material items in the fourth quarter of 1974.**

Lines of Business—Lines of business accounting for 10% or more of operating revenues and related earnings before and after income taxes applicable to common shares for the five years ended December 31, 1975 are as follows:

Lines of Business

	Year Ended December 31,				
	1975	1974	1973	1972	1971
	(In Thousands of Dollars)				
Revenues:					
Pipeline*	**$442,625**	$377,989	$324,541	$296,256	$272,011
Contract Drilling	**141,743**	109,300	83,493	72,070	66,521
Exploration and Production	**34,370**	33,025	23,887	18,599	19,571
Forest Products*	**3,133**	5,081	6,935	2,917	465
Other	**30,043**	20,819	22,068	16,427	14,922
Intercompany sales of produced gas	**(11,843)**	(7,642)	(7,973)	(9,629)	(9,225)
Total	**$640,071**	$538,572	$452,951	$396,640	$364,265
Earnings Before Income Taxes Applicable to Common Shares:					
Pipeline*	**$ 75,400**	$ 66,967	$ 61,388	$ 61,570	$ 40,910
Contract Drilling	**29,225**	22,751	16,789	14,259	14,059
Exploration and Production	**2,463**	1,283	5,315	2,519	6,291
Forest Products*	**2,357**	4,488	6,543	2,527	133
Other	**5,330**	421	(362)	(617)	627
Total	**$114,775**	$ 95,910	$ 89,673	$ 80,258	$ 62,020
Earnings Applicable to Common Shares:					
Pipeline*	**$ 37,152**	$ 35,064	$ 32,175	$ 31,086	$ 22,707
Contract Drilling	**24,435**	18,706	13,508	11,724	10,526
Exploration and Production	**2,136**	1,217	3,283	2,236	4,030
Forest Products*	**2,338**	3,310	4,316	2,467	982
Other	**2,523**	196	(178)	(239)	471
Total	**$ 68,584**	$ 58,493	$ 53,104	$ 47,274	$ 38,716

*Revenue includes the equity in earnings of joint ventures accounted for by the equity method, and the corresponding categories of Earnings Before Income Taxes Applicable to Common Shares and Earnings Applicable to Common Shares include the related income. For revenues of joint ventures, see Notes 5 and 6 of the Notes to Financial Statements.

Dividends—Dividends totaled $1.65 per share for 1975 compared with $1.575 per share for 1974. This was the 39th consecutive year of dividend payments by the Company. Dividends paid per common share for the last two years were as follows:

Quarter	1975	1974
First	**$.4125**	$.375
Second	**.4125**	.375
Third	**.4125**	.4125
Fourth	**.4125**	.4125

Dividends paid per share on Series 2 Cumulative Convertible Preference Stock, which is also voting stock, were $.90 per quarter in 1975 and 1974. An active market does not exist for this stock.

Capital Stock—Per share prices of the Company's Common Stock traded on the New York Stock Exchange are summarized below:

	1975	1974
Quarter	**High — Low**	High — Low
First	**$50⅝ — $41**	$55½ — $46
Second	**59½ — 44**	52¾ — 39
Third	**56½ — 49**	42⅞ — 27⅛
Fourth	**49⅝ — 42⅝**	43¼ — 32⅞

established lines of credit, available through Sept. 30, 1976, with several banks to provide for borrowings of up to $85,000,000 in the form of unsecured notes bearing interest at the banks' prevailing prime commercial rates. Southern Natural Gas also issues commercial paper from time to time. At December 31, 1975, $17,500,000 of commercial paper was outstanding, which is expected to be repaid from cash generated from operations of Southern Natural Gas.

The Offshore Company, in 1975, entered into a $25,000,000 loan agreement with two banks. The terms of this agreement provide for 16 equal quarterly repayments of principal, commencing March 31, 1977, with interest rates based on 110% of prime rate plus .35 of 1%.

During 1975, Offshore established lines of credit with several banks, under which the entire $15,000,000 available had been borrowed by year-end. These notes are in the form of renewable 90-day notes but are to be repaid within one year and bear interest at one of the bank's prevailing prime commercial rates.

In September 1975, Amoshore Drilling Company, of which Offshore is a 50% participant, completed a $33,260,000 credit agreement with two banks. Borrowings under this agreement will bear interest at a rate tied to the prime rate and will be available until completion of the related rig or September 1977, whichever is earlier, and are to be repaid in ten equal semiannual installments beginning six months after delivery of the rig. At the end of the year Amoshore had borrowed $29,200,000 under this agreement.

Offshore's joint venture with a group of Norwegian shipping companies, for the construction and operation of four workboats, obtained loans, outstanding in the amount of $11,425,000 at the end of the year, from the Norwegian shipyard in 1975. These loans are repayable in 16 equal semiannual installments beginning six months after delivery of each workboat and bear interest at a rate of 7.7%.

Negotiations are presently in progress to obtain financing required by Offshore and/or its joint ventures for the balance of its construction program expected to be completed early in 1977.

In September 1975 SONAT Exploration Company, a wholly owned subsidiary, completed a $30,000,000 loan with three banks. The loan is partially secured by certain producing properties of SONAT, with the balance guaranteed by Southern Natural Resources. The principal is repayable in 20 equal quarterly installments from December 1977 through September 1982. The interest rate on this loan is based on 125% of the prime rate of one of the lending banks.

Two of the Company's joint ventures, Boise Southern and Sea Robin, did not enter into any new long-term financing in 1975 and reduced outstanding long-term debt by $6,787,000 and $6,891,000, respectively.

Vancouver Plywood Co., Inc., a 50%-owned joint venture of Boise Southern, entered into a credit agreement under which it borrowed $15,000,000 to be repaid in 1976 and 1977. Interest rates are tied to the prime rate.

Compensating Balances—Southern Natural Gas and Offshore have informal arrangements with certain banks relating to lines of credit and loan agreements, which require the maintenance of compensating balances with the banks based on a percentage of the loans outstanding or of the lines of credit. The companies have been in compliance with these arrangements which did not change significantly during the year. There is no contractual agreement prohibiting withdrawal of these compensating balances.

Debt Retirement—With respect to consolidated long-term debt outstanding at the end of 1975, before deducting amounts in treasury, the annual maturities are as follows (in thousands):

Year	Southern Natural Gas Company	South Georgia Natural Gas Company	The Offshore Company and Subsidiaries (2)	SONAT Exploration Company	Total Consolidated
1976	$ 71,564 (1)	$ 274	$ 14,654	$ —	$ 86,492
1977	17,558	274	23,247	1,500	42,579
1978	21,814	274	44,439 (3)	6,000	72,527
1979	82,914 (1)	228	15,334	6,000	104,476
1980	26,400	192	7,750	6,000	40,342
1981-1985	131,200	1,292	29,000	10,500	171,992
	351,450	2,534	134,424	30,000	518,408
Less Amounts in Treasury	8,233	—	—	—	8,233
Total Long-Term Debt	$ 343,217	$2,534	$134,424	$30,000	$510,175

(1) Southern Natural Gas has $60,000,000 of debentures due June 1976 and $60,000,000 of debentures due April 1979, which do not have sinking fund requirements and which Southern Natural Gas expects to refinance.

(2) Offshore's indenture covering its convertible debentures due December 1, 1992 provides for a sinking fund which may be satisfied by credit for conversions or retirements or by additional optional sinking fund payments; $718,000 has been retired and will be used to satisfy sinking fund requirements. The debentures are convertible into common stock at $37.50 per share at any time up to and including December 1, 1992.

(3) Includes $21,300,000 final lump sum payments under sale-leaseback agreements.

Cash and Temporary Cash Investments—At December 31, 1974, Offshore had temporarily invested in certificates of deposit a portion of its proceeds from a long-term financing arrangement which together with other funds amounted to $32,057,000.

Management's Discussion and Analysis of Significant Changes in Operating Results During the Last Two Fiscal Years (See the Summary of Operations appearing on Page 38)

Revenues

Increases in consolidated revenues during the past two years were generated principally from gas operations and contract drilling.

Increased gas sales prices accounted for most of the increase in gas operations for both years. Approximately one-fourth of that amount in 1975 was attributable to the general rate increase that went into effect in October 1975. Other price increases in 1975 and 1974 were attributable to the inclusion in gas sales rates of higher prices paid to suppliers for new gas purchased and the impact on gas sales prices of advance payments for gas to producers.

Contract drilling revenues increased during both 1975 and 1974 primarily because of new rigs put into service coupled with better utilization of the existing rig fleet and increased day rates negotiated during a time of higher worldwide demand for marine drilling equipment.

Costs and Operating Expenses

The pipeline system's average unit cost of purchased gas increased approximately 23% and 25% during 1975 and 1974, respectively, both increases reflecting the higher cost of recently acquired sources. The cost of natural gas purchased for resale as a percent of natural gas sales revenues has increased from 51.6% in 1973 to 55.8% in 1975.

Operating expenses, because of inflation and expansion, have risen proportionately with operating revenues.

The primary factor contributing to increases in depreciation expense over the past two years has been Offshore's new rig construction program, which has placed several new units in operation during those periods. Additionally, in October 1975 Southern Natural Gas adjusted its depreciation rates as part of its current rate increase application (see Note 1 of the Notes to Financial Statements) which accounted for most of the remaining 1975 increase.

Interest Expense

The additional interest on debt generated by new long-term financing the past two years and, in 1975, the additional estimated interest on federal income tax liabilities was offset somewhat during 1975 by the decline in interest rates paid for short-term borrowings. The higher average construction work in progress balances effected primarily by the liquefied natural gas project and Offshore's construction program accounted for the increase in the amount of interest capitalized during 1974 and 1975.

Income Taxes

The effective tax rate increased to 40.0% in 1975 as compared with 38.7% in 1974 primarily because of the increased tax liability relating to capitalized production intangible drilling costs which began in 1975 under a new accounting standard and because of differences resulting from changes in pipeline depreciation rates without corresponding changes in related tax depreciation rates. These additional amounts were partially offset by the increase in the earnings of certain foreign subsidiaries permanently reinvested in foreign operations on which there is no provision for federal income taxes. A higher portion of foreign earnings was the primary factor in the decrease of the 1974 effective tax rate from that of the previous year.

Net Income

Higher revenues from gas and contract drilling operations due to increased rates, a larger drilling fleet and expanded manufacturing operations accounted for our increases in net income. Our forest products contribution to net income declined in 1974 and again in 1975 due to a three month strike in 1974 and to national economic conditions, but showed a marked improvement in the last half of 1975.

Consolidated Statements of Income Years Ended December 31, 1975 and 1974

	1975	1974
	(In Thousands of Dollars)	
Revenues:		
Operating revenues (Notes 8 and 9)	**$626,393**	$523,358
Equity in earnings of joint ventures and other income	**13,678**	15,214
	640,071	538,572
Costs and Expenses:		
Natural gas purchased for resale	**244,647**	205,070
Operating, maintenance and general	**186,972**	154,436
Depreciation and depletion (Note 8)	**52,727**	45,305
Taxes, other than income	**9,594**	8,813
Interest (less allowance for funds capitalized of $9,635,000 in 1975 and $6,515,000 in 1974)	**30,638**	28,320
	524,578	441,944
Income Before Income Taxes	**115,493**	96,628
Income Taxes (Note 2)	**46,191**	37,417
Net Income (Notes 8, 9 and 11)	**69,302**	59,211
Dividends on Serial Preference Stock (Note 4)	**718**	718
Earnings Applicable to Common Shares (Notes 1, 8 and 9)	**$ 68,584**	$ 58,493
Earnings per Common Share (Notes 1 and 8):		
Primary	**$6.82**	$5.82
Fully diluted	**$6.53**	$5.65

See accompanying notes.

Consolidated Balance Sheets December 31, 1975 and 1974

Assets	1975	1974
	(In Thousands of Dollars)	
Current Assets:		
Cash and temporary cash investments	**$ 23,553**	$ 49,522
Accounts and notes receivable, including $18,076,000 in 1975 and $15,064,000 in 1974 from affiliates not consolidated	**104,456**	82,621
Inventories	**57,561**	46,197
Prepayments and other	**37,922**	27,494
	223,492	205,834
Investments and Advances:		
Advance payments for gas	**87,220**	93,588
Joint ventures:		
Forest products (Note 5)	**43,866**	40,226
Gas operations (Note 6)	**34,138**	34,747
Other	**7,505**	4,901
Other investments	**5,329**	4,956
	178,058	178,418
Plant, Property and Equipment (Note 1):		
Natural gas pipeline	**810,936**	752,508
Oil and gas production	**129,840**	125,478
Drilling	**321,126**	233,776
Manufacturing	**4,504**	3,061
	1,266,406	1,114,823
Less accumulated depreciation, depletion and amortization	**489,128**	442,346
	777,278	672,477
Deferred Charges	**10,791**	9,547
	$1,189,619	$1,066,276

See accompanying notes.

AGO 668232

Consolidated Balance Sheets December 31, 1975 and 1974

Liabilities and Stockholders' Equity	1975	1974
	(In Thousands of Dollars)	
Current Liabilities:		
Long-term debt due within one year (Note 3)	$ 79,552	$ 20,740
Unsecured notes (Note 3)	32,500	25,500
Accounts payable, including $15,393,000 in 1975 and $10,751,000 in 1974 to affiliates not consolidated	60,568	49,840
Accrued income taxes	51,661	46,262
Other	22,068	16,082
	246,349	158,424
Long-Term Debt (Note 3)	428,131	460,116
Deferred Credits:		
Deferred investment tax credits	26,856	24,001
Deferred income taxes	46,726	38,496
Other	10,317	6,356
	83,899	68,853
Minority Interest in Subsidiaries	11,515	11,189
Commitments and Contingencies (Notes 5, 7 and 8)		
Stockholders' Equity (Notes 4 and 11):		
Capital stock	38,433	38,430
Premium on capital stock and other capital surplus	42,467	42,428
Retained earnings (Note 3)	338,825	286,836
	419,725	367,694
	$1,189,619	$1,066,276

See accompanying notes.

Consolidated Statements of Changes in Financial Position Years Ended December 31, 1975 and 1974

	1975	1974
	(In Thousands of Dollars)	
Working Capital Provided:		
Current operations:		
Net income	$ 69,302	$ 59,211
Depreciation, depletion, amortization, abandoned leases, etc.	61,572	57,677
Deferred federal and foreign income taxes and investment tax credits	9,423	(2,652)
Equity in earnings of joint ventures less distributions	(1,967)	(10,602)
Allowance for funds capitalized	(9,635)	(6,515)
Other	8,189	4,798
Working capital provided from operations	136,884	101,917
Net proceeds from issuance of long-term debt	54,947	134,254
Net salvage from retirement of plant, property and equipment	555	15,005
Advance payments for gas—noncurrent	6,368	(35,508)
Other	2,608	2,534
Total Working Capital Provided	201,362	218,202
Working Capital Applied:		
Plant and property additions	157,182	146,977
Dividends paid	17,313	16,557
Reductions of long-term debt	86,810	20,834
Other	10,324	9,929
Total Working Capital Applied	271,629	194,297
Increase (Decrease) in Working Capital	$(70,267)	$ 23,905
Increase (Decrease) in Working Capital Components:		
Current assets:		
Cash and temporary cash investments	$(25,969)	$ 22,750
Accounts and notes receivable	21,835	6,584
Inventories	11,364	11,228
Prepayments, etc.	10,428	5,214
	17,658	45,776
Current liabilities:		
Long-term debt due within one year	(58,812)	(12,630)
Unsecured notes	(7,000)	(500)
Accounts payable	(10,728)	(10,250)
Accrued income taxes	(5,399)	1,598
Other	(5,986)	(89)
	(87,925)	(21,871)
	$(70,267)	$ 23,905

See accompanying notes.

AGO 668234

Consolidated Statements of Retained Earnings Years Ended December 31, 1975 and 1974

	1975	1974
	(In Thousands of Dollars)	
Balance at Beginning of Year	$286,836	$244,182
Add:		
Net Income (Notes 8, 9 and 11)	69,302	59,211
Deduct Dividends:		
Common Stock, $1.65 per share in 1975 and $1.575 per share in 1974	16,595	15,839
Serial Preference Stock (Note 4)	718	718
	17,313	16,557
Balance at End of Year (Note 3)	$338,825	$286,836

See accompanying notes.

Notes to Financial Statements

1. Accounting Policies

Principles of Consolidation—The consolidated financial statements include the accounts of all significant subsidiaries of the Company. All significant intercompany transactions and accounts have been eliminated in consolidation. The equity method of accounting is used for investments in 50% or less owned joint ventures.

Certain amounts in the 1974 consolidated statements have been reclassified to conform with the 1975 presentation.

Foreign Currency Translation—Current assets and liabilities recorded in foreign currencies have been translated into U.S. dollars at the rates of exchange in effect at the year-end. Noncurrent assets and liabilities have been translated at historical rates of exchange. Income statement accounts have been translated at monthly exchange rates. Translation adjustments, which were not material, have been included in income.

Plant, Property and Equipment and Depreciation—Plant, property and equipment is carried at cost, and includes construction work in progress of $154,451,000 and $121,343,000 for 1975 and 1974, respectively, in pipeline, liquefied natural gas, production and contract drilling facilities.

AGO 668235

Prior to October 16, 1975, Southern Natural Gas Company provided depreciation generally on the basis of a composite rate of 3.5% of gross depreciable gas plant in service, except that offshore pipeline facilities were depreciated on a straight-line rate of 5% per annum. Beginning October 16, 1975 and pending FPC approval of the current rate increase application (see Note 8), Southern Natural Gas provides depreciation on storage plant and main line transmission facilities at 5.25% per annum and supply line transmission facilities at 8.5% per annum. Certain production properties are depreciated on the unit-of-production method. Depletion is calculated on the unit-of-production method. The Offshore Company provides depreciation on its drilling units and equipment on the straight-line method, principally over 12 years for offshore units and equipment and over 6 years for inland drilling rigs and equipment.

Inventories—Inventories consist of materials and supplies and gas stored underground and are carried at the lower of average cost or market.

Investment Tax Credits—Southern Natural Gas Company, pursuant to authority received from the Federal Power Commission, amortizes its accumulated deferred investment tax credit over a 10-year period. Other subsidiaries of the Company generally amortize the investment tax credit over the approximate lives of related properties. The amortization of the credits is included in consolidated net income as a reduction of income taxes.

Retirement Income Plans—Substantially all domestic and certain foreign employees are covered by trusteed noncontributory retirement income plans. Retirement costs are funded as accrued and unfunded prior service costs are being systematically funded over 25-year periods.

Deferred Income Taxes—Deferred income taxes are provided for the income tax effect of timing differences between book and taxable income; however, no provision is made with respect to differences of a permanent nature or where prohibited by regulatory rules. The timing differences relate primarily to the use of accelerated depreciation methods for income tax purposes and to the provisions for nonproductive oil and gas leases which are not deductible for income tax purposes until the leases are abandoned.

As of January 1, 1975, in accordance with a newly issued accounting standard, the Company began interperiod income tax allocation for intangible drilling and development costs associated with the exploration for and development of gas reserves that enter into the determination of taxable income and pre-tax book income in different periods.

Subsequent to Southern Natural Gas' most recent rate filing, the Federal Power Commission made it optional for utilities to adopt comprehensive interperiod income tax allocation accounting for all items creating timing differences between the periods in which transactions affecting taxable income and pre-tax book income occur. Southern Natural Gas has not adopted this accounting, when such items receive normalized treatment for rate purposes. Southern Natural Gas does not anticipate that a change from its present flow through treatment of income taxes on certain items for rate-making purposes to a normalized treatment would have a material effect on net income.

A substantial portion of the unremitted earnings of foreign subsidiaries is considered to be permanently reinvested in foreign operations pursuant to Offshore's construction and exploration programs and accordingly no federal income taxes have been provided thereon.

Accounting for Exploration Costs—The costs of delay rentals and dry holes are charged to income as incurred. Substantially all geological and undeveloped lease costs are capitalized and the portion estimated to be applicable to nonproductive leases is amortized over the estimated life of the related lease. Intangible drilling costs applicable to productive oil and gas wells are capitalized and amortized on a unit-of-production method.

Allowance for Funds Capitalized—The Company's regulated subsidiaries capitalize the cost of funds used during construction in accordance with Federal Power Commission regulations. Offshore, a nonregulated subsidiary, capitalizes interest on construction funds to properly reflect the cost of the asset. The amount capitalized by Offshore is based on a monthly average interest rate applied to the average outstanding construction balance.

Earnings Per Share—The computation of primary earnings per share is based on the weighted average number of common shares outstanding during the period.

Fully diluted earnings per share were determined on the assumption that the Company's serial preference stock and the 5% convertible subordinated debentures of The Offshore Company were converted at the beginning of each period. For this calculation, income has been increased by the serial preference stock dividends and the interest on the debentures, net of related income taxes.

2. Income Taxes

An analysis of the Company's income tax expense, in thousands of dollars, is as follows:

	1975	1974
CURRENT:		
Federal	$33,134	$34,537
Foreign	6,078	5,046
State	3,472	2,565
	42,684	42,148
AMORTIZATION OF INVESTMENT TAX CREDITS AND GRANTS	(2,884)	(2,643)
DEFERRED:		
Federal	6,727	(1,637)
Foreign	(336)	(451)
	6,391	(2,088)
	$46,191	$37,417

computed by multiplying income before income taxes by the statutory federal tax rate (48%) primarily because of the lower tax rate attributable to earnings of foreign operations and the amortization of investment tax credits and grants, offset somewhat by differences resulting from changes in pipeline book depreciation rates without corresponding changes in related tax depreciation rates.

At December 31, 1975 the cumulative amount of financial accounting/tax differences related to intangible drilling and development costs, with respect to which income taxes have not been allocated, were not material.

3. Unsecured Notes and Long-Term Debt

Long-term debt at December 31, 1975 and 1974 (after deducting $8,233,000 and $13,600,000, respectively, held in treasury) consisted of (in thousands of dollars):

	1975	1974
First Mortgage Pipe Line Sinking Fund Bonds due to 1987 with interest rates from 4¾% to 5⅝%	$ 44,206	$ 48,837
7.70% Sinking Fund Debentures due April 1, 1991	46,461	46,473
9⅛% Debentures due June 1, 1976	60,000	60,000
6⅞% Debentures due April 1, 1979	60,000	60,000
7⅞% Promissory Notes due from July 15, 1976 through July 15, 1989	60,000	60,000
Bank Notes at 115% of prime rate due from June 30, 1977 through June 30, 1981	70,000	70,000
5% Convertible Subordinated Debentures of The Offshore Company due from December 31, 1977 through December 1, 1992	34,282	34,684
Bank Notes at one-half percent above prime rate but not to exceed 7¾%, due quarterly through December 31, 1979	29,200	36,500
Bank Notes at 125% of prime rate, due quarterly from December 31, 1977 through September 30, 1982	30,000	—
Bank Notes at 110% of prime rate plus .35 of 1% due quarterly from March 31, 1977 through December 31, 1980	25,000	—
Sale-Leaseback Agreements at rates based on an international bank-offered rate (approximately 3.5% at December 31, 1975) due to November 30 and December 31, 1978	39,653	45,254
Other Bonds, Debentures and Notes	11,373	19,108
Total Outstanding	510,175	480,856
Less Irrevocable Deposit to Retire 4½% Sinking Fund Debentures	2,492	—
Less Debt Due Within One Year	79,552	20,740
Total Consolidated Long-Term Debt	$428,131	$460,116

Debt due within one year includes a $60,000,000 issue of debentures maturing in 1976, which is intended to be refinanced on or before the maturity date.

See page 27 with respect to issuance and retirement of debt, credit agreements, compensating balance agreements and indenture provisions of the

At December 31, 1975, $240,197,000 of retained earnings were restricted under the terms of debenture indentures and credit agreements.

4. Capital Accounts

The shares of the Company's capital stock outstanding at December 31, 1975 and 1974 are summarized below:

	1975	1974
Common Stock, $3.75 Par; authorized 40,000,000 shares	10,057,932	10,057,037
Serial Preference Stock, $1.00 Par; authorized 10,000,000 shares:		
Series 1	688,798	688,798
Series 2	27,251	27,251
	716,049	716,049

The changes in Capital Stock, Premium on Capital Stock and Other Capital Surplus during 1975 and 1974, which were not material, were the result of conversions and transactions under stock option and compensation plans.

The conversion rates for Series 1 Preference Stock, which carries cumulative dividends at the rate of $.90 per year, are 1 to .24 share of common stock through April 30, 1979, with reductions thereafter. The conversion rates for Series 2 Preference Stock, which carries cumulative dividends at the rate of $3.60 per year, are four times those for Series 1. Four shares of Series 1 Stock are convertible at any time into one share of Series 2 Stock.

Upon involuntary liquidation, Series 1 Preference Stock is entitled to a preference of $15.00 per share. The Series 1 Stock is redeemable commencing May 1, 1979 at a redemption price of $16.00 per share, reduced by $.25 in each 12-month period beginning May 1, 1980 until May 1, 1983, after which the redemption price is $15.00 per share. The preference on liquidation and the redemption price per share for Series 2 Stock are four times the amounts per share for Series 1 Stock for the applicable period. The aggregate involuntary liquidation preference on serial preference stock amounted to $11,967,000 at December 31, 1975.

At December 31, 1975, 669,495 shares of unissued common stock were reserved for stock option and compensation plans and for conversion of serial preference stock.

5. Forest Products Joint Venture

Boise Southern Company, the forest products joint venture owned equally with Boise Cascade Corporation, had operating revenue of $118,980,000 and $100,282,000 for 1975 and 1974, respectively, and its contribution to consolidated net income was $2,338,000 and $3,310,000, respectively.

Shown on the next page, in thousands of dollars, in condensed form is the financial position of Boise Southern at December 31, 1975 and 1974.

Notes to Financial Statements (cont'd)

	1975	1974
ASSETS		
Current and Other	$ 45,546	$ 44,113
Net Timber, Timberlands and Minerals	78,752	82,564
Net Property and Equipment	105,607	112,128
	$229,905	$238,805
LIABILITIES AND EQUITY		
Current (including $12,000 and $21,280 of bank notes in 1975 and 1974, respectively)	$ 29,738	$ 38,070
Long-Term Debt	106,251	113,063
Participants' Equity	93,916	87,672
	$229,905	$238,805

Beauregard Parish, Louisiana, leases the pulp and paper mill to Boise Southern at rentals sufficient to pay by 1993 all amounts becoming due with respect to the Industrial Revenue Bonds of the Parish outstanding in the amount of $92,035,000 at the end of 1975. The leaseback of the mill from the Parish has been accounted for by Boise Southern for both book and tax purposes as a purchase. The Company and Southern Natural Gas Company have jointly and severally guaranteed, to the extent of 50%, the payment of such rentals and performance by Boise Southern under this lease. Southern Natural Gas has also agreed to indemnify Boise Cascade for 50% of its obligations under certain timberland leases, the rentals for which approximate $2,468,000 annually through 1990.

6. Gas Pipeline Joint Venture

Sea Robin Pipeline Company, the gas pipeline joint venture owned equally with United Gas Pipe Line Company, had operating revenue of $186,035,000 and $118,018,000 for 1975 and 1974, respectively, and its contribution to consolidated net income was $2,488,000 and $2,292,000 in those years.

Since April 1973 Sea Robin has collected revenues of $32,279,000, subject to refund, related to additional depreciation. Settlement of this issue is not expected to have a material effect on consolidated results of operations. See also page 7 with respect to a future rate increase.

Shown below, in thousands of dollars, in condensed form is the financial position of Sea Robin at December 31, 1975 and 1974:

	1975	1974
ASSETS		
Current and Other	$ 38,078	$ 38,583
Net Plant and Property	119,564	130,878
	$157,642	$169,461
LIABILITIES AND EQUITY		
Current and Other	$ 31,570	$ 35,160
Long-Term Debt	64,359	71,781
Participants' Equity (after distribution of $15,000 paid in 1975)	61,713	62,520
	$157,642	$169,461

obligated to purchase one-half of any gas available under Sea Robin's present and future gas purchase contracts. Sea Robin purchases a portion of its gas supplies from production properties of the Company's subsidiaries. These purchases accounted for 5.8% of Sea Robin's total purchases in 1975.

7. Commitments

At December 31, 1975, applications pending before the Federal Power Commission, construction and other commitments, including additional amounts due on advance payment contracts, relating to pipeline operations amounted to approximately $68,000,000.

Offshore had commitments for the construction and acquisition of drilling equipment, including its portion of joint venture commitments, and other assets of approximately $70,000,000.

In addition, Southern Energy Company, a wholly owned subsidiary of Southern Natural Gas, is participating in a project for the importation of liquefied natural gas and has yet to spend approximately $43,000,000 to complete construction.

8. Contingencies

Rates, Regulatory and Related Matters

On March 31, 1975 Southern Natural Gas filed a general rate increase with the Federal Power Commission applicable to sales of gas for resale. On May 15, 1975 the FPC issued an order accepting for filing approximately $66,000,000 of the requested annual increase. The increase went into effect on October 16, 1975, subject to refund pending a decision by the FPC. Additional amounts have been collected since July 1, 1974, subject to refund, under other minor rate increases.

Consolidated net income includes $7,686,000, or 76 cents per share, for 1975 and $1,354,000, or 14 cents per share, for 1974 applicable to natural gas sales revenues of $22,053,000 and $2,709,000, respectively, collected subject to refund. Included in the 1975 revenues subject to refund is $6,657,000 related to increased depreciation rates which, after applicable income taxes, has no effect on net income.

An action for damages in amounts not now determinable, in connection with operation of its gas delivery curtailment plan instituted in 1972 in response to an FPC order, was filed in January 1972 against Southern Natural Gas by one of its customers and is pending in federal court. Southern Natural Gas is also contesting an FPC order requiring refunds in an indeterminable amount in connection with that company's gas curtailment plans. Also, two lawsuits, one a purported class action, claiming additional royalty payments with respect to one field in southern Louisiana have been filed against Southern Natural Gas. The Company is unable to predict the outcome of these matters.

Other Legal Matters

Offshore is involved in disputes involving additional costs claimed by a shipyard which constructed one of

 AGO 668238

cancellation of a contract for another unit. Offshore and a subsidiary are also defendants in a lawsuit relating to the acquisition by the subsidiary of certain rights and property relating to an automatic drilling machine. Vancouver Plywood Co., Inc. is a defendant in antitrust actions. The Company is unable to predict the outcome of these proceedings, but does not anticipate that they will materially affect the consolidated financial position at December 31, 1975.

9. Foreign Operations

Offshore, approximately 91%-owned, is engaged mostly in foreign operations from which it derived the major portion of its contribution to consolidated net income for 1975 and 1974 of $25,973,000 and $18,362,000, respectively. The contribution by foreign operations to consolidated revenue was $139,200,000 in 1975 and $107,100,000 in 1974. At December 31, 1975 and 1974 net assets located outside the United States amounted to $258,000,000 and $168,900,000, respectively. Unremitted earnings of foreign subsidiaries of Offshore, before provision for foreign income taxes, aggregated $175,800,000 at December 31, 1975 and foreign and federal income taxes aggregating $38,500,000 have been paid or accrued on such earnings.

10. Stock Options and Retirement Income Plans

The Company has in effect a Qualified Stock Option Plan and an Incentive Compensation Plan. An aggregate of 500,000 shares was authorized to be issued pursuant to awards made under these plans. No options have been awarded under the Qualified Stock Option Plan.

In 1971, 1973 and 1974 awards under the Incentive Compensation Plan equivalent to a net of 96,487 shares of common stock were made to employees. Distributions of 60% of the awards and the appreciation on the remaining 40% may be paid in cash or stock in seven annual installments. Installments equivalent to 21,978 shares of common stock have been paid in cash or stock since 1972.

The effect on net income of the Incentive Compensation Plan and an earlier plan amounted to $379,000 and $193,000 in 1975 and 1974, respectively.

The cost of retirement income plans (see Note 1) totaled $6,098,000 and $5,119,000 for 1975 and 1974, respectively. During 1974 plan benefits and actuarial assumptions used to determine annual costs were modified with no significant effect on net income for the year.

11. Future Compliance with New Accounting Standard

As of January 1, 1976, in accordance with Statement of Financial Accounting Standards No. 5 issued by the Financial Accounting Standards Board, Offshore's previously accepted accounting policy of providing loss reserves in its insurance subsidiaries, equal to the losses, will be changed to a policy of recognizing losses at the time they occur. As a result of an amendment to this new standard prior periods will be restated as of January 1, 1976, to eliminate loss reserves accumulated through December 31, 1975. This will result in an increase, after applicable income taxes, in the Company's stockholders' equity herein of $5,722,000, of which $1,281,000 and $1,113,000 were applicable to net income for 1975 and 1974, respectively.

Report of Certified Public Accountants

The Stockholders of
Southern Natural Resources, Inc.

We have examined the accompanying consolidated balance sheets of Southern Natural Resources, Inc. and subsidiaries at December 31, 1975 and 1974 and the related consolidated statements of income, retained earnings and changes in financial position for the years then ended. Our examinations were made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As discussed in the first three paragraphs of Note 8, the Company has significant rate, regulatory and related matters pending, the final resolution of which cannot be determined at this time.

In our opinion, subject, in 1975, to the effects of such adjustment, if any, as may result from the outcome of the matters described in the preceding paragraph, the statements mentioned above present fairly the consolidated financial position of Southern Natural Resources, Inc. and subsidiaries at December 31, 1975 and 1974, and the consolidated results of operations and changes in financial position for the years then ended in conformity with generally accepted accounting principles applied on a consistent basis during the period. Further, in our opinion, subject to the outcome of the matters discussed above, the information for the years 1975 and 1974 pertaining to revenues and earnings relating to lines of business appearing on page 26 is fairly stated in all respects material to the consolidated results of operations of the Company.

ARTHUR YOUNG & COMPANY

New York, New York
January 29, 1976

Summary of Operations and Fifteen Year Statistical Review (Dollar amounts in millions—except per share amounts)

	1975	1974	1973	1972	1971
Revenues Including Other Income	$640.1	$538.6	$452.9	$396.6	$364.2
Costs and Operating Expenses	494.0	413.7	339.5	295.2	280.8
Interest Expense	30.6	28.3	23.0	20.4	20.7
Income Before Income Taxes	115.5	96.6	90.4	81.0	62.7
Income Taxes Including Foreign	46.2	37.4	36.6	33.0	23.3
Net Income	69.3	59.2	53.8	48.0	39.4
Dividends on Preference Stock	.7	.7	.7	.7	.7
Earnings Applicable to Common Shares	$ 68.6	$ 58.5	$ 53.1	$ 47.3	$ 38.7
Weighted Average Common Shares Outstanding During the Year (thousands) (1)	10,057	10,057	10,053	10,051	10,048
Earnings per Common Share					
—Total Consolidated (1)	$6.82	$5.82	$5.28	$4.70	$3.85
—Offshore's Contribution (1)	$2.58	$1.83	$1.39	$1.18	$1.07
—Forest Products' Contribution (1)	$ .23	$ .33	$ .43	$ .24	$ .10
Dividends per Common Share (1)	$1.65	$1.575	$1.50	$1.45	$1.40
Stockholders' Equity	$419.7	$367.7	$325.1	$287.4	$254.4
Minority Interest (2)	11.5	11.2	11.2	8.6	6.3
Total Debt, Including Amounts Due Within One Year	540.2	506.4	380.6	347.8	302.9
Total Capitalization	$971.4	$885.3	$716.9	$643.8	$563.6
Gross Plant	$1,266.4	$1,114.8	$988.2	$928.1	$862.1
Accumulated Depreciation, Depletion and Amortization	$ 489.1	$ 442.3	$394.7	$361.2	$333.4

(Management's Discussion and Analysis of the Summary of Operations for the last two fiscal years is presented on page 28.)

NOTES:

(1) Earnings per common share are based on the weighted average number of common shares outstanding during the periods since 1967. Prior to 1967 the Company computed earnings per share based on common shares outstanding at year end; accordingly, shares presented for those years represent the outstanding amount at year end. Such shares have been adjusted for the 2-for-1 split of the Company's common stock which became effective May 6, 1965.

1970	1969	1968	1967	1966	1965	1964	1963	1962	1961
$330.5	$290.0	$277.6	$234.1	$221.3	$198.4	$189.8	$175.2	$158.7	$153.2
259.8	231.4	220.5	181.8	174.0	157.1	151.5	140.1	126.4	122.3
15.3	9.4	9.5	7.5	6.7	5.7	5.6	6.5	6.4	7.0
55.4	49.2	47.6	44.8	40.6	35.6	32.7	28.6	25.9	23.9
19.3	16.7	16.8	15.4	16.2	14.1	12.7	12.5	11.1	10.2
36.1	32.5	30.8	29.4	24.4	21.5	20.0	16.1	14.8	13.7
.7	.7	.7	—	—	—	—	—	—	—
$ 35.4	$ 31.8	$ 30.1	$ 29.4	$ 24.4	$ 21.5	$ 20.0	$ 16.1	$ 14.8	$ 13.7
10,043	10,017	9,989	9,979	9,978	9,975	9,970	9,965	9,953	9,946
$3.52	$3.17	$3.01	$2.95	$2.45	$2.16	$2.01	$1.62	$1.49	$1.38
$ .90	$1.16	$1.06	$ .99	$ .64	$ .44	$ .31	$ .14	$ .06	$ .13
$ .03	—	—	—	—	—	—	—	—	—
$1.40	$1.40	$1.40	$1.30	$1.30	$1.175	$1.10	$1.05	$1.00	$1.00
$229.7	$204.5	$191.8	$169.4	$145.2	$133.7	$123.8	$114.7	$108.8	$103.9
4.5	2.9	4.8	3.6	3.4	2.5	1.8	1.5	1.2	1.0
285.7	255.6	214.6	192.9	160.1	148.7	130.9	141.6	138.5	148.3
$519.9	$463.0	$411.2	$365.9	$308.7	$284.9	$256.5	$257.8	$248.5	$253.2
$804.7	$721.9	$637.8	$590.7	$515.5	$482.9	$438.9	$410.1	$375.1	$363.6
$305.5	$281.1	$263.7	$232.9	$215.4	$196.7	$180.3	$161.8	$133.3	$118.8

(2) The Company owned approximately 81% of The Offshore Company until December 31, 1964, 87% until December 19, 1967, 83% until December 29, 1969 and 87% until January 23, 1970 when the ownership decreased 1% upon acquisition of H. B. Fowler & Company, Inc. on a pooling of interest basis. Purchases of Offshore's stock during 1974 increased the Company's ownership to 89% at December 31, 1974. In early 1975 additional purchases increased the Company's ownership to 90.7%.

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AGO 668242

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AGO 668243

Exhibit 10

STATEMENT

of

SOUTHERN NATURAL GAS COMPANY

before

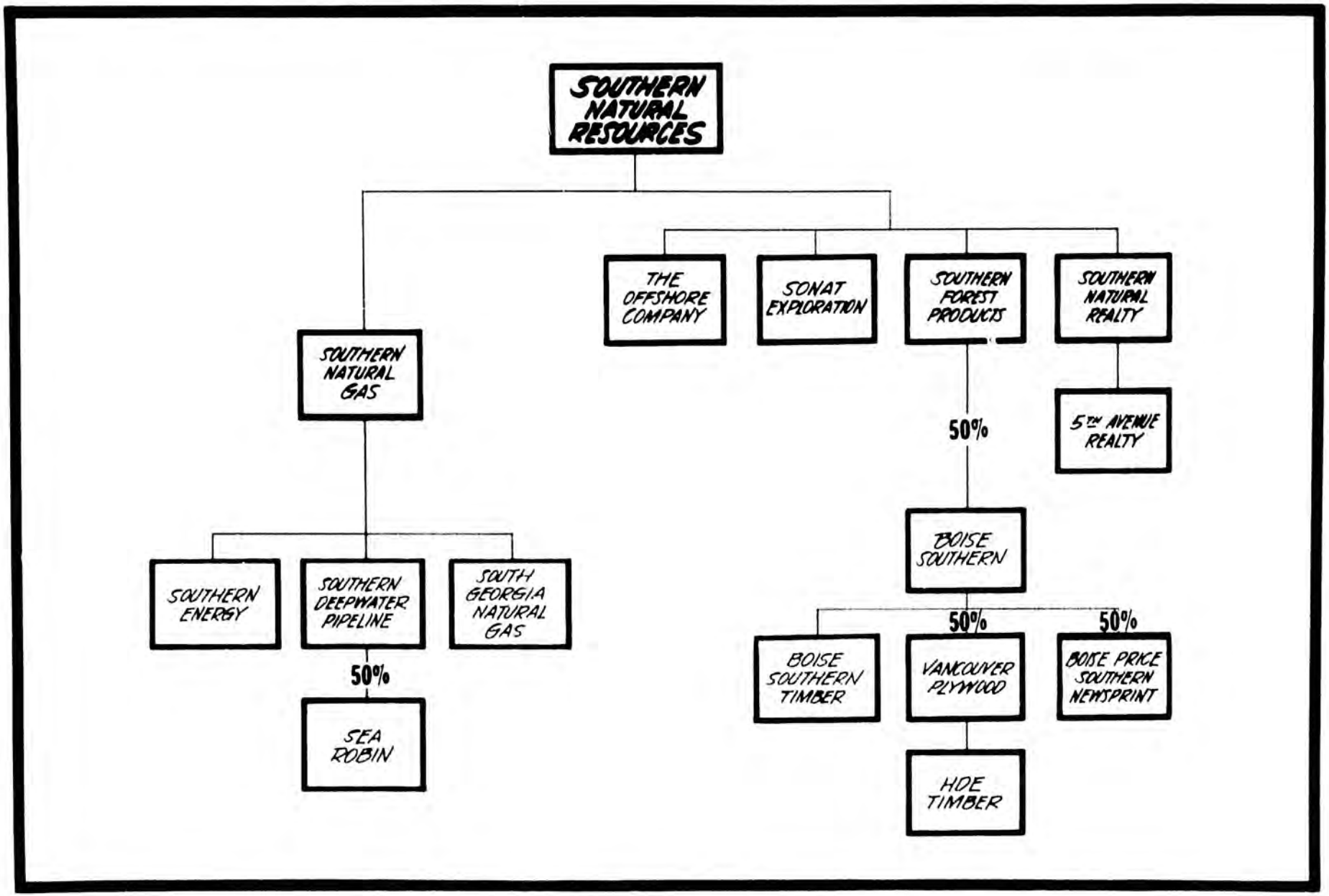
SPECIAL COMMITTEE OF

ALASKA LEGISLATURE



HEARINGS HELD ON
JANUARY 31 – FEBRUARY 2
1977

AGO 668245


SOUTHERN NATURAL RESOURCES
THE OFFSHORE COMPANY
SONAT EXPLORATION
SOUTHERN FOREST PRODUCTS
SOUTHERN NATURAL REALTY
SOUTHERN NATURAL GAS
5TH AVENUE REALTY
50%
BOISE SOUTHERN
SOUTHERN ENERGY
SOUTHERN DEEPWATER PIPELINE
SOUTH GEORGIA NATURAL GAS
50%
50%
50%
BOISE SOUTHERN TIMBER
VANCOUVER PLYWOOD
BOISE PRICE SOUTHERN NEWSPRINT
50%
SEA ROBIN
HDE TIMBER

AGO 668247

AGO 668248

UTILITIES — NATURAL GAS
MANAGEMENT PERFORMANCE
(AS REPORTED BY FORBES, JANUARY 1, 1977)

COMPANY	RETURN ON EQUITY 5-YEAR RANK	RETURN ON EQUITY DEBT/EQUITY RATIO	RETURN ON TOTAL CAPITAL 5-YEAR RANK	GROWTH EARNINGS/SHARE 5-YEAR RANK
SOUTHERN NATURAL RESOURCES	1	1.1	1	1
PANHANDLE EASTERN	2	1.3	4	4
TENNECO	3	0.9	3	3
ENSERCH	4	1.1	2	2
TEXAS EASTERN	5	1.0	5	5
EL PASO COMPANY	6	1.6	7	7
COASTAL STATES GAS	7	0.9	6	6

AGD 668249

COMPARATIVE DEBT RATINGS

(MOODY'S 1976)

	BONDS	DEBENTURES	C/PAPER
CONSOLIDATED		Aa	P-1
SOUTHERN NATURAL	Aa	A	P-1
PACIFIC GAS & ELECTRIC	Aa		P-1
COLUMBIA		A	P-1
NORTHERN NATURAL		A	P-1
PACIFIC LIGHTING		A	P-1
PANHANDLE EASTERN		A	P-2
COLORADO INTERSTATE	A	Baa	
NATURAL GAS P/L	A	Baa	P-1
MICHIGAN CONSOLIDATED	A		P-2
MICHIGAN WISCONSIN	A		P-2
MISSISSIPPI RIVER		Baa	P-2
NORTHWEST PIPELINE		Baa	
TEXAS GAS		Baa	P-2
PACIFIC GAS TRANSMISSION	Baa		
TEXAS EASTERN	Baa	Ba	P-2

AGO 668251

AGO 668252

AGO 668253

SOUTHERN NATURAL GAS COMPANY GENERAL SYSTEM MAP 1976

TENNESSEE
CHATTANOOGA
MISSISSIPPI
ALABAMA
GEORGIA
SOUTH CAROLINA
MULDON STORAGE FIELD
AMORY
MULDON STA.
CULLMAN
GADSDEN
ANNISTON
ROME
BELL MILLS STA.
ATLANTA
EXCHANGE WITH TRANSCO GAS PIPE LINE CORP.
AUGUSTA
COLUMBIA
AIKEN
BESSEMER
TARRANT STA.
BIRMINGHAM
DE ARMANVILLE STA.
LOUISVILLE STA.
COLUMBUS
McCONNELLS STA.
CALERA
GRANTVILLE
OCMULGEE STA.
WRENS STA.
KOSCIUSKO
REFORM STA.
TUSCALOOSA
HALL GATE STA.
CHARLESTON
MACON
THOMASTON STA.
MONROE
PERRYVILLE STA.
PICKENS STA.
TEXAS EASTERN TRANS.
ELMORE STA.
ELLERSLIE STA.
BEAR CREEK
ONWARD STA.
COLUMBUS
CARTHAGE
BIENVILLE STA.
VICKSBURG
RANKIN STA.
MERIDIAN
GALLION STA.
SELMA STA.
AUBURN STA.
SAVANNAH
ELBA ISLAND
LOGANSPORT STA.
SPIDER STA.
ENTERPRISE STA.
YORK STA.
MONTGOMERY
LOGANSPORT
BAY SPRINGS STA.
BAY SPRINGS
LAKE ST. JOHN
GWINVILLE STA.
CRANFIELD
PEARL RIVER STA.
BRUNSWICK
BIG ESCAMBIA CREEK FIELD
EXCHANGE WITH FLORIDA GAS TRANSMISSION CO.
TEXAS
LOUISIANA
DEXTER STA.
FRANKLINTON STA.
FLORIDA GAS TRANS.
FLORIDA
TALLAHASSEE
SO. SECTION 28
LACOMBE STA.
WHITE CASTLE STA.
TOCA STA.
POINT A LA HACHE
STUARDS BLUFF FIELD
WEST BLACK BAY
SHADYSIDE STA.
DUCK LAKE
GLORIA STA.
PATTERSON
BAYOU BAY
BLOCK 34 -- 47 FIELD LINE
BRETON ISLAND
LAKE SAND
MONTEGUT
COFFEE BAY
OLGA STA.
BLOCK 107
MAIN PASS
LAKE ENFERMER
LAKE WASHINGTON
ROMERE PASS
BLK. 60
WEST DELTA
SOUTH PASS

SCALE IN MILES 30 20 10 0 15 30

SYSTEM AS OF JANUARY, 1976

Legend

- PIPELINES OF SOUTHERN NATURAL GAS COMPANY
- PIPELINES OF SOUTHERN NATURAL GAS COMPANY UNDER CONSTRUCTION
- PIPELINES OF SEA ROBIN PIPELINE COMPANY
- PIPELINES OF SOUTH GEORGIA NATURAL GAS COMPANY
- COMPRESSOR STATIONS
- LNG REGASIFICATION FACILITY UNDER CONSTRUCTION
- GAS FIELDS
- POINTS OF DELIVERY OF GAS FROM UNITED GAS PIPELINE COMPANY
- SALES TO MAJOR TRANSMISSION COMPANIES
- CONNECTING PIPELINES OF OTHERS
- SALES TO NATURAL GAS DISTRIBUTION SYSTEMS
- DIRECT SALES TO LARGE INDUSTRIAL CONSUMERS
- STORAGE FIELD

SOUTHERN NATURAL GAS COMPANY
MAJOR RESALE CUSTOMERS

MISSISSIPPI

Mississippi Valley Gas Company – serves 92 Cities and Municipalities.

ALABAMA

Alabama Gas Corporation – serves 148 Cities and Municipalities.
Marshall County Gas District – serves 3 Cities
Southeast Alabama Gas District – serves 26 Cities and Municipalities.

GEORGIA

Atlanta Gas Light Company – serves 195 Cities and Municipalities.
Gas Light Company of Columbus – serves 1 City
Austell, City of – serves 5 Cities.
Dalton, City of – serves 2 Cities.

SOUTH CAROLINA

Carolina Pipeline Company – serves 47 Cities and Municipalities.
South Carolina Electric and Gas Company – serves 53 Cities and Municipalities.

TENNESSEE

Chattanooga Gas Company – serves 20 Cities and Municipalities.

Note: In addition to these major resale customers, Southern Natural Gas Company sells gas for resale to an additional 98 municipalities and gas distributors and to three connecting interstate pipeline companies:

Florida Gas Transmission Company
South Georgia Natural Gas Company
Texas Eastern Transmission Corporation

SOUTHERN NATURAL GAS COMPANY
DIRECT SALES CUSTOMERS

ALABAMA

Air Reduction Sales Company, Inc.
Alabama Power Company
Alabaster Lime Co.
Allison Lumber Co.
American Can Company
Bickerstaff Clay Products Co., Inc.
Birmingham Hide and Tallow Co.
Vulcan Materials
Borden Chemical Company
Brown Wood Preserving Co.
Cement Asbestos Products Co.
Cheney Lime Company
Continental Can Company
Cordova Brick Company
Dolcito Quarry Company
Eason Pottery Works
Goodyear Tire & Rubber Co.
Gulf States Paper Corp.
Hercules Inc.
Hunt Oil Company
Lone Star Industries, Inc.
Longview Lime Corp.
McMillan – Bloedel United, Inc.
Mt. Vernon Mills, Inc.
National Cement Company
Ragland Brick Company
Martin-Marietta Cement Co.
William L. McDavid
U. S. Steel Corp.
Universal Atlas Cement Co.
West Point – Pepperell, Inc.

GEORGIA

Certain-Teed Products Corp.
Continental Can Company
Johns-Manville Products Corp. of Georgia
Kaiser Agricultural – Chemical Division
Savannah Sugar Refining Corporation
Union Bag Camp Corporation
West Point – Pepperell, Inc.

SOUTHERN NATURAL GAS COMPANY
DIRECT SALES CUSTOMERS
(Continued)

LOUISIANA

Amax Nickel Refining Co., Inc.
Mississippi River Grain Elevator, Inc.

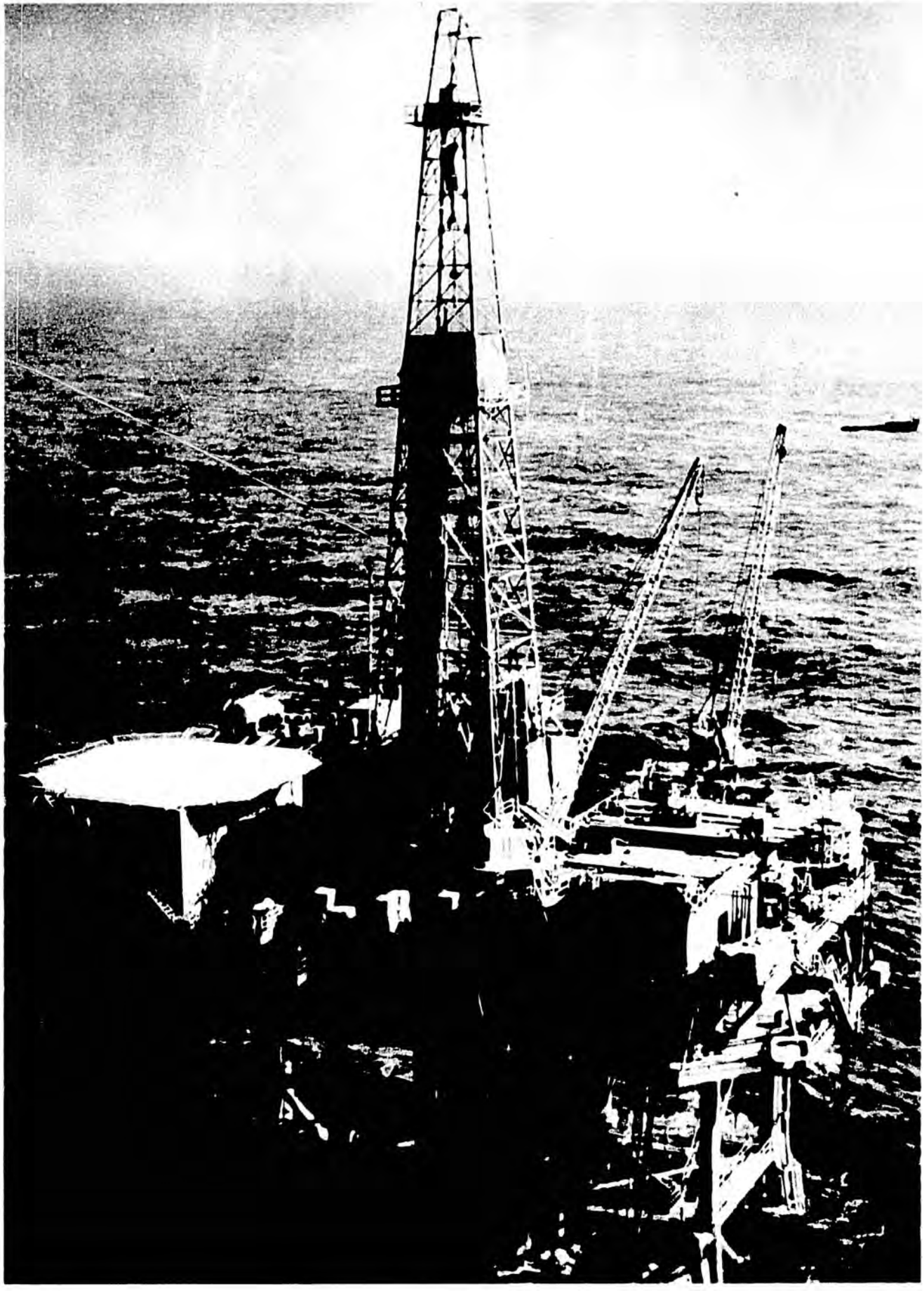
MISSISSIPPI

Atlas Tank Manufacturing Co., Inc.
Clinton Oil Company
Crystal Oil Company
Mississippi Chemical Corp.
Valley Cement Industries, Inc.
Oliver Electrical Mfg. Co.
Paymaster Oil Mill Co.
Southland Oil Company
Triad Oil and Gas Company
Hassie Hunt Trust
Issaquena Farms Corp.
Jones O'Brien, Inc.
King's Gin Company, Inc.
John W. McGowan
Pennzoil Producing Company
Sohio Petroleum Co.
Tinsley Well Service
Department of the Army

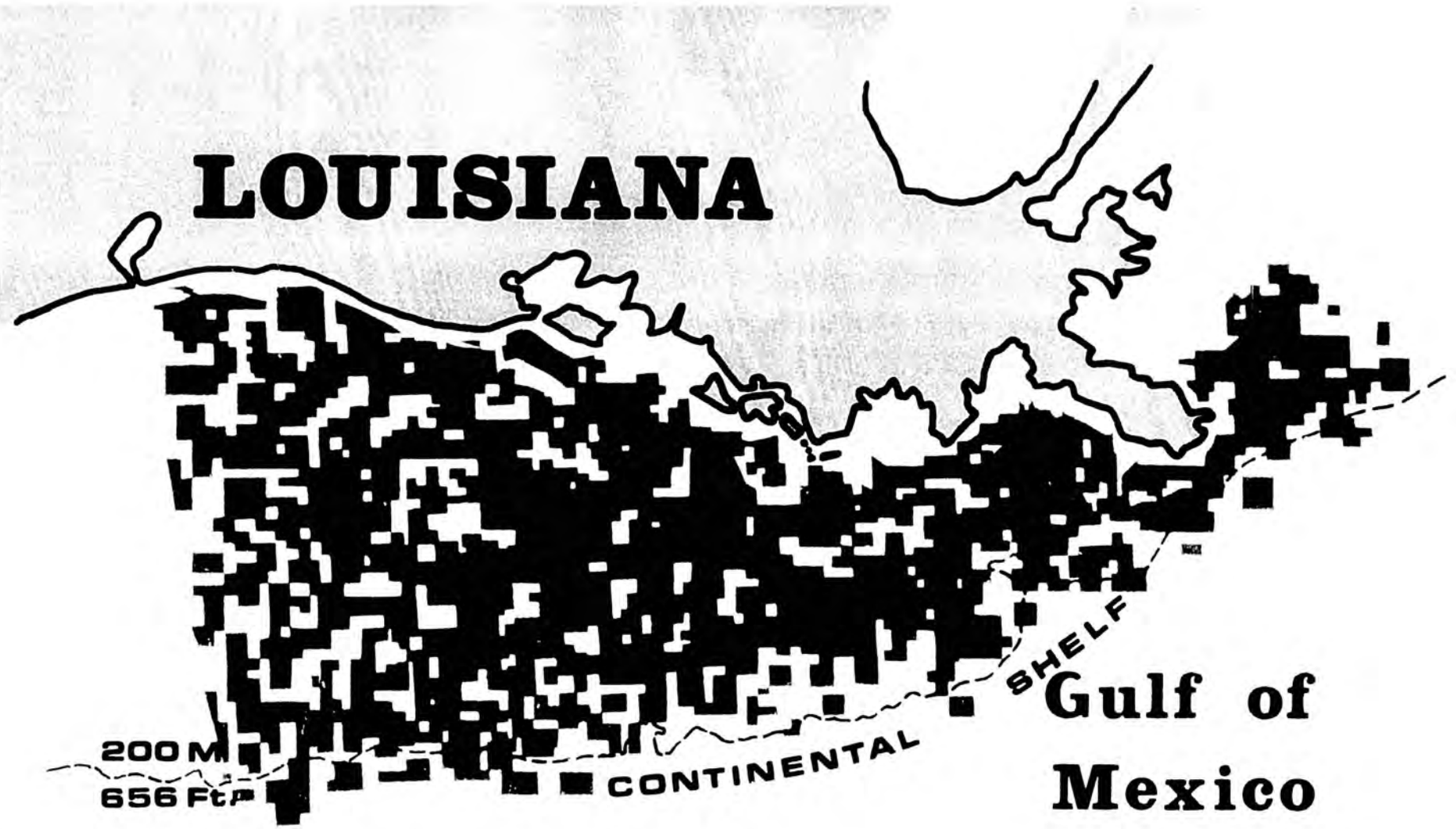
SOUTH CAROLINA

Dixie Clay Company
Graniteville Company
J. M. Huber Corporation
National Kaolin Products Company
Southeastern Clay Company
United Sierra Division, Cyprus Mines
United Merchants and Manufacturers, Inc.

AGO 668257



AGO 668259

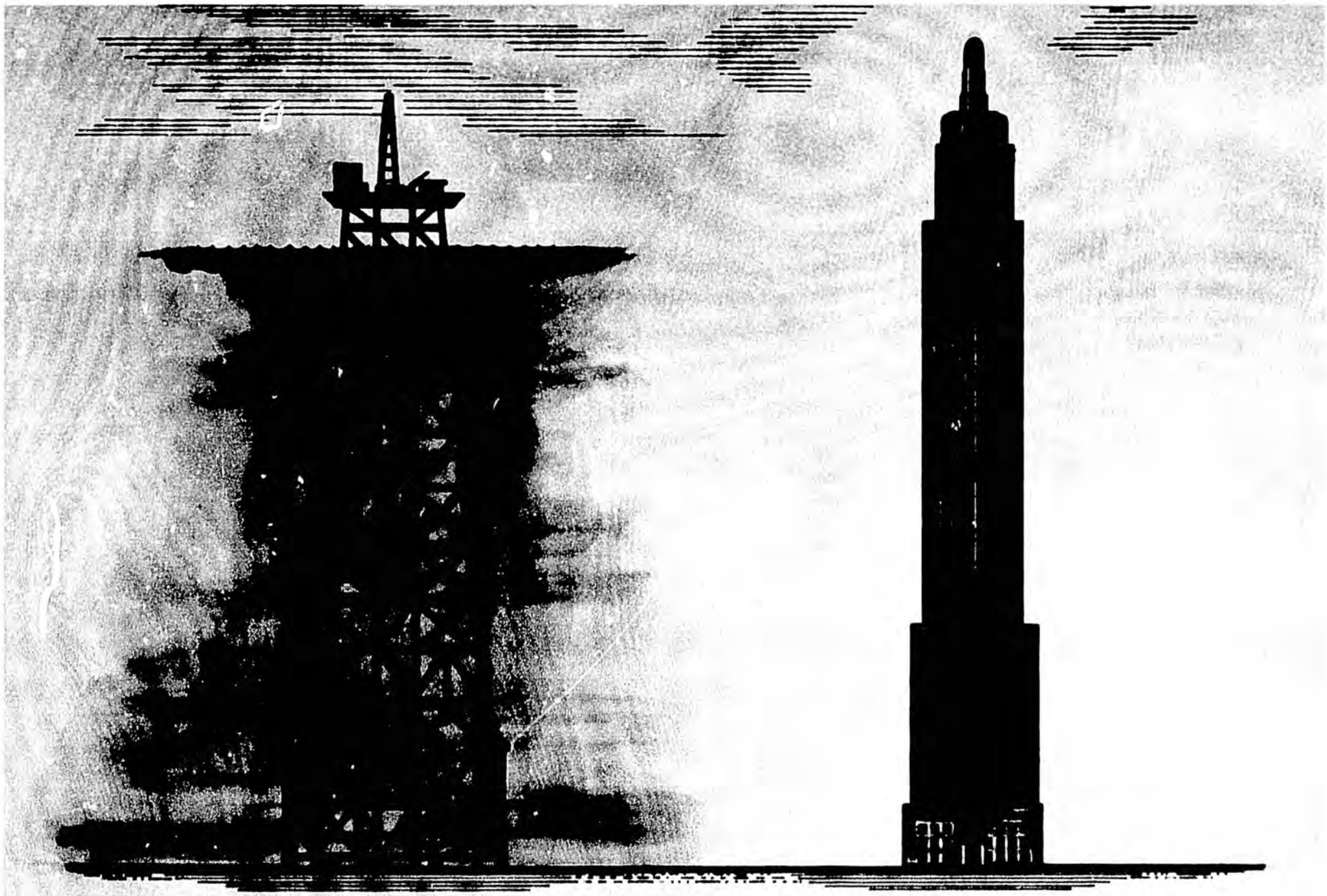


Total leased through Oct. 1976– 8,356,003 acres

AGO 668261

SOURCE : OIL and GAS JOURNAL

AGO 668262

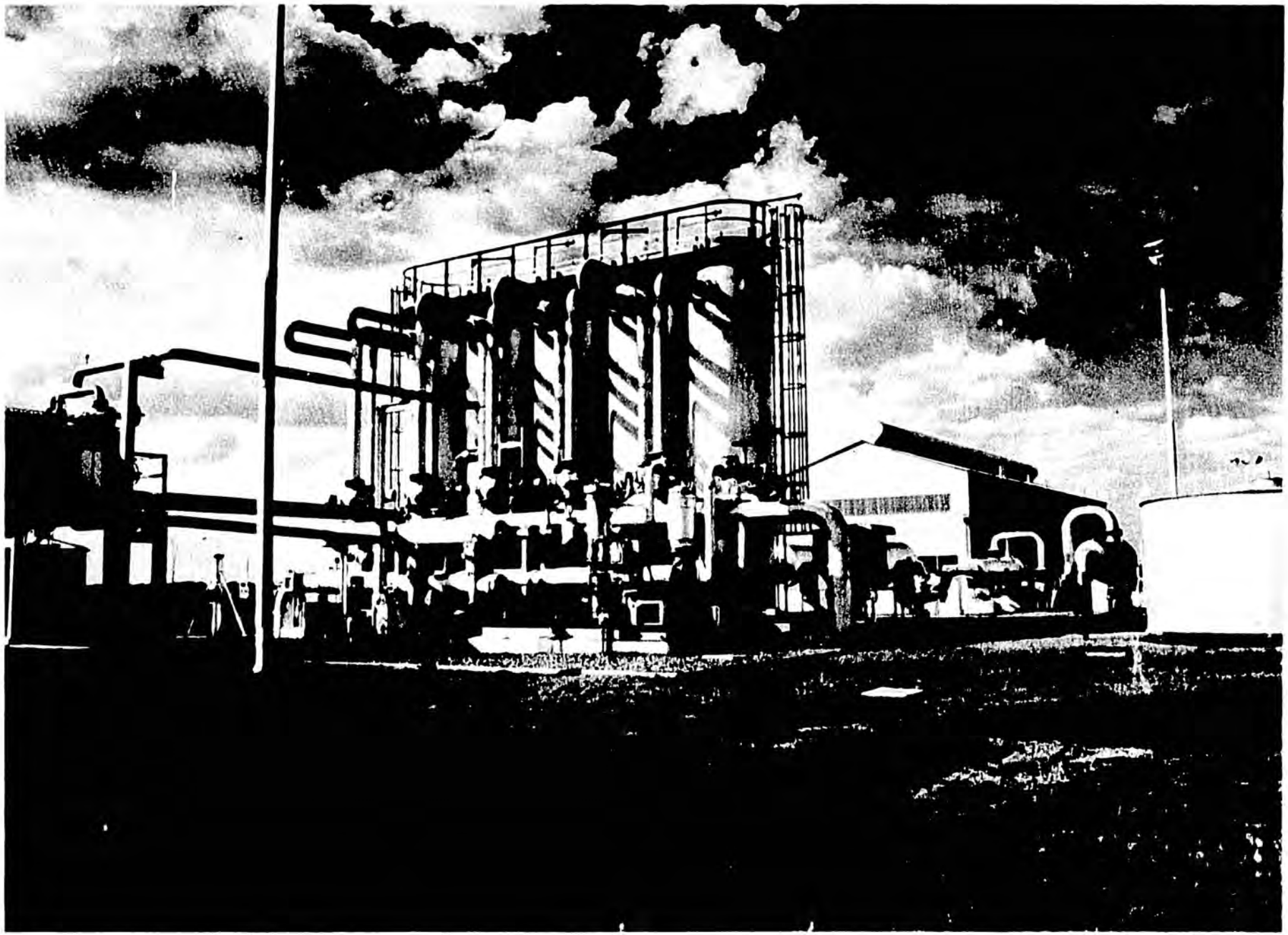


PLATFORM

EMPIRE STATE BUILDING

AGO 668263

AGO 668264



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AGO 668267

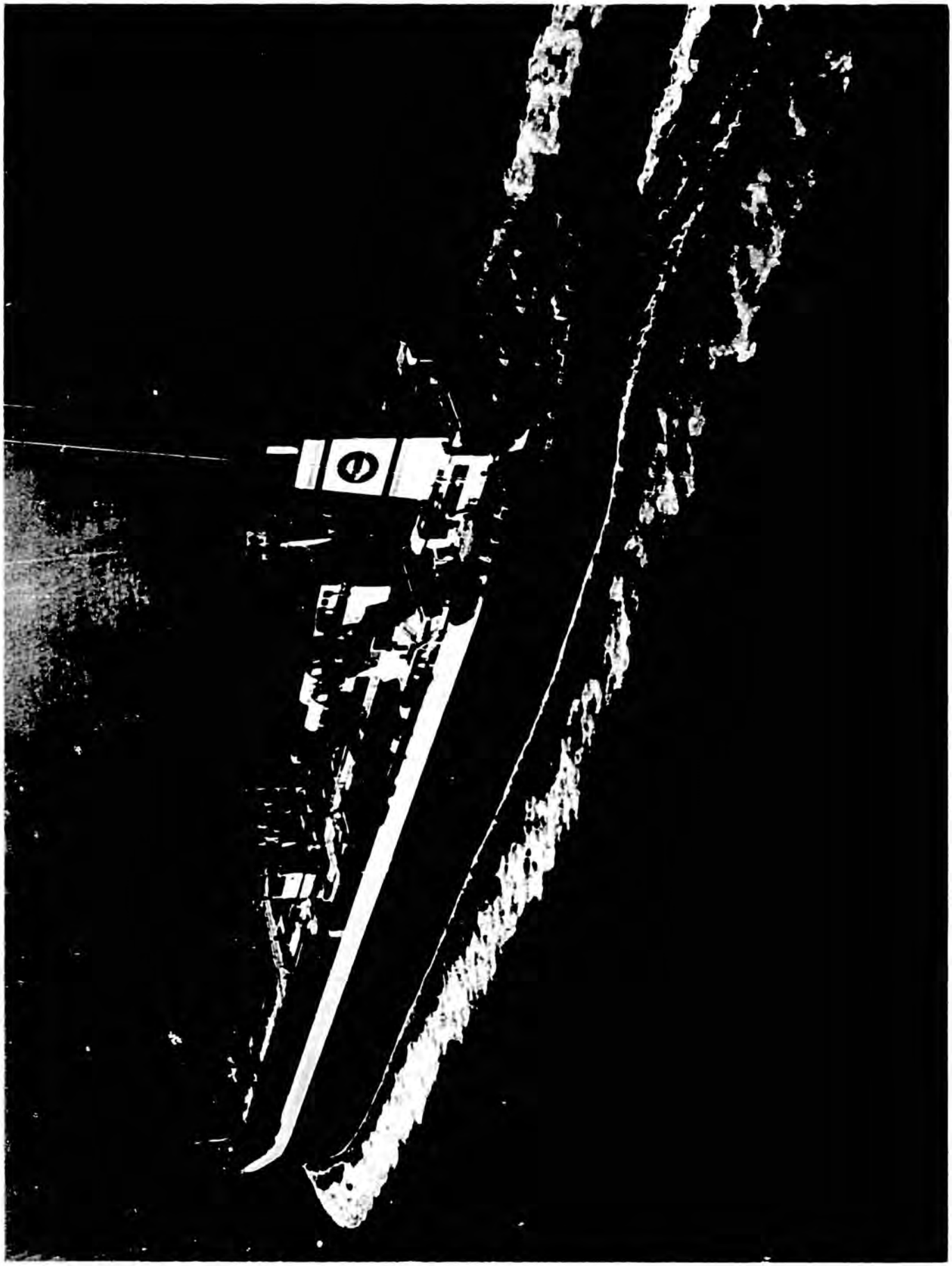
AGO 668268

LNG TANKER ROUTE - ARZEW TO SAVANNAH



AGO 668269

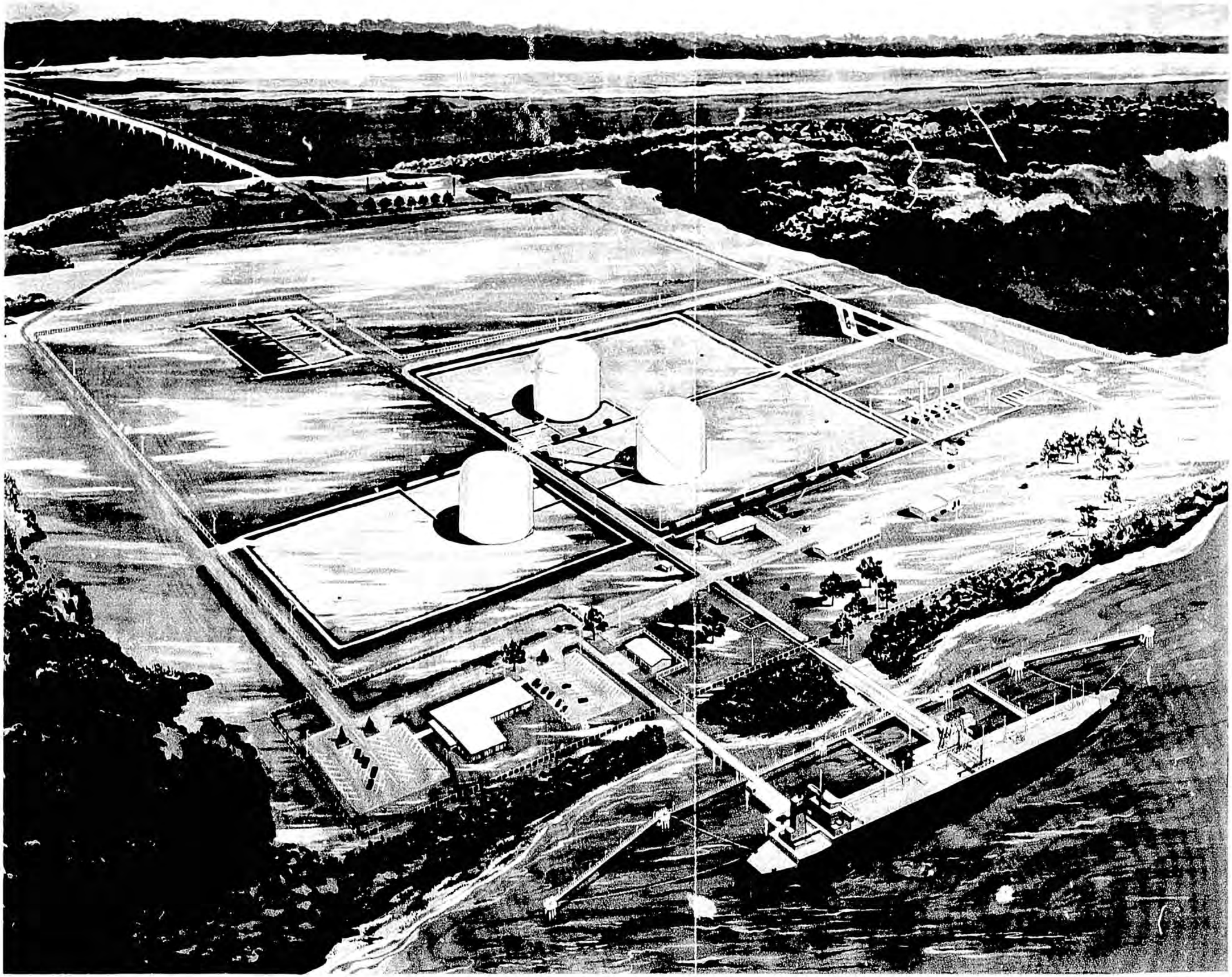
AGO 668270



AGO 668271

AGO 660273

AGO 66827A



SOUTHERN ENERGY COMPANY - ELBA ISLAND LNG FACILITY, SAVANNAH, GEORGIA

AGO 668275



AGO 668277


AGO 668279

SIGNIFICANT ADVANTAGES OF AN ALL-AMERICAN ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PROJECT COMPLETION

INITIAL DELIVERIES WITHIN 5 YEARS. FULL DELIVERIES IN LESS THAN 6 YEARS.

EMPLOYMENT

ESTIMATED 749,000 MAN YEARS OF DIRECT AND INDUCED U.S. EMPLOYMENT.

ENVIRONMENTAL

LIMITED ENVIRONMENTAL IMPACT ON STATE'S ENVIRONMENT. PRESERVES ARCTIC NATIONAL WILDLIFE RANGE.

ROYALTY SALES CONTRACT

RESERVES ROYALTY GAS TO INTRASTATE USE. MOST FAVORED NATIONS PRICING CLAUSE.

REVENUE AND EXPENDITURES

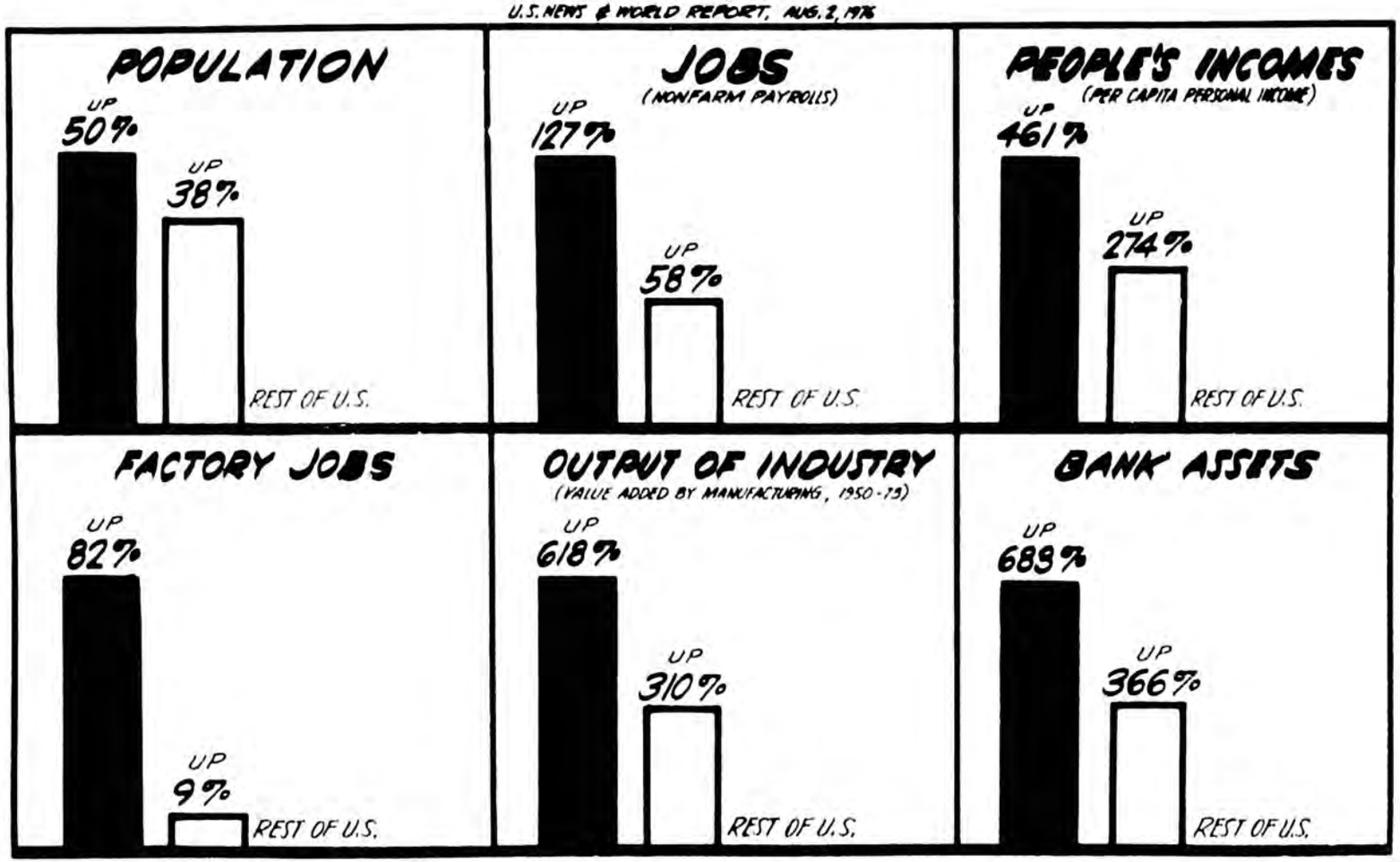
U.S., INCOME TAXES, ALASKA AD VALOREM TAXES AND OTHER TAXES	$19.2 BIL.
GOODS, SERVICES AND FACILITIES IN ALASKA	$4.6 BIL.
CONSTRUCTION PAYROLL IN ALASKA	$840 MIL.

AGD 668281

AGO 668282

ECONOMY OF THE SOUTH
1950—1976

U.S. NEWS & WORLD REPORT, AUG. 2, 1976



AGO 668283

SCOMM

#21:25

February 27, 1976

Senator Chancy Croft
President of the Senate
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

Representative Mike Bradner
Speaker of the House
Alaska State Legislature
State Capitol, Pouch V
Juneau, Alaska 99811

RE: Interim Report of the Joint Gas Pipeline Impact Committee

Dear Mr. President and Mr. Speaker:

Please consider this to be a letter of transmittal of the Interim Report of the Joint Gas Pipeline Impact Committee existing pursuant to H.B. 258 "The Gas Pipeline Impact Committee", Chapter 170 SLA 75. I request that this letter of transmittal, together with the report, be read into the appropriate Journal in each house.

As an aid to the interpretation of the Interim Report, I submit the followin as being my understanding of the sense of the Committee:

1. The Committee does not intend to suggest that the Commissioner of Natural Resources or the Royalty Board enter into unreasonable agreements with prospective purchasers. It is the sense of the Committee that Alaska should indicate that it is a "willing seller" of a portion of it's gas and is seeking a "willing buyer" on terms which will reserve as much gas as possible for future use to meet Alaska's internal domestic and other needs. The Committee would expect the executive to negotiate the best possible agreement. Understanding, that when such an agreement is negotiated, it may or may not be acceptable to the Legislature. It may be that the executive will negotiate the best possible agreement, at the same time recommending against its implementation on the basis that too little is received by the State and too much given by the State. We believe that it is imperative, however, in the conduct of the people's business, that such a tentative agreement be made public and its merits debated.

2. We do not wish to tie our negotiator's hands by quantifying the word "substantial" as used in paragraph #7 in the Committee's findings, and paragraph #1 of the Committee's recommendations.

3. The Committee does not suggest an arbitrary time deadline for our executive negotiators. We do point out, however, for the agreement to be finalized, legislative approval is necessary and a special session should be avoided if possible.

4. We do not intend in any manner to preclude negotiations for use of royalty gas within the State of Alaska and the further exploration of petrochemical and domestic uses. The major thrust of the Committee's recommendations is based on the belief that a Trans-Alaska pipeline is essential for future domestic and petrochemical in-state use options of North Slope gas.

5. Pursuant to other action by the Committee, the following have been introduced by the respective Rules Committee by request:

SCR 85/HCR 107	"Relating to the Impact on Alaska of a Trans-Canada Gas Transportation System"
SB 685/HB 848	"An Act Making a Special Appropriation to the Department of Natural Resources for the Purpose of Conducting Negotiations with Prospective Purchasers of North Slope Natural Gas and Providing for an Effective Date"
SB 686/HB 650	"An Act Relating to Waste of Oil and Gas and Providing for an Effective Date"
SB 687/HB 649	"An Act Relating to the Leases of State Land for Oil and Gas into taking of Royalty Gas from them and Providing for an Effective Date"

6. Finally, and most importantly, our recommendations are based on the facts and circumstances as they exist today.

The situation may change at any time rendering the presently recommended strategy inappropriate. For example, it has been suggested that the Federal Power Commission may conduct allocation proceedings nullifying contractual sales commitments. It may be more or less deregulated. The recent request of the President for authority to make the final route decision subsequent to January 1, 1977 may effect the political climate. It may be determined, as has been suggested by some, that neither the Trans-Alaska nor the Trans-Canada line are economically feasible at this time.

The recommendations of the Committee rely strongly on the advice of our consultant, Mr. Rush Moody, recently Vice-Chairman of the Federal Power Commission. The strategy may only be appropriate if the Federal Power Commission closes the certification hearings in May according to it's present schedule and further certifies one route based on the precedents, principles, and considerations customarily employed in past certification proceedings admittedly more limited in scope and of much less national significance.

The opportunity to use royalty gas to accomplish our public purposes as we perceive them may be lost unless we have substantially negotiated possible sale terms and are ready to move if and when the time arrives - which may be very soon.

Respectfully submitted,

Senator John Rader, Chairman
Gas Pipeline Impact Committee"

5. Affirmative, agressive action by the Governor, the Commissioner of Natural Resources, the State Royalty Board, and the Legislature with respect to the State's royalty gas is imperative.

6. Effective use of the State's royalty gas, to serve the best interests of the State, requires:

   a. The State must elect to take its royalty share of natural gas and natural gas liquids in kind.

   b. The State must commit a portion of its royalty gas to purchasers who will assist in securing approval of a Trans-Alaska transportation system, and who will thereafter utilize such a Trans-Alaska system.

7. Present levels of natural gas demand in Alaska permit a commitment of a portion of the State's royalty gas to purchasers outside the State; while every effort must be made to retain a substantial part of Alaska's gas for present and future in-state needs, it is in the overall best interests of the State to offer for sale outside the State, a substantial portion of the State's royalty gas to purchasers who can, and will, assist in securing authorization of a Trans-Alaska transportation system.

8. Those persons and firms interested in the construction and operation of a Trans-Alaska transportation system can materially alleviate State unemployment problems, and the State should, in striking a bargain for the commitment of State resources to a Trans-Alaska system, secure appropriate commitments for the hire and training of Alaska residents in the construction and operation of such a system.

9. Finally, the risk that non-action by the State, or delayed action by the State, will cause the selection of a Trans-Canadian routing, and the risk that the State will lose substantial benefit of its natural gas resource are so great, it is the sense of this Committee that State action must not be delayed.

BY REASON OF THE FOREGOING, IT IS THE RECOMMENDATION OF THIS COMMITTEE THAT:

1. The commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with interested out-of-state

INTERIM REPORT
OF THE
JOINT GAS PIPELINE IMPACT COMMITTEE

This Committee, through public hearings and staff investigation, has become convinced that immediate action by the State of Alaska is essential if the citizens of this State are to receive maximum benefit from the State's natural gas resource.

The Committee will issue a full and complete report on its findings and recommendations at a later date, but is impelled to submit this interim report to the Legislature and the people of the State of Alaska because of the urgency of the present situation.

The Committee finds and concludes the following:

1. A federal decision authorizing the transportation of North Slope natural gas across Canada would be inimical to the interests of the State of Alaska. The State's resource would be drained, its people denied access to a premium fuel and raw material, its work force deprived of employment opportunities, and productive economic growth would be thwarted.
2. A federal decision authorizing the transportation of North Slope natural gas across the State of Alaska to an open port will serve the best interests of the State.
3. The level of benefits, and burdens reasonably to be expected by the State as a consequence of any decision on a North Slope gas transportation system are of such magnitude that the routing decision must be regarded as critical to the future of the State. Action to secure a Trans-Alaska routing must be pursued as expeditiously as possible; no reasonable step should be left untaken.
4. The position of the state as owner of a one-eighth royalty in natural gas and natural gas liquids produced from State-owned lands on the North Slope creates an immediate opportunity for effective State action which can assist in securing a Trans-Alaska transportation system.

purchasers to reach definitive sales and/or exchange agreements covering disposition of substantial portions of the State's royalty gas on the best obtainable terms.

2. The Commissioner of Natural Resources and the State Royalty Board should undertake immediate negotiations with natural gas transporters involved in the proposal for a Trans-Alaska system to reach definitive transportation agreements covering the State's royalty gas sold for out-of-state use, and the State's withdrawal of the unsold portion of its royalty gas from the system for in-state use; appropriate commitments should be obtained with respect to hire and training of Alaska residents.
3. The arrangements and agreements so negotiated should be presented to the Legislature for ratification prior to the end of the Second Session of the Ninth Legislature to avoid, if possible, a special session.
4. The Legislature should hold itself ready for immediate consideration of and prompt action on, the recommendations of the Commissioner and Board.
5. Such arrangements, contracts, and agreements as are negotiated by the Commissioner and Board and approved by the Legislature should be incorporated into the pending applications for a Trans-Alaska transportation system, presented to the Federal Power Commission by the appropriate transporter-applicant, and approval thereof obtained in the pending Federal Power Commission proceedings.
6. The Legislature should adopt SCR 66 and further seek the active cooperation of all owners of North Slope gas in support of the Trans-Alaska pipeline route."

Public Law 94-586
94th Congress

An Act

To expedite a decision on the delivery of Alaska natural gas to United States markets, and for other purposes.

Oct. 22, 1976
[S. 3521]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Alaska Natural Gas Transportation Act of 1976.

SHORT TITLE

SECTION 1. This Act may be cited as the "Alaska Natural Gas Transportation Act of 1976". 15 USC 719 note.

CONGRESSIONAL FINDINGS

SEC. 2. The Congress finds and declares that— 15 USC 719.

(1) a natural gas supply shortage exists in the contiguous States of the United States;

(2) large reserves of natural gas in the State of Alaska could help significantly to alleviate this supply shortage;

(3) the expeditious construction of a viable natural gas transportation system for delivery of Alaska natural gas to United States markets is in the national interest; and

(4) the determinations whether to authorize a transportation system for delivery of Alaska natural gas to the contiguous States and, if so, which system to select, involve questions of the utmost importance respecting national energy policy, international relations, national security, and economic and environmental impact, and therefore should appropriately be addressed by the Congress and the President in addition to those Federal officers and agencies assigned functions under law pertaining to the selection, construction, and initial operation of such a system.

STATEMENT OF PURPOSE

SEC. 3. The purpose of this Act is to provide the means for making a sound decision as to the selection of a transportation system for delivery of Alaska natural gas to the contiguous States for construction and initial operation by providing for the participation of the President and the Congress in the selection process, and, if such a system is approved under this Act, to expedite its construction and initial operation by (1) limiting the jurisdiction of the courts to review the actions of Federal officers or agencies taken pursuant to the direction and authority of this Act, and (2) permitting the limitation of administrative procedures and effecting the limitation of judicial procedures related to such actions. To accomplish this purpose it is the intent of the Congress to exercise its constitutional powers to the fullest extent in the authorizations and directions herein made, and particularly with respect to the limitation of judicial review of actions of Federal officers or agencies taken pursuant thereto. 15 USC 719a.

89-139 (497) O - 76

DEFINITIONS

15 USC 719b.

SEC. 4. As used in this Act:

(1) the term "Alaska natural gas" means natural gas derived from the area of the State of Alaska generally known as the North Slope of Alaska, including the Continental Shelf thereof;

(2) the term "Commission" means the Federal Power Commission;

(3) the term "Secretary" means the Secretary of the Interior;

(4) the term "provision of law" means any provision of a Federal statute or rule, regulation, or order issued thereunder; and

(5) the term "approved transportation system" means the system for the transportation of Alaska natural gas designated by the President pursuant to section 7(a) or 8(b) and approved by joint resolution of the Congress pursuant to section 8.

FEDERAL POWER COMMISSION REVIEWS AND REPORTS

Proceedings, suspension.
15 USC 719c.
15 USC 717w.

SEC. 5. (a)(1) Notwithstanding any provision of the Natural Gas Act or any other provision of law, the Commission shall suspend all proceedings pending before the Commission on the date of enactment of this Act relating to a system for the transportation of Alaska natural gas as soon as the Commission determines to be practicable after such date, and the Commission may refuse to act on any application, amendment thereto, or other requests for action under the Natural Gas Act relating to a system for the transportation of Alaska natural gas until such time as (A) a decision of the President designating such a system for approval takes effect pursuant to section 8, (B) no such decision takes effect pursuant to section 8, or (C) the President decides not to designate such a system for approval under section 8 and so advises the Congress pursuant to section 7.

(2) In the event a decision of the President designating such a system takes effect pursuant to this Act, the Commission shall forthwith vacate proceedings suspended under paragraph (1) and, pursuant to section 9 and in accordance with the President's decision, issue a certificate of public convenience and necessity respecting such system.

(3) In the event such a decision of the President does not take effect pursuant to this Act or the President decides not to designate such a system and so advises the Congress pursuant to section 7, the suspension provided for in paragraph (1) of this subsection shall be removed.

Recommendation, submittal to President.

(b)(1) The Commission shall review all applications for the issuance of a certificate of public convenience and necessity relating to the transportation of Alaska natural gas pending on the date of enactment of this Act, and any amendments thereto which are timely made, and after consideration of any alternative transportation system which the Commission determines to be reasonable, submit to the President not later than May 1, 1977, a recommendation concerning the selection of such a transportation system. Such recommendation may be in the form of a proposed certificate of public convenience and necessity, or in such other form as the Commission determines to be appropriate, or may recommend that no decision respecting the selection of such a transportation system be made at this time or pursuant to this Act. Any recommendation that the President approve a particular transportation system shall (A) include a description of the nature and route of the system, (B) designate

a person to construct and operate the system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system. (C) if such recommendation is for an all-land pipeline transportation system, or a transportation system involving water transportation, include provision for new facilities to the extent necessary to assure direct pipeline delivery of Alaska natural gas contemporaneously to points both east and west of the Rocky Mountains in the lower continental United States.

(2) The Commission may, by rule, provide for the presentation of data, views, and arguments before the Commission or a delegate of the Commission pursuant to such procedures as the Commission determines to be appropriate to carry out its responsibilities under paragraph (1) of this subsection. Such a rule shall, to the extent determined by the Commission, apply, notwithstanding any provision of law that would otherwise have applied to the presentation of data, views, and arguments. Rule.

(3) The Commission may request such information and assistance from any Federal agency as the Commission determines to be necessary or appropriate to carry out its responsibilities under this Act. Any Federal agency requested to submit information or provide assistance shall submit such information to the Commission at the earliest practicable time after receipt of a Commission request. Cooperation.

(c) The Commission shall accompany any recommendation under subsection (b) (1) with a report, which shall be available to the public, explaining the basis for such recommendation and including for each transportation system reviewed or considered a discussion of the following: Report, public availability.

(1) for each year of the 20-year period which begins with the first year following the date of enactment of this Act, the estimated—

(A) volumes of Alaska natural gas which would be available to each region of the United States directly, or indirectly by displacement or otherwise, and

(B) transportation costs and delivered prices of any such volumes of gas by region;

(2) the effects of each of the factors described in subparagraphs (A) and (B) of paragraph (1) on the projected natural gas supply and demand for each region of the United States and on the projected supplies of alternative fuels available by region to offset shortages of natural gas occurring in such region for each such year;

(3) the impact upon competition;

(4) the extent to which the system provides a means for the transportation to United States markets of natural resources or other commodities from sources in addition to the Prudhoe Bay Reserve;

(5) environmental impacts;

(6) safety and efficiency in design and operation and potential for interruption in deliveries of Alaska natural gas;

(7) construction schedules and possibilities for delay in such schedules or for delay occurring as a result of other factors;

(8) feasibility of financing;

(9) extent of reserves, both proven and probable and their deliverability by year for each year of the 20-year period which

begins with the first year following the date of enactment of this Act;

(10) the estimate of the total delivered cost to users of the natural gas to be transported by the system by year for each year of the 20-year period which begins with the first year following the date of enactment of this Act;

(11) capability and cost of expanding the system to transport additional volumes of natural gas in excess of initial system capacity;

(12) an estimate of the capital and operating costs, including an analysis of the reliability of such estimates and the risk of cost overruns; and

(13) such other factors as the Commission determines to be appropriate.

(d) The recommendation by the Commission pursuant to this section shall not be based upon the fact that the Government of Canada or agencies thereof have not, by then rendered a decision as to authorization of a pipeline system to transport Alaska natural gas through Canada.

Transportation system, recommendation, submittal to President.

15 USC 717w.

Environmental impact statement, submittal to President.

(e) If the Commission recommends the approval of a particular transportation system, it shall submit to the President with such recommendation (1) an identification of those facilities and operations which are proposed to be encompassed within the term "construction and initial operation" in order to define the scope of directions contained in section 9 of this Act and (2) the terms and conditions permitted under the Natural Gas Act, which the Commission determines to be appropriate for inclusion in a certificate of public convenience and necessity to be issued respecting such system. The Commission shall submit to the President contemporaneously with its report an environmental impact statement prepared respecting the recommended system, if any, and each environmental impact statement which may have been prepared respecting any other system reported on under this section.

OTHER REPORTS

Comments, submittal to President.
15 USC 719d.

Public availability.

SEC. 6. (a) Not later than July 1, 1977, any Federal officer or agency may submit written comments to the President with respect to the recommendation and report of the Commission and alternative methods for transportation of Alaska natural gas for delivery to the contiguous States. Such comments shall be made available to the public by the President when submitted to him, unless expressly exempted from this requirement in whole or in part by the President, under section 552(b)(1) of title 5, United States Code. Any such written comment shall include information within the competence of such Federal officer or agency with respect to—

(1) environmental considerations, including air and water quality and noise impacts;

(2) the safety of the transportation systems;

(3) international relations, including the status and time schedule for any necessary Canadian approvals and plans;

(4) national security, particularly security of supply;

(5) sources of financing for capital costs;

(6) the impact upon competition;

(7) impact on the national economy, including regional natural gas requirements; and

(8) relationship of the proposed transportation system to other aspects of national energy policy.

(b) Not later than July 1, 1977, the Governor of any State, any municipality, State utility commission, and any other interested person may submit to the President such written comments with respect to the recommendation and report of the Commission and alternative systems for delivering Alaska natural gas to the contiguous States as they determine to be appropriate. Comments, submittal to President.

(c) Not later than July 1, 1977, each Federal officer or agency shall report to the President with respect to actions to be taken by such officer or agency under section 9(a) relative to each transportation system reported on by the Commission under section 5(c) and shall include such officer's or agency's recommendations with respect to any provision of law to be waived pursuant to section 8(g) in conjunction with any decision of the President which designates a system for approval. Report to President.

(d) Following receipt by the President of the Commission's recommendations, the Council on Environmental Quality shall afford interested persons an opportunity to present oral and written data, views, and arguments respecting the environmental impact statements submitted by the Commission under section 5(e). Not later than July 1, 1977, the Council on Environmental Quality shall submit to the President a report, which shall be contemporaneously made available by the Council to the public, summarizing any data, views, and arguments received and setting forth the Council's views concerning the legal and factual sufficiency of each such environmental impact statement and other matters related to environmental impact as the Council considers to be relevant. Report to President.

PRESIDENTIAL DECISION AND REPORT

SEC. 7. (a)(1) As soon as practicable after July 1, 1977, but not later than September 1, 1977, the President shall issue a decision as to whether a transportation system for delivery of Alaska natural gas should be approved under this Act. If he determines such a system should be so approved, his decision shall designate such a system for approval pursuant to section 8 and shall be consistent with section 5(b)(1)(C) to assure delivery of Alaska natural gas to points both east and west of the Rocky Mountains in the continental United States. The President in making his decision shall take into consideration the Commission's recommendation pursuant to section 5, the report under section 5(c), and any comments submitted under section 6; and his decision to designate a system for approval shall be based on his determination as to which system, if any, best serves the national interest. 15 USC 719e.

(2) The President, for a period of up to 90 additional calendar days after September 1, 1977, may delay the issuance of his decision and transmittal thereof to the House of Representatives and the Senate, if he determines (A) that there exists no environmental impact statement prepared relative to a system he wishes to consider or that any prepared environmental impact statement relative to a system he wishes to consider is legally or factually insufficient, or (B) that the additional time is otherwise necessary to enable him to make a sound decision on an Alaska natural gas transportation system. The President shall promptly, but in no case any later than September 1, 1977, notify the House of Representatives and the Transmittal to Congress, delay. Notice to Congress.

Senate if he so delays his decision and submit a full explanation of the basis of any such delay.

(3) If, on or before May 1, 1977, the President determines to delay issuance and transmittal of his decision to the House of Representatives and the Senate pursuant to paragraph (2) of this subsection, he may authorize a delay of not more than 90 days in the date of taking of any action specified in sections 5 and 6. The President shall promptly notify the House of Representatives and the Senate of any such authorization of delay and submit a full explanation of the basis of any such authorization.

Notice to Congress.

(4) If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he shall in such decision—

(A) describe the nature and route of the system designated for approval;

(B) designate a person to construct and operate such a system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system;

(C) identify those facilities, the construction of which, and those operations, the conduct of which, shall be encompassed within the term "construction and initial operation" for purposes of defining the scope of the directions contained in section 9 of this Act, taking into consideration any recommendation of the Commission with respect thereto; and

(D) identify those provisions of law, relating to any determination of a Federal officer or agency as to whether a certificate, permit, right-of-way, lease, or other authorization shall be issued or be granted, which provisions the President finds (i) involve determinations which are subsumed in his decision and (ii) require waiver pursuant to section 8(g) in order to permit the expeditious construction and initial operation of the transportation system.

Chairman, appointment.

(5) After a decision of the President designating an Alaska natural gas transportation system takes effect under section 8, the President shall appoint an officer of the United States, with the advice and consent of the Senate, or designate a board (consisting of such an officer, so appointed with the advice and consent of the Senate, as chairman and such other individuals as the President determines appropriate to serve on such board by reason of background, experience, or position) to serve as Federal inspector of construction of such transportation system, except that no such individual or officer may have a financial interest in the approved transportation system. Upon enactment of a joint resolution pursuant to section 8 approving such a system the Federal inspector shall—

Joint surveillance and monitoring agreement, establishment.

(A) establish a joint surveillance and monitoring agreement, approved by the President, with the State of Alaska similar to that in effect during construction of the trans-Alaska oil pipeline to monitor the construction of the approved transportation system within the State of Alaska;

(B) monitor compliance with applicable laws and the terms and conditions of any applicable certificate, rights-of-way, permit, lease, or other authorization issued or granted under section 9;

(C) monitor actions taken to assure timely completion of construction schedules and the achievement of quality of construction, cost control, safety, and environmental protection objectives and the results obtained therefrom;

(D) have the power to compel, by subpena if necessary, submission of such information as he deems necessary to carry out his responsibilities; and

(E) keep the President and the Congress currently informed on any significant departures from compliance and issue quarterly reports to the President and the Congress concerning existing or potential failures to meet construction schedules or other factors which may delay the construction and initial operation of the system and the extent to which quality of construction, cost control, safety and environmental protection objectives have been achieved.

(6) If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he may identify in such decision such terms and conditions permissible under existing law as he determines appropriate for inclusion with respect to any issuance or authorization directed to be made pursuant to section 9.

Transmittal to Congress.

(b) The decision of the President made pursuant to subsection (a) of this section shall be transmitted to both Houses of Congress and shall be considered received by such Houses for the purposes of this section on the first day on which both are in session occurring after such decision is transmitted. Such decision shall be accompanied by a report explaining in detail the basis for his decision with specific reference to the factors set forth in sections 5(c) and 6(a), and the reasons for any revision, modification of, or substitution for, the Commission recommendation.

Financial analysis.

(c) The report of the President pursuant to subsection (b) of this section shall contain a financial analysis for the transportation system designated for approval. Unless the President finds and states in his report submitted pursuant to this section that he reasonably anticipates that the system designated by him can be privately financed, constructed, and operated, his report shall also be accompanied by his recommendation concerning the use of existing Federal financing authority or the need for new Federal financing authority.

(d) In making his decision under subsection (a) the President shall inform himself, through appropriate consultation, of the views and objectives of the States, the Government of Canada, and other governments with respect to those aspects of such a decision that may involve intergovernmental and international cooperation among the Government of the United States, the States, the Government of Canada, and any other government.

(e) If the President determines to designate a transportation system for approval, the decision of the President shall take effect as provided in section 8, except that the approval of a decision of the President shall not be construed as amending or otherwise affecting the laws of the United States so as to grant any new financing authority as may have been identified by the President pursuant to subsection (c).

CONGRESSIONAL REVIEW

15 USC 719f.

SEC. 8. (a) Any decision under section 7(a) or 8(b) designating for approval a transportation system for the delivery of Alaska natural gas shall take effect upon enactment of a joint resolution within the first period of 60 calendar days of continuous session of Congress beginning on the date after the date of receipt by the Senate and House of Representatives of a decision transmitted pursuant to section 7(b) or subsection (b) of this section.

(b) If the Congress does not enact such a joint resolution within such 60-day period, the President, not later than the end of the 30th day following the expiration of the 60-day period, may propose a new decision and shall provide a detailed statement concerning the reasons for such proposal. The new decision shall be submitted in accordance with section 7(a) and transmitted to the House of Representatives and the Senate on the same day while both are in session and shall take effect pursuant to subsection (a) of this section. In the event that a resolution respecting the President's decision was defeated by vote of either House, no new decision may be transmitted pursuant to this subsection unless such decision differs in a material respect from the previous decision.

(c) For purposes of this section—

(1) continuity of session of Congress is broken only by an adjournment sine die; and

(2) the days on which either House is not in session because of an adjournment of more than 3 days to a day certain are excluded in the computation of the 60-day calendar period.

(d)(1) This subsection is enacted by Congress—

(A) as an exercise of the rulemaking power of each House of Congress, respectively, and as such it is deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in that House in the case of resolutions described by paragraph (2) of this subsection; and it supersedes other rules only to the extent that it is inconsistent therewith; and

(B) with full recognition of the constitutional right of either House to change the rules (so far as those rules relate to the procedure of that House) at any time, in the same manner and to the same extent as in the case of any other rule of such House.

"Resolution."

(2) For purposes of this Act, the term "resolution" means (A) a joint resolution, the resolving clause of which is as follows: "That the House of Representatives and Senate approve the Presidential decision on an Alaska natural gas transportation system submitted to the Congress on ————, 19 , and find that any environmental impact statements prepared relative to such system and submitted with the President's decision are in compliance with the Natural Environmental Policy Act of 1969."; the blank space therein shall be filled with the date on which the President submits his decision to the House of Representatives and the Senate; or (B) a joint resolution described in subsection (g).

42 USC 4321 note.

Referral to congressional committees.

(3) A resolution once introduced with respect to a Presidential decision on an Alaska natural gas transportation system shall be referred to one or more committees (and all resolutions with respect to the same Presidential decision on an Alaska natural gas transportation system shall be referred to the same committee or committees) by the President of the Senate or the Speaker of the House of Representatives, as the case may be.

(4)(A) If any committee to which a resolution with respect to a Presidential decision on an Alaska natural gas transportation system has been referred has not reported it at the end of 30 calendar days after its referral, it shall be in order to move either to discharge such committee from further consideration of such resolution or to discharge such committee from consideration of any other resolution with respect to such Presidential decision on an Alaska natural gas transportation system which has been referred to such committee.

(B) A motion to discharge may be made only by an individual favoring the resolution, shall be highly privileged (except that it may not be made after the committee has reported a resolution with respect to the same Presidential decision on an Alaska natural gas transportation system), and debate thereon shall be limited to not more than 1 hour, to be divided equally between those favoring and those opposing the resolution. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to. Debate limitation.

(C) If the motion to discharge is agreed to or disagreed to, the motion may not be made with respect to any other resolution with respect to the same Presidential decision on an Alaska natural gas transportation system.

(5)(A) When any committee has reported, or has been discharged from further consideration of, a resolution, but in no case earlier than 30 days after the date of receipt of the President's decision to the Congress, it shall be at any time thereafter in order (even though a previous motion to the same effect has been disagreed to) to move to proceed to the consideration of the resolution. The motion shall be highly privileged and shall not be debatable. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

(B) Debate on the resolution described in subsection (d)(2)(A) shall be limited to not more than 10 hours and on any resolution described in subsection (g) to one hour. This time shall be divided equally between those favoring and those opposing such resolution. A motion further to limit debate shall not be debatable. An amendment to, or motion to recommit the resolution shall not be in order, and it shall not be in order to move to reconsider the vote by which such resolution was agreed to or disagreed to or, thereafter within such 60-day period, to consider any other resolution respecting the same Presidential decision.

(6)(A) Motions to postpone, made with respect to the discharge from committee, or the consideration of a resolution and motions to proceed to the consideration of other business, shall be decided without debate.

(B) Appeals from the decision of the Chair relating to the application of the rules of the Senate or the House of Representatives, as the case may be, to the procedures relating to a resolution shall be decided without debate.

(e) The President shall find that any required environmental impact statement relative to the Alaska natural gas transportation system designated for approval by the President has been prepared and that such statement is in compliance with the National Environmental Policy Act of 1969. Such finding shall be set forth in the report of the President submitted under section 7. The President may supplement or modify the environmental impact statements prepared by the Commission or other Federal officers or agencies. Any such environmental impact statement shall be submitted contemporaneously with the transmittal to the Senate and House of Representatives of the President's decision pursuant to section 7(b) or subsection (b) of this section. 42 USC 4321 note. Submittal to congressional committees.

(f) Within 20 days of the transmittal of the President's decision to the Congress under section 7(b) or under subsection (b) of this section, (1) the Commission shall submit to the Congress a report commenting on the decision and including any information with regard to that decision which the Commission considers appropriate, Report, submittal to Congress.

Hearings. Report, submittal to Congress.

and (2) the Council on Environmental Quality shall provide an opportunity to any interested person to present oral and written data, views, and arguments on any environmental impact statement submitted by the President relative to any system designated by him for approval which is different from any system reported on by the Commission under section 5(c), and shall submit to the Congress a report summarizing any such views received. The committees in each House of Congress to which a resolution has been referred under subsection (d)(3) shall conduct hearings on the Council's report and include in any report of the committee respecting such resolution the findings of the committee on the legal and factual sufficiency of any environmental impact statement submitted by the President relative to any system designated by him for approval.

Congressional committee hearings.

Waiver, submittal to Congress.

(g)(1) At any time after a decision designating a transportation system is submitted to the Congress pursuant to this section, if the President finds that any provision of law applicable to actions to be taken under subsection (a) or (c) of section 9 require waiver in order to permit expeditious construction and initial operation of the approved transportation system, the President may submit such proposed waiver to both Houses of Congress.

(2) Such provision shall be waived with respect to actions to be taken under subsection (a) or (c) of section 9 upon enactment of a joint resolution pursuant to the procedures specified in subsections (c) and (d) of this section (other than subsection (d)(2) thereof) within the first period of 60 calendar days of continuous session of Congress beginning on the date after the date of receipt by the Senate and House of Representatives of such proposal.

(3) The resolving clause of the joint resolution referred to in this subsection is as follows: "That the House of Representatives and Senate approve the waiver of the provision of law ( ) as proposed by the President, submitted to the Congress on , 19 ." The first blank space therein being filled with the citation to the provision of law and the second blank space therein being filled with the date on which the President submits his decision to the House of Representatives and the Senate.

(4) In the case of action with respect to a joint resolution described in this subsection, the phrase "a waiver of a provision of law" shall be substituted in subsection (d) for the phrase "the Alaska natural gas transportation system.".

AUTHORIZATIONS

15 USC 719g.

SEC. 9. (a) To the extent that the taking of any action which is necessary or related to the construction and initial operation of the approved transportation system requires a certificate, right-of-way, permit, lease, or other authorization to be issued or granted by a Federal officer or agency, such Federal officer or agency shall—

(1) to the fullest extent permitted by the provisions of law administered by such officer or agency, but

(2) without regard to any provision of law which is waived pursuant to section 8(g) issue or grant such certificates, permits, rights-of-way, leases, and other authorizations at the earliest practicable date.

(b) All actions of a Federal officer or agency with respect to consideration of applications or requests for the issuance or grant of a certificate, right-of-way, permit, lease, or other authorization to which subsection (a) applies shall be expedited and any such application or

request shall take precedence over any similar applications or requests of the Federal officer or agency.

(c) Any certificate, right-of-way, permit, lease, or other authorization issued or granted pursuant to the direction under subsection (a) shall include the terms and conditions required by law unless waived pursuant to a resolution under section 8(g), and may include terms and conditions permitted by law, except that with respect to terms and conditions permitted but not required, the Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to include terms and conditions as would compel a change in the basic nature and general route of the approved transportation system or those the inclusion of which would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system. Terms and conditions.

(d) Any Federal officer or agency, with respect to any certificate, permit, right-of-way, lease, or other authorization issued or granted by such officer or agency, may, to the extent permitted under laws administered by such officer or agency add to, amend or abrogate any term or condition included in such certificate, permit, right-of-way, lease, or other authorization except that with respect to any such action which is permitted but not required by law, such Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to take such action if the terms and conditions to be added, or as amended, would compel a change in the basic nature and general route of the approved transportation system or would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system.

(e) Any Federal officer or agency to which subsection (a) applies, to the extent permitted under laws administered by such officer or agency, shall include in any certificate, permit, right-of-way, lease, or authorization issued or granted those terms and conditions identified in the President's decision as appropriate for inclusion except that the requirement to include such terms and conditions shall not limit the Federal officer or agency's authority under subsection (d) of this section.

JUDICIAL REVIEW

SEC. 10. (a) Notwithstanding any other provision of law, the actions of Federal officers or agencies taken pursuant to section 9 of this Act, shall not be subject to judicial review except as provided in this section. 15 USC 719h.

(b)(1) Claims alleging the invalidity of this Act may be brought not later than the 60th day following the date a decision takes effect pursuant to section 8 of this Act.

(2) Claims alleging that an action will deny rights under the Constitution of the United States, or that an action is in excess of statutory jurisdiction, authority, or limitations, or short of statutory right may be brought not later than the 60th day following the date of such action, except that if a party shows that he did not know of the action complained of, and a reasonable person acting in the circumstances would not have known, he may bring a claim alleging the invalidity of such action on the grounds stated above not later than the 60th day following the date of his acquiring actual or constructive knowledge of such action.

(c)(1) A claim under subsection (b) shall be barred unless a complaint is filed prior to the expiration of such time limits in the United States Court of Appeals for the District of Columbia acting as a

Special Court. Such court shall have exclusive jurisdiction to determine such proceeding in accordance with the procedures hereinafter provided, and no other court of the United States, of any State, territory, or possession of the United States, or of the District of Columbia, shall have jurisdiction of any such claim in any proceeding instituted prior to or on or after the date of enactment of this Act.

(2) Any such proceeding shall be assigned for hearing and completed at the earliest possible date, shall, to the greatest extent practicable, take precedence over all other matters pending on the docket of the court at that time, and shall be expedited in every way by such court and such court shall render its decision relative to any claim within 90 days from the date such claim is brought unless such court determines that a longer period of time is required to satisfy requirements of the United States Constitution.

USC prec. title 1.

(3) The enactment of a joint resolution under section 8 approving the decision of the President shall be conclusive as to the legal and factual sufficiency of the environmental impact statements submitted by the President relative to the approved transportation system and no court shall have jurisdiction to consider questions respecting the sufficiency of such statements under the National Environmental Policy Act of 1969.

42 USC 4321 note.

SUPPLEMENTAL ENFORCEMENT AUTHORITY

Compliance order or civil action. 5 USC 719i.

SEC. 11 (a) In addition to remedies available under other applicable provisions of law, whenever any Federal officer or agency determines that any person is in violation of any applicable provision of law administered or enforceable by such officer or agency or any rule, regulation, or order under such provision, including any term or condition of any certificate, right-of-way, permit, lease, or other authorization, issued or granted by such officer or agency, such officer or agency may—

(1) issue a compliance order requiring such person to comply with such provision or any rule, regulation, or order thereunder, or

(2) bring a civil action in accordance with subsection (c).

(b) Any order issued under subsection (a) shall state with reasonable specificity the nature of the violation and a time of compliance, not to exceed 30 days, which the officer or agency, as the case may be, determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

Civil penalty.

(c) Upon a request of such officer or agency, as the case may be, the Attorney General may commence a civil action for appropriate relief, including a permanent or temporary injunction or a civil penalty not to exceed $25,000 per day for violations of the compliance order issued under subsection (a). Any action under this subsection may be brought in any district court of the United States for the district in which the defendant is located, resides, or is doing business, and such court shall have jurisdiction to restrain such violation, require compliance, or impose such penalty or give ancillary relief.

Jurisdiction.

EXPORT LIMITATIONS

15 USC 719j. 15 USC 717w.

SEC. 12. Any exports of Alaska natural gas shall be subject to the requirements of the Natural Gas Act and section 103 of the Energy

Policy and Conservation Act, except that in addition to the requirements of such Acts, before any Alaska natural gas in excess of 1,000 Mcf per day may be exported to any nation other than Canada or Mexico, the President must make and publish an express finding that such exports will not diminish the total quantity or quality nor increase the total price of energy available to the United States. 42 USC 6212. Presidential finding, publication.

EQUAL ACCESS TO FACILITIES

SEC. 13. (a) There shall be included in the terms of any certificate, permit, right-of-way, lease, or other authorization issued or granted pursuant to the directions contained in section 9 of this Act, a provision that no person seeking to transport natural gas in the Alaska natural gas transportation system shall be prevented from doing so or be discriminated against in the terms and conditions of service on the basis of degree of ownership, or lack thereof, of the Alaska natural gas transportation system. 15 USC 719k.

(b) The State of Alaska is authorized to ship its royalty gas on the approved transportation system for use within Alaska and, to the extent its contracts for the sale of royalty gas so provide, to withdraw such gas from the interstate market for use within Alaska; the Federal Power Commission shall issue all authorizations necessary to effectuate such shipment and withdrawal subject to review by the Commission only of the justness and reasonableness of the rate charged for such transportation.

ANTITRUST LAWS

SEC. 14. Nothing in this Act, and no action taken hereunder, shall imply or effect an amendment to, or exemption from, any provision of the antitrust laws. 15 USC 719l

AUTHORIZATION

SEC. 15. There is hereby authorized to be appropriated beginning in fiscal year 1978 and each fiscal year thereafter, such sums as may be necessary to carry out the functions of the Federal inspector appointed by the President with the advice and consent of the Senate under section 7. 15 USC 719m.

SEPARABILITY

SEC. 16. If any provision of this Act, or the application thereof, is held invalid, the remainder of this Act shall not be affected thereby. 15 USC 719n.

CIVIL RIGHTS

SEC. 17. All Federal officers and agencies shall take such affirmative action as is necessary to assure that no person shall, on the grounds of race, creed, color, national origin, or sex, be excluded from receiving, or participating in any activity conducted under, any certificates, permit, right-of-way, lease, or other authorization granted or issued pursuant to this Act. The appropriate Federal officers and agencies shall promulgate such rules as are necessary to carry out the purposes of this section and may enforce this section, and any rules promulgated under this section through agency and department provisions and rules which shall be similar to those established and in effect under title VI of the Civil Rights Act of 1964. Discrimination, prohibition. 15 USC 719o. Rules. 42 USC 2000d *et seq.*

REPORT ON THE EQUITABLE ALLOCATION OF NORTH SLOPE CRUDE OIL

Report to Congress. 43 USC 1651 note.

SEC. 18. Within 6 months of the date of enactment of this Act, the President shall determine what special expediting procedures are necessary to insure the equitable allocation of north slope crude oil to the Northern Tier States of Washington, Oregon, Idaho, Montana, North Dakota, Minnesota, Michigan, Wisconsin, Illinois, Indiana, and Ohio (hereinafter referred to as the "Northern Tier States") to carry out the provisions of section 410 of Public Law 93-153 and shall report his findings to the Congress. In his report, the President shall identify the specific provisions of law, which relate to any determination of a Federal officer or agency as to whether to issue or grant a certificate, permit, right-of-way, lease, or other authorization in connection with the construction of an oil delivery system serving the Northern Tier States and which the President finds would inhibit the expeditious construction of such a system in the contiguous States of the United States. In addition the President will include in his report a statement which demonstrates the impact that the delivery system will have on reducing the dependency of New England and the Middle Atlantic States on foreign oil imports. Furthermore, all Federal officers and agencies shall, prior to the submission of such report and further congressional action relating thereto, expedite to the fullest practicable extent all applications and requests for action made with respect to such an oil delivery system.

43 USC 1651 note.

ANTITRUST STUDY

Report to Congress. 15 USC 719 note.

SEC. 19. The Attorney General of the United States is authorized and directed to conduct a thorough study of the antitrust issues and problems relating to the production and transportation of Alaska natural gas and, not later than six months following the date of enactment of this Act, to complete such study and submit to the Congress a report containing his findings and recommendations with respect thereto.

EXPIRATION

15 USC 719 note.

SEC. 20. This Act shall terminate in the event that no decision of the President takes effect under section 8 of this Act, such termination to occur at the end of the last day on which a decision could be, but is not, approved under such section.

Approved October 22, 1976.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 94-1658, Pt. 1 (Comm. on Interstate and Foreign Commerce).
SENATE REPORT No. 94-1020 (Comm. on Commerce and Comm. on Interior and Insular Affairs).
CONGRESSIONAL RECORD, Vol. 122 (1976):
July 1, considered and passed Senate.
Sept. 30, considered and passed House, amended.
Oct. 1, Senate agreed to House amendments.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 12, No. 44:
Oct. 22, Presidential statement.

○

ALASKA NATURAL GAS TRANSPORTATION

TIMETABLE

Federal decision-making steps under the Alaska Natural Gas Transportation Act of 1976

(1) Recommendations to President

A. Federal Power Commission
   1. Hearings concluded in the El Paso Alaska certificate proceeding 11/12/76
   2. F.P.C. Staff submitted position brief to F.P.C. on 12/7/76; brief supported Arctic Gas route
   3. F.P.C. hearings closed 12/12/76
   4. Initial decision by Administrative Law Judge Litt due 2/1/77
   5. Briefs on exceptions to Litt decision due 3/1/77
   6. F.P.C. recommendation to President on route selection due 5/1/77

B. Council on Environmental Quality
   1. Hearings on Environmental Impact Statements on all three route proposals
   2. C.E.Q. recommmendation to President due 7/1/77

C. State (and other interested parties) comments to Pres due 7/1/77

(2) Presidential Decision

A. President makes route recommendation to Congress by 9/1/77
   1. President may delay decision by up to 90 days

(3) Congressional decision

A. Congress has 60 days to select route after Presidential recommendation
   1. If Congress approves Presidential recommendation through Joint Resolution within 60 days, the recommendation takes effect.
   2. If Congress does not approve Presidential recommendation through Joint Resolution within 60 days, the President has 30 days to submit another recommendation. Congress then has another 60 days to act.

(4) Federal Agency approval

A. After Congressional approval, all federal agencies charged with issuance of certificates, permits, rights-of-way, leases, etc. "as soon as practicable".

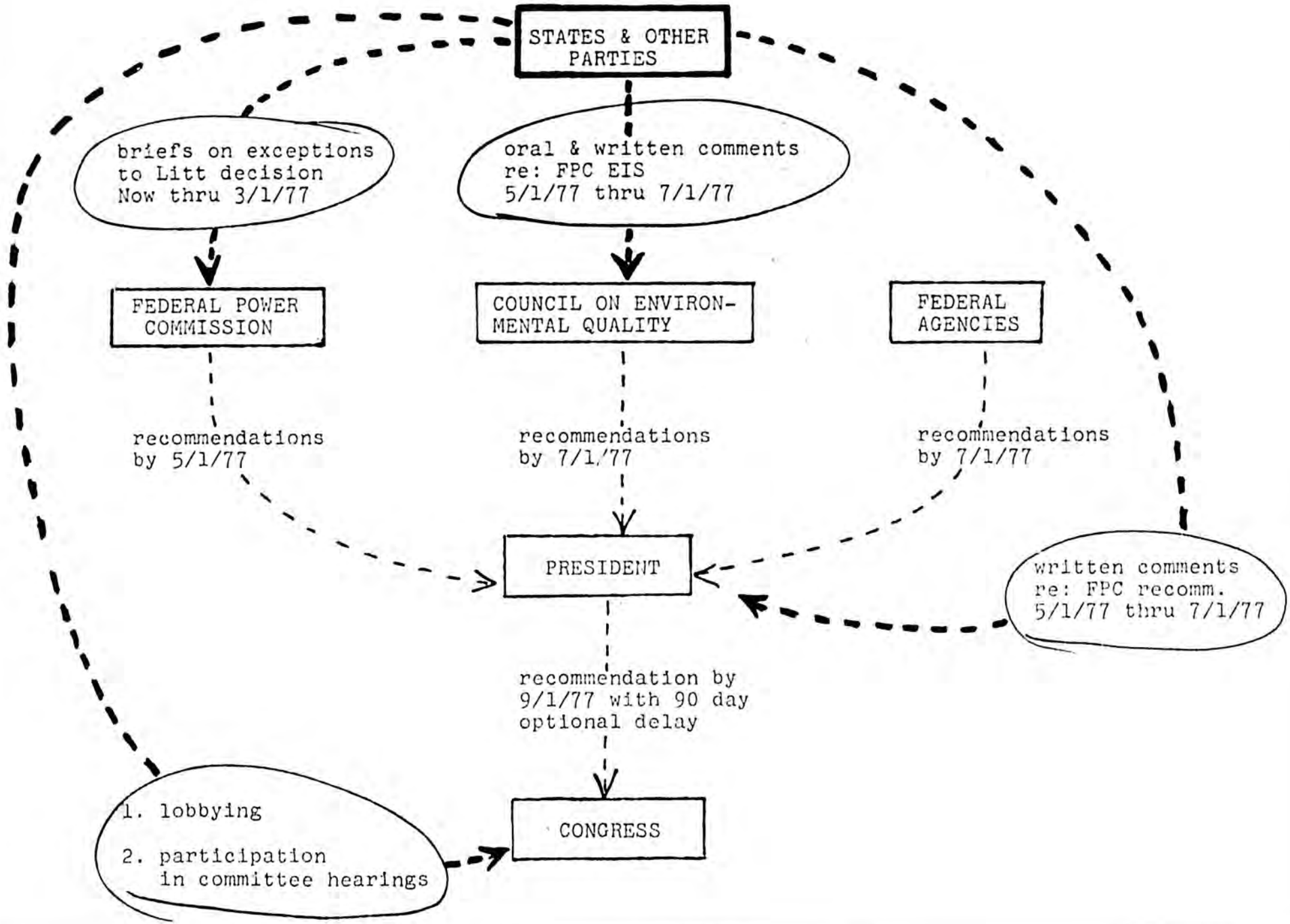
(5) Judicial Review

A. Judicial review is limited to Constitutional questions and statutory powers, not on the substance of the decision. All litigation (on either the resolution or on the 1976 Act) must be filed within 60 days of the Congressional decision.

*Prepared 1/30/77 for House and Senate Special Committees on the Sale of Royalty Gas

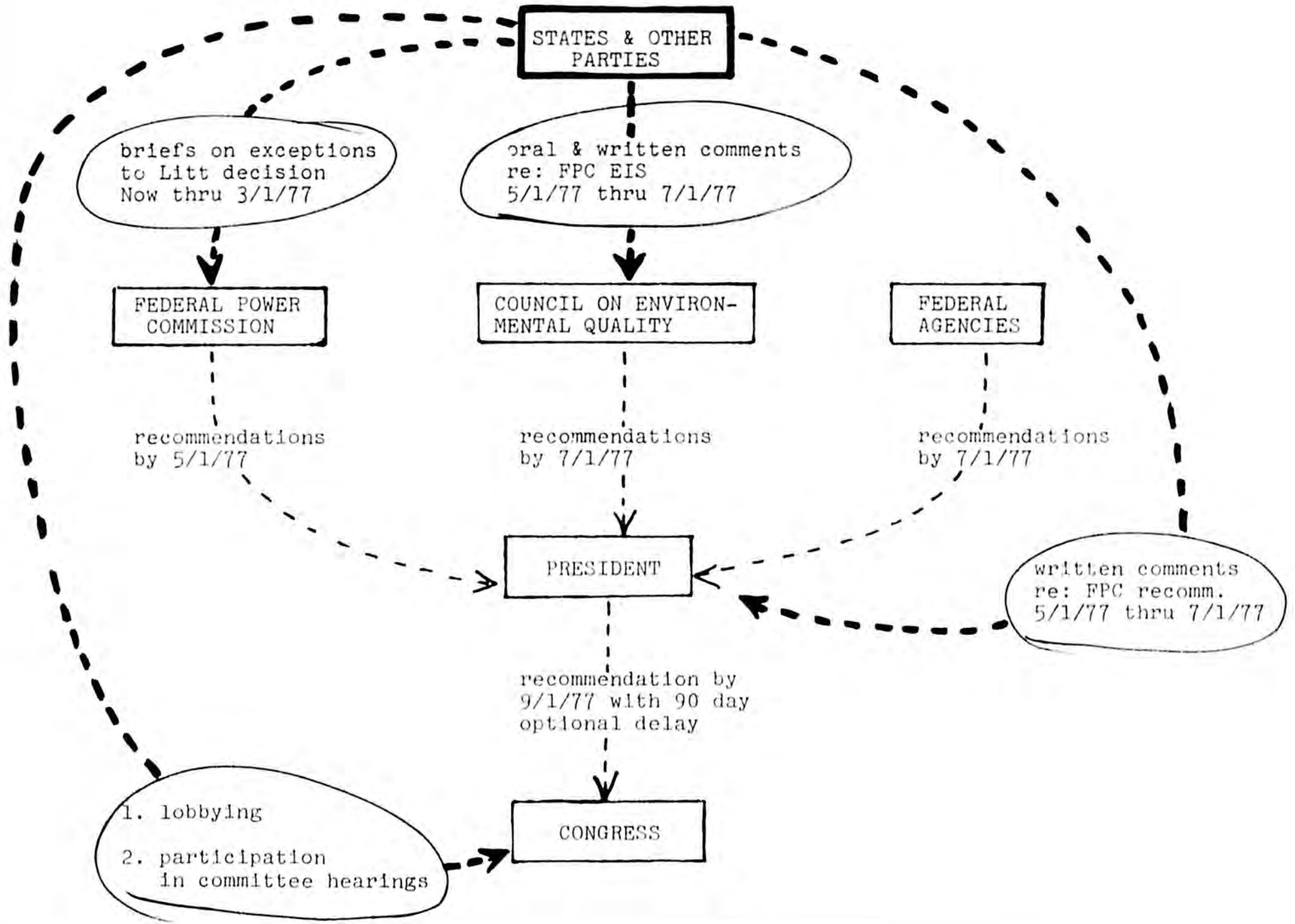
Barlow 2/22/77

TIMETABLE OF STATE INPUT
RE: ROUTE DECISION



Barlow 2/22/77

TIMETABLE OF STATE INPUT
RE: ROUTE DECISION



A STUDY OF STATE PETROLEUM

LEASING METHODS AND POSSIBLE ALTERNATIVES

E R R A T A S H E E T

Page 68: 3rd Paragraph, 2nd sentence; change the word chance to change.

Page 107: Figure II-15; the words: Probability of Occurance in % (Risk Factor) should not be at the bottom of the Table. It actually refers to the Vertical table numbered 10-100.

Page 108: Same as figure II-16; The risk factor actually refers to the vertical scale numbered 1 thru 30.

ALASKA NATURAL GAS TRANSPORTATION

TIMETABLE

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   2. F.P.C. Staff submitted position brief to F.P.C. on 12/7/76; brief supported Arctic Gas route
   3. F.P.C. hearings closed 12/12/76
   4. Initial decision by Administrative Law Judge Litt due 2/1/77
   5. Briefs on exceptions to Litt decision due 3/1/77
   6. F.P.C. recommendation to President on route selection due 5/1/77

B. Council on Environmental Quality
   1. Hearings on Environmental Impact Statements on all three route proposals
   2. C.E.Q. recommmendation to President due 7/1/77

(2) Presidential decision

A. President makes route recommendation to Congress by 9/1/77
   1. President may delay decision by up to 90 days

(3) Congressional decision

A. Congress has 60 days to select route after Presidential recommendation
   1. If Congress approves Presidential recommendation through Joint Resolution within 60 days, the recommendation takes effect.
   2. If Congress does not approve Presidential recommendation through Joint Resolution within 60 days, the President has 30 days to submit another recommendation. Congress then has another 60 days to act.

(4) Federal Agency approval

A. After Congressional approval, all federal agencies charged with issuance of certificates, permits, rights-of-way, leases, etc. "as soon as practicable".

(5) Judicial Review

A. Judicial review is limited to Constitutional questions and statutory powers, not on the substance of the decision. All litigation (on either the resolution or on the 1976 Act) must be filed within 60 days of the Congressional decision.

*Prepared 1/30/77 for House and Senate Special Committees on the Sale of Royalty Gas

FACTUAL COMPARISON OF PROJECTS — Continued

	PAN-ALASKA PROJECT	ARCTIC GAS PROJECT
IV. *Environmental Impact:*	Miles of new pipe: 800 in Alaska, plus a few hundred miles, principally in west Texas, connecting with existing pipelines in the Lower 48 having idle capacity. Gravel required: approximately 7.5 million cubic yards. Waterway crossings: Major: 26. Total: About 600. Does not enter a wildlife range.	5,600 miles of new pipeline. Gravel required: approximately 57 million cubic yards. Waterway crossings: Major: 170. Total: About 3,000. Traverses the width of the Arctic National Wildlife Range.
V. *Timing:*	With the uses of Alyeska's haul road and other construction facilities which required 1½ years to complete, this project has a significant head start. The laying of 809 miles of pipe in Alaska, coincident with the construction of the liquefied natural gas (LNG) plant represent the major time requirements for the project. Permits must be obtained only from American agencies.	Requires the construction of camps, haul roads, and other preliminary facilities before construction of the pipeline may begin. Requires the laying of 5,600 miles of pipeline. Permits must be sought from both U.S and Canadian agencies. Must compete before the National Energy Board (NEB) in Canada against Foothills' all-Canadian Maple Leaf Project. Native claims *not settled* in Canada.
VI. *Benefits to the State of Alaska:*	Native claims settled in Alaska, after many years of extensive efforts in the U.S. Congress. Substantial. $4.7 billion worth of goods, services, and facilities. Construction payrool of $840 million in Alaska. $2.0 billion to be paid in ad valorem and income taxes to the State over the life of the project. Pipeline route provides Staate of Alaska direct access to 12½ percent royalty share of the gas.	Minimal. $657 million worth of goods, services and facilities. Construction payroll of $100 million in Alaska. $360 million in ad valorem and income taxes to the State over the life of the project. Arctic Gas route precludes state access to its royalty share of gas.
VII. *Tax Benefits to U.S.:*	$9.2 billion in Federal income taxes to the U.S. treasury over the life of the project. $3.6 billion to be paid in *other* taxes to American governmental entities over the life of the project.	$2.1 billion in Federal income taxes to the U.S. treasury over the life of the project. $1.4 billion to be paid in *other* taxes to American governmental entities over the life of the project. (In addition, $8 billion will be paid to Canada at present tax rates. Taxing powers of the provinces are sovereign and cannot be controlled by the Canadian federal government.)
VIII. *Employment:*	7,500 workers to be employed at the peak of the project in the State of Alaska. 624 permanent employees in the State after construction. Total work force in U.S. at peak of construction: 24,000 (including Alaska). Permanent number of employees in the U.S. after completion of project: 1,470 (including Alaska).	2,500 workers to be employed at the peak of the project in the State of Alaska. 39 permanent employees in the State after construction. Total work force in U.S. at peak of construction: 12,000. Permanent number of employees in the U.S. after completion of project: 420.
IX. *Shrinkage:*	11.1 percent, some of which could be recoverable in the form of cryogenic energy.	9.6 percent, *none* of which is recoverable.
X. *Total Capital Cost:*	$8 billion.	$9.2 billion.
XI. *Pipe Rolling:*	Pipe requirements (42") can be met by U.S. mills.	Requires substantial portion of worldwide pipe mill capacity. No U.S. mill can now roll 48-inch pipe. Must be done in Canada, Germany or Japan.

The CHAIRMAN. All time has expired.

Pursuant to the rule, the Clerk will now read the committee amendment in the nature of a substitute recommended by the Committee on Interstate and Foreign Commerce, now printed in the reported bill as an original bill for the purpose of amendment.

It shall also be in order to consider an amendment in the nature of a substitute recommended by the Committee on Interior and Insular Affairs if offered as an amendment in the nature of a substitute for the amendment in the nature of a substitute recommended by the Committee Interstate and Foreign Commerce.

The Clerk will read.

The Clerk read as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Alaska Natural Gas Transportation Act of 1976."

AMENDMENT IN THE NATURE OF A SUBSTITUTE OFFERED BY MR. MELCHER

Mr. MELCHER. Mr. Chairman, I offer an amendment in the nature of a substitute.

The Clerk read as follows:

Amendment in the nature of a substitute offered by Mr. MELCHER:

Strike out all after the enacting clause and insert in lieu thereof the following:

SHORT TITLE

SECTION 1. This Act may be cited as the "Alaska Natural Gas Transportation Act of 1976".

CONGRESSIONAL FINDINGS

SEC. 2. The Congress finds and declares that—

(1) a natural gas supply shortage exists in the contiguous States of the United States;

(2) large reserves of natural gas in the State of Alaska could help significantly to alleviate this supply shortage;

(3) the expeditious construction of a viable natural gas transportation system for delivery of Alaska natural gas to United States markets is in the national interest; and

(4) the determination whether to authorize a transportation system for delivery of Alaska natural gas to the contiguous States and, if so, which system to select, involve questions of the utmost importance respecting national energy policy, international relations, national security, and economic and environmental impact, and therefore should appropriately be addressed by the Congress and the President in addition to those Federal officers and agencies assigned functions under law pertaining to the selection, construction, and initial operation of such a system.

STATEMENT OF PURPOSE

SEC. 3. The purpose of this Act is to provide the means for making a sound decision as to the selection of a transportation system for delivery of Alaska natural gas to the contiguous States for construction and initial operation by providing for the participation of the President and the Congress in the selection process, and, if such a system is approved under this Act, to expedite its construction and initial operation by (1) limiting the jurisdiction of the courts to review the actions of Federal officers or agencies taken pursuant to the direction and authority of this Act, and (2) permitting the limitation of administrative procedures and effecting the limitation of judicial procedures related to such actions. To accomplish this purpose it is the intent of the Congress to exercise its constitutional powers to the fullest extent in the authorizations and directions herein made, and particularly with respect to the limitation of judicial review of actions of Federal officers or agencies taken pursuant thereto.

DEFINITIONS

SEC. 4. As used in this Act:

(1) the term "Alaska natural gas" means natural gas derived from the area of the State of Alaska generally known as the North Slope of Alaska, including the Continental Shelf thereof;

(2) the term "Commission" means the Federal Power Commission;

(3) the term "Secretary" means the Secretary of the Interior;

(4) the term "provision of law" means any provision of a Federal statute or rule, regulation or order issued thereunder; and

(5) the term "approved transportation system" means the system for the transportation of Alaska natural gas designated by the President pursuant to section 7(a) or 8(b) and approved by joint resolution of the Congress pursuant to section 8.

FEDERAL POWER COMMISSION REVIEWS AND REPORTS

SEC. 5. (a)(1) Notwithstanding any provision of the Natural Gas Act or any other provision of law, the Commission shall suspend all proceedings pending before the Commission on the date of enactment of this Act relating to a system for the transportation of Alaska natural gas as soon as the Commission determines to be practicable after such date, and the Commission may refuse to act on any application, amendment thereto, or other requests for action under the Natural Gas Act relating to a system for the transportation of Alaska natural gas until such time as (A) a decision of the President designating such a system for approval takes effect pursuant to section 8, (B) no such decision takes effect pursuant to section 8, or (C) the President decides not to designate such a system for approval under section 8 and so advises the Congress pursuant to section 7.

(2) In the event a decision of the President designating such a system takes effect pursuant to this Act, the Commission shall forthwith vacate proceedings suspended under paragraph (1) and, pursuant to section 9 and in accordance with the President's decision, issue a certificate of public convenience and necessity respecting such system.

(3) In the event such a decision of the President does not take effect pursuant to this Act or the President decides not to designate such a system and so advises the Congress pursuant to section 7, the suspension provided for in paragraph (1) of this subsection shall be removed.

(b)(1) The Commission shall review all applications for the issuance of a certificate of public convenience and necessity relating to the transportation of Alaska natural gas pending on the date of enactment of this Act, and any amendments thereto which are timely made, and after consideration of any alternative transportation system which the Commission determines to be reasonable, submit to the President not later than May 1, 1977, a recommendation concerning the selection of such a transportation system. Such recommendation may be in the form of a proposed certificate of public convenience and necessity, or in such other form as the Commission determines to be appropriate, or may recommend that no decision respecting the selection of such a transportation system be made at this time or pursuant to this Act. Any recommendation that the President approve a particular transportation system shall (A) include a description of the nature and route of the system, (B) designate a person to construct and operate the system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system, (C) if such recommendation is for an all-land pipeline transportation system, or a transportation system involving water transportation include provision for new facilities to the extent necessary to assure direct pipeline delivery of Alaska natural gas contemporaneously to points both east and west of the Rocky Mountains in the lower continental United States.

(2) The Commission may, by rule, provide for the presentation of data, views, and arguments before the Commission or a delegate of the Commission pursuant to such procedures as the Commission determines to be appropriate to carry out its responsibilities under paragraph (1) of this subsection. Such a rule shall, to the extent determined by the Commission, apply, notwithstanding any provision of law that would otherwise have applied to the presentation of data, views, and arguments.

(3) The Commission may request such information and assistance from any Federal agency as the Commission determines to be necessary or appropriate to carry out its responsibilities under this Act. Any Federal agency requested to submit information or provide assistance shall submit such information to the Commission at the earliest practicable time after receipt of a Commission request.

(c) The Commission shall accompany any recomendation under subsection (b)(1) with a report, which shall be available to the public, explaining the basis for such recommendation and including for each transportation system reviewed or considered a discussion of the following:

(1) for each year of the 20-year period which begins with the first year following the date of enactment of this Act, the estimated—

(A) volumes of Alaska natural gas which would be available to each region of the United States directly, or indirectly by displacement or otherwise, and

(B) transportation costs and delivered prices of any such volumes of gas by region;

(2) the effects of each of the factors described in subparagraphs (A) and (B) of paragraph (1) on the projected natural gas supply and demand for each region of the United States and on the projected supplies of alternative fuels available by region to offset shortages of natural gas occurring in such regions for each such year;

(3) the impact upon competition;

(4) the extent to which the system provides a means for the transportation to United States markets of natural resources or other commodities from sources in addition to the Prudhoe Bay Reserve;

(5) environmental impacts;

(6) safety and efficiency in design and operation and potential for interruption in deliveries of Alaska natural gas;

(7) construction schedules and possibilities for delay in such schedules or for delay occurring as a result of other factors;

(8) feasibility of financing;

(9) extent of reserves, both proven and probable and their deliverability by year for each year of the 20-year period which begins with the first year following the date of enactment of this Act;

(10) the estimate of the total delivered cost to users of the natural gas to be transported by the system by year for each year of the 20-year period which begins with the first year following the date of enactment of this Act;

(11) capability and cost of expanding the system to transport additional volumes of natural gas in excess of initial system capacity;

(12) an estimate of the capital and operating costs, including an analysis of the reliability of such estimates and the risk of cost overruns; and

(13) such other factors as the Commission determines to be appropriate.

(d) The recommendation by the Commission pursuant to this section shall not be based upon the fact that the Government of Canada or agencies thereof have not, by then rendered a decision as to authorization of a pipeline system to transport Alaska natural gas through Canada.

(e) If the Commission recommends the approval of a particular transportation system, it shall submit to the President with such recommendation (1) an identification of those facilities and operations which are proposed to be encompassed within the term "construction and initial operation" in order to define the scope of directions contained in section 9 of this Act and (2) the terms and conditions permitted under the Natural Gas Act, which the Commission determines to be appropriate for inclusion in a certificate of public convenience and necessity to be issued respecting such system. The Commission shall submit to the President contemporaneously with its report an environmental impact statement prepared respecting the recommended system, if any, and each environmental impact statement which may have been prepared respecting any other system reported on under this section.

OTHER REPORTS

SEC. 6. (a) Not later than July 1, 1977, any Federal officer or agency may submit written comments to the President with respect to the recommendation and report of the Commission and alternative methods for transportation of Alaska natural gas for delivery to the contiguous States. Such comments shall be made available to the public by the President when submitted to him, unless expressly exempted from this requirement in whole or in part by the President, under section 552(b)(1) of title 5, United States Code. Any such written comment shall include information within the competence of such Federal officer or agency with respect to—

(1) environmental considerations, including air and water quality and noise impacts;

(2) the safety of the transportation systems;

(3) international relations, including the status and time schedule for any necessary Canadian approvals and plans;

(4) national security, particularly security of supply;

(5) sources of financing for capital costs;

(6) the impact upon competition;

(7) impact on the national economy, including regional natural gas requirements; and

(8) relationship of the proposed transportation system to other aspects of national energy policy.

(b) Not later than July 1, 1977, the Governor of any State, any municipality, State utility commission, and any other interested

person may submit to the President such written comments with respect to the recommendation and report of the Commission and alternate systems for delivering Alaska natural gas to the contiguous States as they determine to be appropriate.

(c) Not later than July 1, 1977, each Federal officer or agency shall report to the President with respect to actions to be taken by such officer or agency under section 9(a) relative to each transportation system reported on by the Commission under section 5(c) and shall include such officer's or agency's recommendations with respect to any provision of law to be waived pursuant to section 8(g) in conjunction with any decision of the President which designates a system for approval.

(d) Following receipt by the President of the Commission's recommendations, the Council on Environmental Quality shall afford interested persons an opportunity to present oral and written data, views, and arguments respecting the environmental impact statements submitted by the Commission under section 5(e). Not later than July 1, 1977, the Council on Environmental Quality shall submit to the President a report, which shall be contemporaneously made available by the Council to the public, summarizing any data, views, and arguments received and setting forth the Council's views concerning the legal and factual sufficiency of each such environmental impact statement and other matters related to environmental impact as the Council considers to be relevant.

PRESIDENTIAL DECISION AND REPORT

SEC. 7. (a)(1) As soon as practicable after July 1, 1977, but not later than September 1, 1977, the President shall issue a decision as to whether a transportation system for delivery of Alaska natural gas should be approved under this Act. If he determines such a system should be so approved, his decision shall designate such a system for approval pursuant to section 8 and shall be consistent with section 5(b)(1)(C) to assure delivery of Alaska natural gas to points both east and west of the Rocky Mountains in the continental United States. The President in making his decision shall take into consideration the Commission's recommendation pursuant to section 5, the report under section 5(c), and any comments submitted under section 6; and his decision to designate a system for approval shall be based on his determination as to which system, if any, best serves the national interest.

(2) The President, for a period of up to 90 additional calendar days after September 1, 1977, may delay the issuance of his decision and transmittal thereof to the House of Representatives and the Senate, if he determines (A) that there exists no environmental impact statement prepared relative to a system he wishes to consider or that any prepared environmental impact statement relative to a system he wishes to consider is legally or factually insufficient, or (B) that the additional time is otherwise necessary to enable him to make a sound decision on an Alaska natural gas transportation system. The President shall promptly, but in no case any later than September 1, 1977, notify the House of Representatives and the Senate if he so delays his decision and submit a full explanation of the basis of any such delay.

(3) If, on or before May 1, 1977, the President determines to delay issuance and transmittal of his decision to the House of Representatives and the Senate pursuant to paragraph (2) of this subsection, he may authorize a delay of not more than 90 days in the date of taking of any action specified in sections 5 and 6. The President shall promptly notify the House of Representatives and the Senate of any such authorization of delay and submit a full explanation of the basis of any such authorization.

(4) If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he shall in such decision—

(A) describe the nature and route of the system designated for approval;

(B) designate a person to construct and operate such a system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system;

(C) identify those facilities, the construction of which, and those operations, the conduct of which, shall be encompassed within the term "construction and initial operation" for purposes of defining the scope of the directions contained in section 9 of this Act, taking into consideration any recommendation of the Commission with respect thereto; and

(D) identify those provisions of law, relating to any determination of a Federal officer or agency as to whether a certificate, permit, right-of-way, lease, or other authorization shall be issued or be granted, which provisions the President finds (i) involve determination which are subsumed in his decision and (ii) require waiver pursuant to section 8(g) in order to permit the expeditious construction and initial operation of the transportation system.

(5) After a decision of the President designating an Alaska natural gas transportation system takes effect under section 8, the President shall appoint an officer of the United States, with the advice and consent of the Senate, or designate a board (consisting of such an officer, so appointed with the advice and consent of the Senate, as chairman and such other individuals as the President determines appropriate to serve on such board by reason of background, experience, or position) to serve as Federal inspector of construction of such transportation system, except that no such individual or officer may have a financial interest in the approved transportation system. Upon enactment of a joint resolution pursuant to section 8 approving such a system the Federal inspector shall—

(A) establish a joint surveillance and monitoring agreement, approved by the President, with the State of Alaska similar to that in effect during construction of the trans-Alaska oil pipeline to monitor the construction of the approved transportation system within the State of Alaska;

(B) monitor compliance with applicable laws and the terms and conditions of any applicable certificate, rights-of-way, permit, lease, or other authorization issued or granted under section 9;

(C) monitor actions taken to assure timely completion of construction schedules and the achievement of quality of construction, cost control, safety, and environmental protection objectives and the results obtained therefrom;

(D) have the power to compel, by subpena if necessary, submission of such information as he deems necessary to carry out his responsibilities; and

(E) keep the President and the Congress currently informed on any significant departures from compliance and issue quarterly reports to the President and the Congress concerning existing or potential failures to meet construction schedules or other factors which may delay the construction and initial operation of the system and the extent to which quality of construction, cost control, safety and environmental protection objectives have been achieved.

(6) If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he may identify in such decision such terms and conditions permissible under existing law as he determines appropriate for inclusion with respect to any issuance or authorization directed to be made pursuant to section 9.

(b) The decision of the President made pursuant to subsection (a) of this section shall be transmitted to both Houses of Congress and shall be considered received by such Houses for the purposes of this section on the first day on which both are in session occurring after such decision is transmitted. Such decision shall be accompanied by a report explaining in detail the basis for his decision with specific reference to the factors set forth in sections 5(c) and 6(a) and the reasons for any revision, modification of, or substitution for, the Commission recommendation.

(c) The report of the President pursuant to subsection (b) of this section shall contain a financial analysis for the transportation system designated for approval. Unless the President finds and states in his report submitted pursuant to this section that he reasonably anticipates that the system designated by him can be privately financed, constructed, and operated, his report shall also be accompanied by his recommendation concerning the use of existing Federal financing authority or the need for new Federal financing authority.

(d) In making his decision under subsection (a) the President shall inform himself, through appropriate consultation, of the views and objectives of the States, the Government of Canada, and other governments with respect to those aspects of such a decision that may involve intergovernmental and international cooperation among the Government of the United States, the States, the Government of Canada, and any other government.

(e) If the President determines to designate a transportation system for approval, the decision of the President shall take effect as provided in section 8, except that the approval of a decision of the President shall not be construed as amending or otherwise effecting the laws of the United States so as to grant any new financing authority as may have been identified by the president pursuant to subsection (c).

CONGRESSIONAL REVIEW

SEC. 8. (a) Any decision under section 7(a) or 8(b) designating for approval a transportation system for the delivery of Alaska natural gas shall take effect upon enactment of a joint resolution within the first period of 60 calendar days of continuous session of Congress beginning on the date after the date of receipt by the Senate and House of Representatives of a decision transmitted pursuant to section 7(b) or subsection (b) of this section.

(b) If the Congress does not enact such a joint resolution within such 60-day period, the President, not later than the end of the 30th day following the expiration of the 60-day period, may propose a new decision and shall provide a detailed statement concerning the reasons for such proposal. The new decision shall be submitted in accordance with section 7(a) and transmitted to the House of Representatives and the Senate on the same day while both are in session and shall take effect pursuant to subsection (a) of this section. In the event that a resolution respecting the President's decision was defeated by vote of either House, no new decision may be transmitted pursuant to this subsection unless such decision differs in a material respect from the previous decision.

(c) For purposes of this section—

(1) continuity of session of Congress is broken only by an adjournment sine die; and

(2) the days on which either House is not in session because of an adjournment of more

than 3 days to a day certain are excluded in the computation of the 60-day calendar period.

(d)(1) This subsection is enacted by Congress—

(A) as an exercise of the rulemaking power of each House of Congress, respectively, and as such it is deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in that House in the case of resolutions described by paragraph (2) of this subsection; and it supersedes other rules only to the extent that it is inconsistent therewith; and

(B) with full recognition of the constitutional right of either House to change the rules (so far as those rules relate to the procedure of that House) at any time, in the same manner and to the same extent as in the case of any other rule of such House.

(2) For purposes of this Act, the term "resolution" means (A) a joint resolution, the resolving clause of which is as follows: "That the House of Representatives and Senate approve the Presidential decision on an Alaska natural gas transportation system submitted to the Congress on , 19 , and find that any environmental impact statements prepared relative to such system and submitted with the President's decision are in compliance with the National Environmental Policy Act of 1969."; the blank space therein shall be filed with the date on which the President submits his decision to the House of Representatives and the Senate; or (B) a joint resolution described in subsection (g).

(3) A resolution once introduced with respect to a Presidential decision on an Alaska natural gas transportation system shall be referred to one or more committees (and all resolutions with respect to the same Presidential decision on an Alaska natural gas transportation system shall be referred to the same committee or committees) by the President of the Senate or the Speaker of the House of Representatives, as the case may be.

(4)(A) If any committee to which a resolution with respect to a Presidential decision on an Alaska natural gas transportation system has been referred has not reported it at the end of 30 calendar days after its referral, it shall be in order to move either to discharge such committee from further consideration of such resolution or to discharge such committee from consideration of any other resolution with respect to such Presidential decision on an Alaska natural gas transportation system which has been referred to such committee.

(B) A motion to discharge may be made only by an individual favoring the resolution, shall be highly privileged (except that it may not be made after the committee has reported a resolution with respect to the same Presidential decision on an Alaska natural gas transportation system), and debate thereon shall be limited to not more than 1 hour, to be divided equally between those favoring and those opposing the resolution. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

(C) If the motion to discharge is agreed to or disagreed to, the motion may not be made with respect to any other resolution with respect to the same Presidential decision on an Alaska natural gas transportation system.

(5)(A) When any committee has reported, or has been discharged from further consideration of, a resolution, but in no case earlier than 30 days after the date of receipt of the President's decision to the Congress, it shall be at any time thereafter in order (even though a previous motion to the same effect has been disagreed to) to move to proceed to the consideration of the resolution. The motion shall be highly privileged and shall not be debatable. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

(B) Debate on the resolution described in subsection (d)(2)(A) shall be limited to not more than 10 hours and on any resolution described in subsection (g) to one hour. This time shall be divided equally between those favoring and those opposing such resolution. A motion further to limit debate shall not be debatable. An amendment to, or motion to recommit the resolution shall not be in order, and it shall not be in order to move to reconsider the vote by which such resolution was agreed to or disagreed to or, thereafter within such 60-day period, to consider any other resolution respecting the same Presidential decision.

(6)(A) Motions to postpone, made with respect to the discharge from committee, or the consideration of a reoslution and motions to proceed to the consideration of other business, shall be decided without debate.

(B) Appeals from the decision of the Chair relating to the application of the rules of the Senate or the House of Representatives, as the case may be, to the procedures relating to a resolution shall be decided without debate.

(e) The President shall find that any required environmental impact statement relative to the Alaska natural gas transportation system designated for approval by the President has been prepared and that such statements is in compliance with the National Environmental Policy Act of 1969. Such finding shall be set forth in the report of the President submitted under section 7. The President may supplement or modify the environmental impact statements prepared by the Commission or other Federal officers or agencies. Any such environmental impact statement shall be submitted contemporaneously with the transmittal to the Senate and House of Representatives of the President's decision pursuant to section 7(b) or subsection (b) of this section.

(f) Within 20 days of the transmittal of the President's decision to the Congress under section 7(b) or under subsection (b) of this section, (1) the Commission shall submit to the Congress a report commenting on the decision and including any information with regard to that decision which the Commission considers appropriate, and (2) the Council on Environmental Quality shall provide an opportunity to any interested person to present oral and written data, views, and arguments on any environmental impact statement submitted by the President relative to any system designated by him for approval which is different from any system reported on by the Commission under section 5(c), and shall submit to the Congress a report summarizing any such views received. The committees in each House of Congress to which a resolution has been referred under section (d)(3) shall conduct hearings on the Council's report and include in any report of the committee respecting such resolution the findings of the committee on the legal and factual sufficiency of any environmental impact statement submitted by the President relative to any system designated by him for approval.

(g)(1) At any time after a decision designating a transportation system is submitted to the Congress pursuant to this section, if the President finds that any provision of law applicable to actions to be taken under subsection (a) or (c) of section 9 require waiver in order to permit expeditious construction and initial operation of the approved transportation system, the President may submit such proposed waiver to both Houses of Congress.

(2) Such provision shall be waived with respect to actions to be taken under subsection (a) or (c) of section 9 upon enactment of a joint resolution pursuant to the procedures specified in subsections (c) and (d) of this section (other than subsection (d)(2) thereof) within the first period of 60 calendar days of continuous session of Congress beginning on the date after the date of receipt by the Senate and House of Representatives of such proposal.

(3) The resolving clause of the joint resolution referred to in this subsection is as follows: "That the House of Representatives and Senate approve the waiver of the provision of law ( ) as proposed by the President, submitted to the Congress on , 19 ." The first blank space therein being filled with the citation to the provision of law and the second blank space therein being filled with the date on which the President submits his decision to the House of Representatives and the Senate.

(4) In the case of action with respect to a joint resolution described in this subsection, the phrase "a waiver of a provision of law" shall be substituted in subsection (d) for the phrase "the Alaska natural gas transportation system.".

AUTHORIZATIONS

SEC. 9. (a) To the extent that the taking of any action which is necessary or related to the construction and initial operation of the approved transportation system requires a certificate, right-of-way, permit, lease, or other authorization to be issued or granted by a Federal officer or agency, such Federal office or agency shall—

(1) to the fullest extent permitted by the provisions of laws administered by such officer or agency, but

(2) without regard to any provision of law which is waived pursuant to section 8(g) issue or grant such certificates, permits, rights-of-way, leases, and other authorizations at the earliest practicable date.

(b) All actions of a Federal officer or agency with respect to consideration of applications or requests for the issuance or grant of a certificate, right-of-way, permit, lease, or other authorization to which subsection (a) applies shall be expedited and any such application or request shall take precedence over any similar applications or requests of the Federal officer or agency.

(c) Any certificate, right-of-way, permit, lease, or other authorization issued or granted pursuant to the direction under subsection (a) shall include the terms and conditions required by law unless waived pursuant to a resolution under section 8(g), and may include terms and conditions permitted by law, except that with respect to terms and conditions permitted but not required, the Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to include terms and conditions as would compel a change in the basic nature and general route of the approved transportation system or those the inclusion of which would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system.

(d) Any Federal officer or agency, with respect to any certificate, permit, right-of-way, lease, or other authorization issued or granted by such officer or agency, may, to the extent permitted under laws administered by such officer agency add to, amend or abrogate any term or condition included in such certificate, permit, right-of-way, lease, or other authorization except that with respect to any such action which is permitted but not required by law, such Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to take such action if the terms and conditions to be added, or as amended, would compel a change in the basic nature and general route of the

approved transportation system or would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system.

(e) Any Federal officer or agency to which subsection (a) applies, to the extent permitted under laws administered by such officer or agency, shall include in any certificate, permit, right-of-way, lease, or other authorization issued or granted those terms and conditions identified in the President's decision as appropriate for inclusion except that the requirement to include such terms and conditions shall not limit the Federal officer or agency's authority under subsection (d) of this section.

JUDICIAL REVIEW

SEC. 10. (a) Notwithstanding any other provision of law, the actions of Federal officers or agencies taken pursuant to section 9 of this Act, shall not be subject to judicial review except as provided in this section.

(b)(1) Claims alleging the invalidity of this Act may be brought not later than the 60th day following the date a decision takes effect pursuant to section 8 of this Act.

(2) Claims alleging that an action will deny rights under the Constitution of the United States, or that an action is in excess of statutory jurisdiction, authority, or limitations, or short of statutory right may be brought not later than the 60th day following the date of such action, except that if a party shows that he did not know of the action complained of, and a reasonable person acting in the circumstances would not have known, he may bring a claim alleging the invalidity of such action on the grounds stated above not later than the 60th day following the date of his acquiring actual or constructive knowledge of such action.

(c)(1) A claim under subsection (b) shall be barred unless a complaint is filed prior to the expiration of such time limits in the United States Court of Appeals for the District of Columbia acting as a Special Court. Such court shall have exclusive jurisdiction to determine such proceeding in accordance with the procedures hereinafter provided, and no other court of the United States, of any State, territory, or possession of the United States, or of the District of Columbia, shall have jurisdiction of any such claim in any proceeding instituted prior to or on or after the date of enactment of this Act.

(2) Any such proceeding shall be assigned for hearing and completed at the earliest possible date, shall, to the greatest extent practicable, take precedence over all other matters pending on the docket of the court at that time, and shall be expedited in every way by such court and such court shall render its decision relative to any claim within 90 days from the date such claim is brought unless such court determines that a longer period of time is required to satisfy requirements of the United States Constitution.

(3) The enactment of a joint resolution under section 8 approving the decision of the President shall be conclusive as to the legal and factual sufficiency of the environmental impact statements submitted by the President relative to the approved transportation system and no court shall have jurisdiction to consider questions respecting the sufficiency of such statements under the National Environmental Policy Act of 1969.

SUPPLEMENTAL ENFORCEMENT AUTHORITY

SEC. 11. (a) In addition to remedies available under other applicable provisions of law, whenever any Federal officer or agency determines that any person is in violation of any applicable provision of law administered or enforceable by such officer or agency or any rule, regulation, or order under such provision, including any term or condition of any certificate, right-of-way, permit, lease, or other authorization, issued or granted by such officer or agency, such officer or agency may—

(1) issue a compliance order requiring such person to comply with such provision or any rule, regulation, or order thereunder, or

(2) bring a civil action in accordance with subsection (c).

(b) Any order issued under subsection (a) shall state with reasonable specificity the nature of the violation and a time of compliance, not to exceed 30 days, which the officer or agency, as the case may be, determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

(c) Upon a request of such officer or agency, as the case may be, the Attorney General may commence a civil action for appropriate relief, including a permanent or temporary injunction or a civil penalty not to exceed $25,000 per day for violations of the compliance order issued under subsection (a). Any action under this subsection may be brought in any district court of the United States for the district in which the defendant is located, resides, or is doing business, and such court shall have jurisdiction to restrain such violation, require compliance, or impose such penalty or give ancillary relief.

EXPORT LIMITATIONS

SEC. 12. Any exports of Alaska natural gas shall be subject to the requirements of the Natural Gas Act and section 103 of the Energy Policy and Conservation Act, except that in addition to the requirements of such Acts, before any Alaska natural gas in excess of 1,000 Mcf per day may be exported to any nation other than Canada or Mexico, the President must make and publish an express finding that such exports will not diminish the total quantity or quality nor increase the total price of energy available to the United States.

EQUAL ACCESS TO FACILITIES

SEC. 13. (a) There shall be included in the terms of any certificate, permit, right-of-way, lease, or other authorization issued or granted pursuant to the directions contained in section 9 of this Act, a provision that no person seeking to transport natural gas in the Alaska natural gas transportation system shall be prevented from doing so or be discriminated against in the terms and conditions of service on the basis of degree of ownership, or lack thereof, of the Alaska natural gas transportation system.

(b) The State of Alaska is authorized to ship its royalty gas on the approved transportation system for use within Alaska and, to the extent its contracts for the sale of royalty gas so provide, to withdraw such gas from the interstate market for use within Alaska; the Federal Power Commission shall issue all authorizations necessary to effectuate such shipment and withdrawal subject to review by the Commission only of the justness and reasonableness of the rate charged for such transportation.

ANTITRUST LAWS

SEC. 14. Nothing in this Act, and no action taken hereunder, shall imply or effect an amendment to, or exemption from, any provision of the antitrust laws.

AUTHORIZATION

SEC. 15. There is hereby authorized to be appropriated beginning in fiscal year 1978 and each fiscal year thereafter, such sums as may be necessary to carry out the functions of the Federal Inspector appointed by the President with the advice and consent of the Senate under section 7.

SEPARABILITY

SEC. 16. If any provision of this Act, or the application thereof, is held invalid, the remainder of this Act shall not be affected thereby.

CIVIL RIGHTS

SEC. 17. All Federal officers and agencies shall take such affirmative action as is necessary to assure that no person shall, on the grounds of race, creed, color, national origin, or sex, be excluded from receiving, or participating in any activity conducted under, any certificates, permit, right-of-way, lease, or other authorization granted or issued pursuant to this Act. The appropriate Federal officers and agencies shall promulgate such rules as are necessary to carry out the purposes of this section and may enforce this section, and any rules promulgated under this section through agency and department provisions and rules which shall be similar to those established and in effect under title VI of the Civil Rights Act of 1964.

REPORT ON THE EQUITABLE ALLOCATION OF NORTH SLOPE CRUDE OIL

SEC. 18. Within 6 months of the date of enactment of this Act, the President shall determine what special expediting procedures are necessary to insure the equitable allocation of north slope crude oil to the Northern Tier States of Washington, Oregon, Idaho, Montana, North Dakota, Minnesota, Michigan, Wisconsin, Illinois, Indiana, and Ohio (hereinafter referred to as the "Northern Tier States") to carry out the provisions of section 410 of Public Law 93-153 and shall report his findings to the Congress. In his report, the President shall identify the specific provisions of law, which relate to any determination of a Federal officer or agency as to whether to issue or grant a certificate, permit, right-of-way, lease, or other authorization in connection with the construction of an oil delivery system serving the Northern Tier States and which the President finds would inhibit the expeditious construction of such a system in the contiguous States of the United States. Furthermore, all Federal officers and agencies shall, prior to the submission of such report and further congressional action relating thereto, expedite to the fullest practicable extent all applications and requests for action made with respect to such an oil delivery system.

ANTITRUST STUDY

SEC. 19. The Attorney General of the United States is authorized and directed to conduct a thorough study of the antitrust issues and problems relating to the production and transportation of Alaska natural gas and, not later than six months following the date of enactment of this Act, to complete such study and submit to the Congress a report containing his findings and recommendations with respect thereto.

EXPIRATION

SEC. 20. This Act shall terminate in the event that no decision of the President takes effect under section 8 of this Act, such termination to occur at the end of the last day on which a decision could be, but is not, approved under such section.

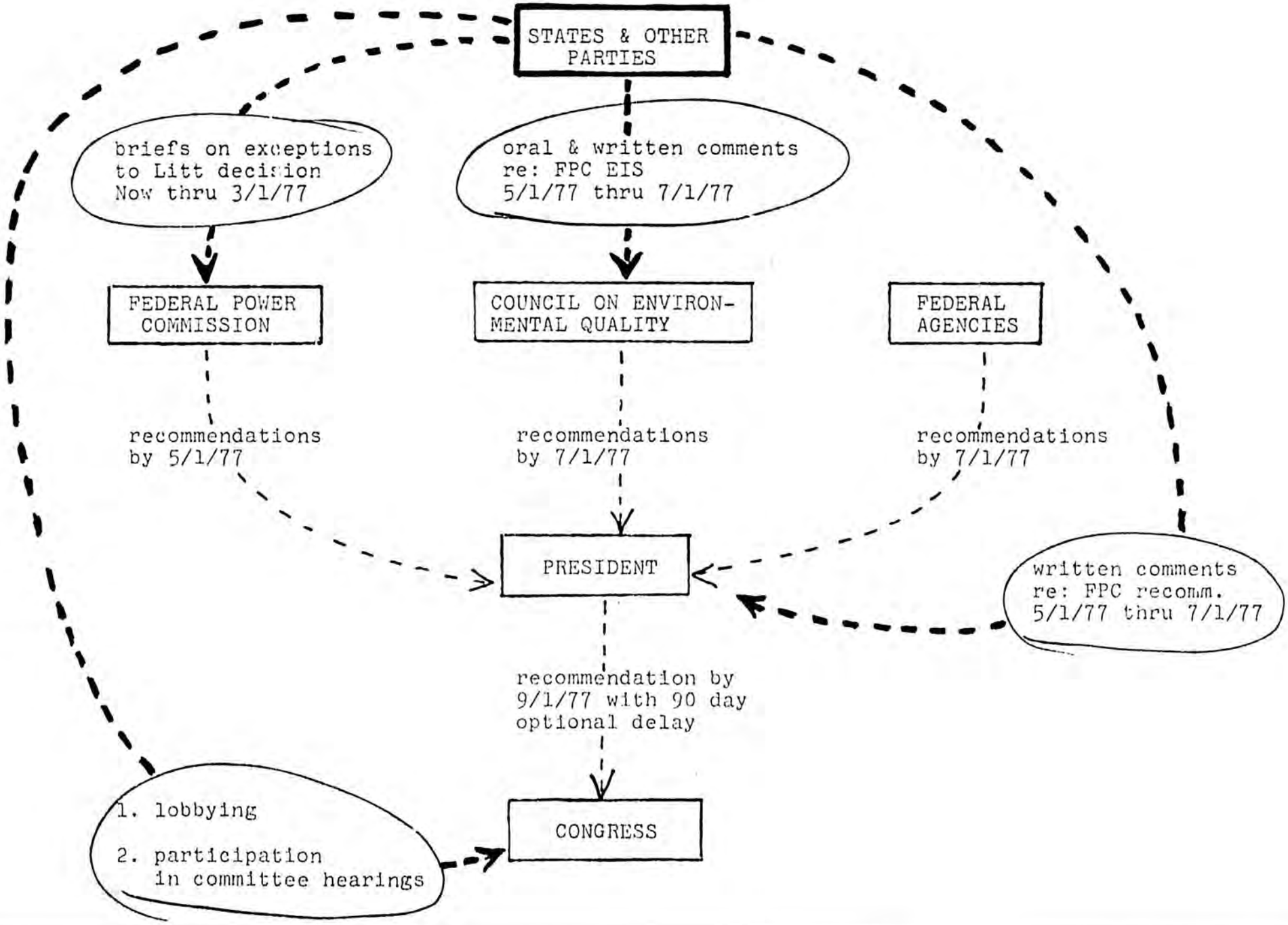
Mr. MELCHER (during the reading). Mr. Chairman, I ask unanimous consent that further reading of the amendment in the nature of a substitute be dispensed with, that it be printed in the RECORD, and that it be open to amendment at any point.

The CHAIRMAN. Is there objection to the request of the gentleman from Montana?

Mr. RUPPE. Reserving the right to object, Mr. Chairman, and I do not intend to object, I would like to ask my colleague, the gentleman from Montana (Mr. MELCHER), this question: Does the committee amendment presented to the desk reflect the Ruppe amendment as passed by the committee?

Barlow 2/22/77

TIMETABLE OF STATE INPUT
RE: ROUTE DECISION



ALASKA NATURAL GAS TRANSPORTATION

TIMETABLE

Federal decision-making steps under the Alaska Natural Gas Transportation Act of 1976

(1) Recommendations to President

A. Federal Power Commission
1. Hearings concluded in the El Paso Alaska certificate proceeding 11/12/76
2. F.P.C. Staff submitted position brief to F.P.C. on 12/7/76; brief supported Arctic Gas route
3. F.P.C. hearings closed 12/12/76
4. Initial decision by Administrative Law Judge Litt due 2/1/77
5. Briefs on exceptions to Litt decision due 3/1/77
6. F.P.C. recommendation to President on route selection due 5/1/77

B. Council on Environmental Quality
1. Hearings on Environmental Impact Statements on all three route proposals
2. C.E.Q. recommmendation to President due 7/1/77

C. State (and other interested parties) comments to Pres due 7/1/77

(2) Presidential Decision

A. President makes route recommendation to Congress by 9/1/77
1. President may delay decision by up to 90 days

(3) Congressional decision

A. Congress has 60 days to select route after Presidential recommendation
1. If Congress approves Presidential recommendation through Joint Resolution within 60 days, the recommendation takes effect.
2. If Congress does not approve Presidential recommendation through Joint Resolution within 60 days, the President has 30 days to submit another recommendation. Congress then has another 60 days to act.

(4) Federal Agency approval

A. After Congressional approval, all federal agencies charged with issuance of certificates, permits, rights-of-way, leases, etc. "as soon as practicable".

(5) Judicial Review

A. Judicial review is limited to Constitutional questions and statutory powers, not on the substance of the decision. All litigation (on either the resolution or on the 1976 Act) must be filed within 60 days of the Congressional decision.

*Prepared 1/30/77 for House and Senate Special Committees on the Sale of Royalty Gas

FACTUAL COMPARISON OF PROJECTS — Continued

	TRANS-ALASKA PROJECT	ARCTIC GAS PROJECT
IV. *Environmental Impact:*	Miles of new pipe: 800 in Alaska, plus a few hundred miles, principally in west Texas, connecting with existing pipelines in the Lower 48 having idle capacity. Gravel required: approximately 7.5 million cubic yards. Waterway crossings: Major: 26. Total: About 600. Does not enter a wildlife range.	5,600 miles of new pipeline. Gravel required: approximately 57 million cubic yards. Waterway crossings: Major: 170. Total: About 3,000. Traverses the width of the Arctic National Wildlife Range. Requires the construction of camps, haul roads, and other preliminary facilities before construction of the pipeline may begin.
V. *Timing:*	With the uses of Alyeska's haul road and other construction facilities which required 1½ years to complete, this project has a significant head start. The laying of 800 miles of pipe in Alaska, coincident with the construction of the liquefied natural gas (LNG) plant represent the major time requirements for the project. Permits must be obtained only from American agencies.	Requires the laying of 5,600 miles of pipeline. Permits must be sought from both U.S. and Canadian agencies. Must compete before the National Energy Board (NEB) in Canada against Foothills' all-Canadian Maple Leaf Project. Native claims *not settled* in Canada.
VI. *Benefits to the State of Alaska:*	Native claims settled in Alaska, after many years of extensive efforts in the U.S. Congress. Substantial. $4.7 billion worth of goods, services, and facilities. Construction payrool of $840 million in Alaska. $2.9 billion to be paid in ad valorem and income taxes to the State over the life of the project. Pipeline route provides Staate of Alaska direct access to 12½ percent royalty share of the gas.	Minimal. $657 million worth of goods, services and facilities. Construction payroll of $100 million in Alaska. $360 million in ad valorem and income taxes to the State over the life of the project. Arctic Gas route precludes state access to its royalty share of gas.
VII. *Tax Benefits to U.S.:*	$9.2 billion in Federal income taxes to the U.S. treasury over the life of the project. $3.6 billion to be paid in *other* taxes to American governmental entities over the life of the project.	$2.1 billion in Federal income taxes to the U.S. treasury over the life of the project. $1.4 billion to be paid in *other* taxes to American governmental entities over the life of the project. (In addition, $8 billion will be paid to Canada at present tax rates. Taxing powers of the provinces are sovereign and cannot be controlled by the Canadian federal government.)
VIII. *Employment:*	7,500 workers to be employed at the peak of the project in the State of Alaska. 624 permanent employees in the State after construction. Total work force in U.S. at peak of construction: 24,000 (including Alaska). Permanent number of employees in the U.S. after completion of project: 1,470 (including Alaska).	2,500 workers to be employed at the peak of the project in the State of Alaska. 39 permanent employees in the State after construction. Total work force in U.S. at peak of construction: 12,000. Permanent number of employees in the U.S. after completion of project: 420.
IX. *Shrinkage:*	11.1 percent, some of which could be recoverable in the form of cryogenic energy.	9.6 percent, *none* of which is recoverable.
X. *Total Capital Cost:*	$8 billion.	$9.2 billion.
XI. *Pipe Rolling:*	Pipe requirements (42") can be met by U.S. mills.	Requires substantial portion of worldwide pipe mill capacity. No U.S. mill can now roll 48-inch pipe. Must be done in Canada, Germany or Japan.

The CHAIRMAN. All time has expired.

Pursuant to the rule, the Clerk will now read the committee amendment in the nature of a substitute recommended by the Committee on Interstate and Foreign Commerce, now printed in the reported bill as an original bill for the purpose of amendment.

It shall also be in order to consider an amendment in the nature of a substitute recommended by the Committee on Interior and Insular Affairs if offered as an amendment in the nature of a substitute for the amendment in the nature of a substitute recommended by the Committee Interstate and Foreign Commerce.

The Clerk will read.

The Clerk read as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION. 1. This Act may be cited as the "Alaska Natural Gas Transportation Act of 1976."

AMENDMENT IN THE NATURE OF A SUBSTITUTE OFFERED BY MR. MELCHER

Mr. MELCHER. Mr. Chairman, I offer an amendment in the nature of a substitute.

The Clerk read as follows:

Amendment in the nature of a substitute offered by Mr. MELCHER:

Strike out all after the enacting clause and insert in lieu thereof the following:

SHORT TITLE

SECTION 1. This Act may be cited as the "Alaska Natural Gas Transportation Act of 1976".

CONGRESSIONAL FINDINGS

SEC. 2. The Congress finds and declares that—

(1) a natural gas supply shortage exists in the contiguous States of the United States;

(2) large reserves of natural gas in the State of Alaska could help significantly to alleviate this supply shortage;

(3) the expeditious construction of a viable natural gas transportation system for delivery of Alaska natural gas to United States markets is in the national interest; and

(4) the determinations whether to authorize a transportation system for delivery of Alaska natural gas to the contiguous States and, if so, which system to select, involve questions of the utmost importance respecting national energy policy, international relations, national security, and economic and environmental impact, and therefore should appropriately be addressed by the Congress and the President in addition to those Federal officers and agencies assigned functions under law pertaining to the selection, construction, and initial operation of such a system.

STATEMENT OF PURPOSE

SEC. 3. The purpose of this Act is to provide the means for making a sound decision as to the selection of a transportation system for delivery of Alaska natural gas to the contiguous States for construction and initial operation by providing for the participation of the President and the Congress in the selection process, and, if such a system is approved under this Act, to expedite its construction and initial operation by (1) limiting the jurisdiction of the courts to review the actions of Federal officers or agencies taken pursuant to the direction and authority of this Act, and (2) permitting the limitation of administrative procedures and effecting the limitation of judicial procedures related to such actions. To accomplish this purpose it is the intent of the Congress to exercise its constitutional powers to the fullest extent in the authorizations and directions herein made, and particularly with respect to the limitation of judicial review of actions of Federal officers or agencies taken pursuant thereto.

DEFINITIONS

SEC. 4. As used in this Act:

(1) the term "Alaska natural gas" means natural gas derived from the area of the State of Alaska generally known as the North Slope of Alaska, including the Continental Shelf thereof;

(2) the term "Commission" means the Federal Power Commission;

(3) the term "Secretary" means the Secretary of the Interior;

(4) the term "provision of law" means any provision of a Federal statute or rule, regulation, or order issued thereunder; and

(5) the term "approved transportation system" means the system for the transportation of Alaska natural gas designated by the President pursuant to section 7(a) or 8(b) and approved by joint resolution of the Congress pursuant to section 8.

FEDERAL POWER COMMISSION REVIEWS AND REPORTS

SEC. 5. (a)(1) Notwithstanding any provision of the Natural Gas Act or any other provision of law, the Commission shall suspend all proceedings pending before the Commission on the date of enactment of this Act relating to a system for the transportation of Alaska natural gas as soon as the Commission determines to be practicable after such date, and the Commission may refuse to act on any application, amendment thereto, or other requests for action under the Natural Gas Act relating to a system for the transportation of Alaska natural gas until such time as (A) a decision of the President designating such a system for approval takes effect pursuant to section 8, (B) no such decision takes effect pursuant to section 8, or (C) the President decides not to designate such a system for approval under section 8 and so advises the Congress pursuant to section 7.

(2) In the event a decision of the President designating such a system takes effect pursuant to this Act, the Commission shall forthwith vacate proceedings suspended under paragraph (1) and, pursuant to section 9 and in accordance with the President's decision, issue a certificate of public convenience and necessity respecting such system.

(3) In the event such a decision of the President does not take effect pursuant to this Act or the President decides not to designate such a system and so advises the Congress pursuant to section 7, the suspension provided for in paragraph (1) of this subsection shall be removed.

(b)(1) The Commission shall review all applications for the issuance of a certificate of public convenience and necessity relating to the transportation of Alaska natural gas pending on the date of enactment of this Act, and any amendments thereto which are timely made, and after consideration of any alternative transportation system which the Commission determines to be reasonable, submit to the President not later than May 1, 1977, a recommendation concerning the selection of such a transportation system. Such recommendation may be in the form of a proposed certificate of public convenience and necessity, or in such other form as the Commission determines to be appropriate, or may recommend that no decision respecting the selection of such a transportation system be made at this time or pursuant to this Act. Any recommendation that the President approve a particular transportation system shall (A) include a description of the nature and route of the system, (B) designate a person to construct and operate the system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system, (C) if such recommendation is for an all-land pipeline transportation system, or a transportation system involving water transportation include provision for new facilities to the extent necessary to assure direct pipeline delivery of Alaska natural gas contemporaneously to points both east and west of the Rocky Mountains in the lower continental United States.

(2) The Commission may, by rule, provide for the presentation of data, views, and arguments before the Commission or a delegate of the Commission pursuant to such procedures as the Commission determines to be appropriate to carry out its responsibilities under paragraph (1) of this subsection. Such a rule shall, to the extent determined by the Commission, apply, notwithstanding any provision of law that would otherwise have applied to the presentation of data, views, and arguments.

(3) The Commission may request such information and assistance from any Federal agency as the Commission determines to be necessary or appropriate to carry out its responsibilities under this Act. Any Federal agency requested to submit information or provide assistance shall submit such information to the Commission at the earliest practicable time after receipt of a Commission request.

(c) The Commission shall accompany any recomendation under subsection (b)(1) with a report, which shall be available to the public, explaining the basis for such recommendation and including for each transportation system reviewed or considered a discussion of the following:

(1) for each year of the 20-year period which begins with the first year following the date of enactment of this Act, the estimated—

(A) volumes of Alaska natural gas which would be available to each region of the United States directly, or indirectly by displacement or otherwise, and

(B) transportation costs and delivered prices of any such volumes of gas by region;

(2) the effects of each of the factors described in subparagraphs (A) and (B) of paragraph (1) on the projected natural gas supply and demand for each region of the United States and on the projected supplies of alternative fuels available by region to offset shortages of natural gas occurring in such regions for each such year;

(3) the impact upon competition;

(4) the extent to which the system provides a means for the transportation to United States markets of natural resources or other commodities from sources in addition to the Prudhoe Bay Reserve;

(5) environmental impacts;

(6) safety and efficiency in design and operation and potential for interruption in deliveries of Alaska natural gas;

(7) construction schedules and possibilities for delay in such schedules or for delay occurring as a result of other factors;

(8) feasibility of financing;

(9) extent of reserves, both proven and probable and their deliverability by year for each year of the 20-year period which begins with the first year following the date of enactment of this Act;

(10) the estimate of the total delivered cost to users of the natural gas to be transported by the system by year for each year of the 20-year period which begins with the first year following the date of enactment of this Act;

(11) capability and cost of expanding the system to transport additional volumes of natural gas in excess of initial system capacity;

(12) an estimate of the capital and operating costs, including an analysis of the reliability of such estimates and the risk of cost overruns; and

(13) such other factors as the Commission determines to be appropriate.

(d) The recommendation by the Commission pursuant to this section shall not be based upon the fact that the Government of Canada or agencies thereof have not, by then rendered a decision as to authorization of a pipeline system to transport Alaska natural gas through Canada.

(e) If the Commission recommends the approval of a particular transportation system, it shall submit to the President with such recommendation (1) an identification of those facilities and operations which are proposed to be encompassed within the term "construction and initial operation" in order to define the scope of directions contained in section 9 of this Act and (2) the terms and conditions permitted under the Natural Gas Act, which the Commission determines to be appropriate for inclusion in a certificate of public convenience and necessity to be issued respecting such system. The Commission shall submit to the President contemporaneously with its report an environmental impact statement prepared respecting the recommended system, if any, and each environmental impact statement which may have been prepared respecting any other system reported on under this section.

OTHER REPORTS

SEC. 6. (a) Not later than July 1, 1977, any Federal officer or agency may submit written comments to the President with respect to the recommendation and report of the Commission and alternative methods for transportation of Alaska natural gas for delivery to the contiguous States. Such comments shall be made available to the public by the President when submitted to him, unless expressly exempted from this requirement in whole or in part by the President, under section 552(b)(1) of title 5, United States Code. Any such written comment shall include information within the competence of such Federal officer or agency with respect to—

(1) environmental considerations, including air and water quality and noise impacts;

(2) the safety of the transportation systems;

(3) international relations, including the status and time schedule for any necessary Canadian approvals and plans;

(4) national security, particularly security of supply;

(5) sources of financing for capital costs;

(6) the impact upon competition;

(7) impact on the national economy, including regional natural gas requirements; and

(8) relationship of the proposed transportation system to other aspects of national energy policy.

(b) Not later than July 1, 1977, the Governor of any State, any municipality, State utility commission, and any other interested

than 3 days to a day certain are excluded in the computation of the 60-day calendar period.

(d)(1) This subsection is enacted by Congress—

(A) as an exercise of the rulemaking power of each House of Congress, respectively, and as such it is deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in that House in the case of resolutions described by paragraph (2) of this subsection; and it supersedes other rules only to the extent that it is inconsistent therewith; and

(B) with full recognition of the constitutional right of either House to change the rules (so far as those rules relate to the procedure of that House) at any time, in the same manner and to the same extent as in the case of any other rule of such House.

(2) For purposes of this Act, the term "resolution" means (A) a joint resolution, the resolving clause of which is as follows: "That the House of Representatives and Senate approve the Presidential decision on an Alaska natural gas transportation system submitted to the Congress on , 19 , and find that any environmental impact statements prepared relative to such system and submitted with the President's decision are in compliance with the National Environmental Policy Act of 1969."; the blank space therein shall be filled with the date on which the President submits his decision to the House of Representatives and the Senate; or (B) a joint resolution described in subsection (g).

(3) A resolution once introduced with respect to a Presidential decision on an Alaska natural gas transportation system shall be referred to one or more committees (and all resolutions with respect to the same Presidential decision on an Alaska natural gas transportation system shall be referred to the same committee or committees) by the President of the Senate or the Speaker of the House of Representatives, as the case may be.

(4)(A) If any committee to which a resolution with respect to a Presidential decision on an Alaska natural gas transportation system has been referred has not reported it at the end of 30 calendar days after its referral, it shall be in order to move either to discharge such committee from further consideration of such resolution or to discharge such committee from consideration of any other resolution with respect to such Presidential decision on an Alaska natural gas transportation system which has been referred to such committee.

(B) A motion to discharge may be made only by an individual favoring the resolution, shall be highly privileged (except that it may not be made after the committee has reported a resolution with respect to the same Presidential decision on an Alaska natural gas transportation system), and debate thereon shall be limited to not more than 1 hour, to be divided equally between those favoring and those opposing the resolution. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

(C) If the motion to discharge is agreed to or disagreed to, the motion may not be made with respect to any other resolution with respect to the same Presidential decision on an Alaska natural gas transportation system.

(5)(A) When any committee has reported, or has been discharged from further consideration of, a resolution, but in no case earlier than 30 days after the date of receipt of the President's decision to the Congress, it shall be at any time thereafter in order (even though a previous motion to the same effect has been disagreed to) to move to proceed to the consideration of the resolution. The motion shall be highly privileged and shall not be debatable. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

(B) Debate on the resolution described in subsection (d)(2)(A) shall be limited to not more than 10 hours and on any resolution described in subsection (g) to one hour. This time shall be divided equally between those favoring and those opposing such resolution. A motion further to limit debate shall not be debatable. An amendment to, or motion to recommit the resolution shall not be in order, and it shall not be in order to move to reconsider the vote by which such resolution was agreed to or disagreed to or, thereafter within such 60-day period, to consider any other resolution respecting the same Presidential decision.

(6)(A) Motions to postpone, made with respect to the discharge from committee, or the consideration of a resolution and motions to proceed to the consideration of other business, shall be decided without debate.

(B) Appeals from the decision of the Chair relating to the application of the rules of the Senate or the House of Representatives, as the case may be, to the procedures relating to a resolution shall be decided without debate.

(e) The President shall find that any required environmental impact statement relative to the Alaska natural gas transportation system designated for approval by the President has been prepared and that such statement is in compliance with the National Environmental Policy Act of 1969. Such finding shall be set forth in the report of the President submitted under section 7. The President may supplement or modify the environmental impact statements prepared by the Commission or other Federal officers or agencies. Any such environmental impact statement shall be submitted contemporaneously with the transmittal to the Senate and House of Representatives of the President's decision pursuant to section 7(b) or subsection (b) of this section.

(f) Within 20 days of the transmittal of the President's decision to the Congress under section 7(b) or under subsection (b) of this section, (1) the Commission shall submit to the Congress a report commenting on the decision and including any information with regard to that decision which the Commission considers appropriate, and (2) the Council on Environmental Quality shall provide an opportunity to any interested person to present oral and written data, views, and arguments on any environmental impact statement submitted by the President relative to any system designated by him for approval which is different from any system reported on by the Commission under section 5(c), and shall submit to the Congress a report summarizing any such views received. The committees in each House of Congress to which a resolution has been referred under section (d)(3) shall conduct hearings on the Council's report and include in any report of the committee respecting such resolution the findings of the committee on the legal and factual sufficiency of any environmental impact statement submitted by the President relative to any system designated by him for approval.

(g)(1) At any time after a decision designating a transportation system is submitted to the Congress pursuant to this section, if the President finds that any provision of law applicable to actions to be taken under subsection (a) or (c) of section 9 require waiver in order to permit expeditious construction and initial operation of the approved transportation system, the President may submit such proposed waiver to both Houses of Congress.

(2) Such provision shall be waived with respect to actions to be taken under subsection (a) or (c) of section 9 upon enactment of a joint resolution pursuant to the procedures specified in subsections (c) and (d) of this section (other than subsection (d)(2) thereof) within the first period of 60 calendar days of continuous session of Congress beginning on the date after the date of receipt by the Senate and House of Representatives of such proposal.

(3) The resolving clause of the joint resolution referred to in this subsection is as follows: "That the House of Representatives and Senate approve the waiver of the provision of law ( ) as proposed by the President, submitted to the Congress on , 19 ." The first blank space therein being filled with the citation to the provision of law and the second blank space therein being filled with the date on which the President submits his decision to the House of Representatives and the Senate.

(4) In the case of action with respect to a joint resolution described in this subsection, the phrase "a waiver of a provision of law" shall be substituted in subsection (d) for the phrase "the Alaska natural gas transportation system.".

AUTHORIZATIONS

SEC. 9. (a) To the extent that the taking of any action which is necessary or related to the construction and initial operation of the approved transportation system requires a certificate, right-of-way, permit, lease, or other authorization to be issued or granted by a Federal officer or agency, such Federal office or agency shall—

(1) to the fullest extent permitted by the provisions of laws administered by such officer or agency, but

(2) without regard to any provision of law which is waived pursuant to section 8(g) issue or grant such certificates, permits, rights-of-way, leases, and other authorizations at the earliest practicable date.

(b) All actions of a Federal officer or agency with respect to consideration of applications or requests for the issuance or grant of a certificate, right-of-way, permit, lease, or other authorization to which subsection (a) applies shall be expedited and any such application or request shall take precedence over any similar applications or requests of the Federal officer or agency.

(c) Any certificate, right-of-way, permit, lease, or other authorization issued or granted pursuant to the direction under subsection (a) shall include the terms and conditions required by law unless waived pursuant to a resolution under section 8(g), and may include terms and conditions permitted by law, except that with respect to terms and conditions permitted but not required, the Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to include terms and conditions as would compel a change in the basic nature and general route of the approved transportation system or those the inclusion of which would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system.

(d) Any Federal officer or agency, with respect to any certificate, permit, right-of-way, lease, or other authorization issued or granted by such officer or agency, may, to the extent permitted under laws administered by such officer agency add to, amend or abrogate any term or condition included in such certificate, permit, right-of-way, lease, or other authorization except that with respect to any such action which is permitted but not required by law, such Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to take such action if the terms and conditions to be added, or as amended, would compel a change in the basic nature and general route of the

approved transportation system or would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system.

(e) Any Federal officer or agency to which subsection (a) applies, to the extent permitted under laws administered by such officer or agency, shall include in any certificate, permit, right-of-way, lease, or other authorization issued or granted those terms and conditions identified in the President's decision as appropriate for inclusion except that the requirement to include such terms and conditions shall not limit the Federal officer or agency's authority under subsection (d) of this section.

JUDICIAL REVIEW

SEC. 10. (a) Notwithstanding any other provision of law, the actions of Federal officers or agencies taken pursuant to section 9 of this Act, shall not be subject to judicial review except as provided in this section.

(b)(1) Claims alleging the invalidity of this Act may be brought not later than the 60th day following the date a decision takes effect pursuant to section 8 of this Act.

(2) Claims alleging that an action will deny rights under the Constitution of the United States, or that an action is in excess of statutory jurisdiction, authority, or limitations, or short of statutory right may be brought not later than the 60th day following the date of such action, except that if a party shows that he did not know of the action complained of, and a reasonable person acting in the circumstances would not have known, he may bring a claim alleging the invalidity of such action on the grounds stated above not later than the 60th day following the date of his acquiring actual or constructive knowledge of such action.

(c)(1) A claim under subsection (b) shall be barred unless a complaint is filed prior to the expiration of such time limits in the United States Court of Appeals for the District of Columbia acting as a Special Court. Such court shall have exclusive jurisdiction to determine such proceeding in accordance with the procedures hereinafter provided, and no other court of the United States, of any State, territory, or possession of the United States, or of the District of Columbia, shall have jurisdiction of any such claim in any proceeding instituted prior to or on or after the date of enactment of this Act.

(2) Any such proceeding shall be assigned for hearing and completed at the earliest possible date, shall, to the greatest extent practicable, take precedence over all other matters pending on the docket of the court at that time, and shall be expedited in every way by such court and such court shall render its decision relative to any claim within 90 days from the date such claim is brought unless such court determines that a longer period of time is required to satisfy requirements of the United States Constitution.

(3) The enactment of a joint resolution under section 8 approving the decision of the President shall be conclusive as to the legal and factual sufficiency of the environmental impact statements submitted by the President relative to the approved transportation system and no court shall have jurisdiction to consider questions respecting the sufficiency of such statements under the National Environmental Policy Act of 1969.

SUPPLEMENTAL ENFORCEMENT AUTHORITY

SEC. 11. (a) In addition to remedies available under other applicable provisions of law, whenever any Federal officer or agency determines that any person is in violation of any applicable provision of law administered or enforceable by such officer or agency or any rule, regulation, or order under such provision, including any term or condition of any certificate, right-of-way, permit, lease, or other authorization, issued or granted by such officer or agency, such officer or agency may—

(1) issue a compliance order requiring such person to comply with such provision or any rule, regulation, or order thereunder, or

(2) bring a civil action in accordance with subsection (c).

(b) Any order issued under subsection (a) shall state with reasonable specificity the nature of the violation and a time of compliance, not to exceed 30 days, which the officer or agency, as the case may be, determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

(c) Upon a request of such officer or agency, as the case may be, the Attorney General may commence a civil action for appropriate relief, including a permanent or temporary injunction or a civil penalty not to exceed $25,000 per day for violations of the compliance order issued under subsection (a). Any action under this subsection may be brought in any district court of the United States for the district in which the defendant is located, resides, or is doing business, and such court shall have jurisdiction to restrain such violation, require compliance, or impose such penalty or give ancillary relief.

EXPORT LIMITATIONS

SEC. 12. Any exports of Alaska natural gas shall be subject to the requirements of the Natural Gas Act and section 103 of the Energy Policy and Conservation Act, except that in addition to the requirements of such Acts, before any Alaska natural gas in excess of 1,000 Mcf per day may be exported to any nation other than Canada or Mexico, the President must make and publish an express finding that such exports will not diminish the total quantity or quality nor increase the total price of energy available to the United States.

EQUAL ACCESS TO FACILITIES

SEC. 13. (a) There shall be included in the terms of any certificate, permit, right-of-way, lease, or other authorization issued or granted pursuant to the directions contained in section 9 of this Act, a provision that no person seeking to transport natural gas in the Alaska natural gas transportation system shall be prevented from doing so or be discriminated against in the terms and conditions of service on the basis of degree of ownership, or lack thereof, of the Alaska natural gas transportation system.

(b) The State of Alaska is authorized to ship its royalty gas on the approved transportation system for use within Alaska and, to the extent its contracts for the sale of royalty gas so provide, to withdraw such gas from the interstate market for use within Alaska; the Federal Power Commission shall issue all authorizations necessary to effectuate such shipment and withdrawal subject to review by the Commission only of the justness and reasonableness of the rate charged for such transportation.

ANTITRUST LAWS

SEC. 14. Nothing in this Act, and no action taken hereunder, shall imply or effect an amendment to, or exemption from, any provision of the antitrust laws.

AUTHORIZATION

SEC. 15. There is hereby authorized to be appropriated beginning in fiscal year 1978 and each fiscal year thereafter, such sums as may be necessary to carry out the functions of the Federal inspector appointed by the President with the advice and consent of the Senate under section 7.

SEPARABILITY

SEC. 16. If any provision of this Act, or the application thereof, is held invalid, the remainder of this Act shall not be affected thereby.

CIVIL RIGHTS

SEC. 17. All Federal officers and agencies shall take such affirmative action as is necessary to assure that no person shall, on the grounds of race, creed, color, national origin, or sex, be excluded from receiving, or participating in any activity conducted under, any certificates, permit, right-of-way, lease, or other authorization granted or issued pursuant to this Act. The appropriate Federal officers and agencies shall promulgate such rules as are necessary to carry out the purposes of this section and may enforce this section, and any rules promulgated under this section through agency and department provisions and rules which shall be similar to those established and in effect under title VI of the Civil Rights Act of 1964.

REPORT ON THE EQUITABLE ALLOCATION OF NORTH SLOPE CRUDE OIL

SEC. 18. Within 6 months of the date of enactment of this Act, the President shall determine what special expediting procedures are necessary to insure the equitable allocation of north slope crude oil to the Northern Tier States of Washington, Oregon, Idaho, Montana, North Dakota, Minnesota, Michigan, Wisconsin, Illinois, Indiana, and Ohio (hereinafter referred to as the "Northern Tier States") to carry out the provisions of section 410 of Public Law 93-153 and shall report his findings to the Congress. In his report, the President shall identify the specific provisions of law, which relate to any determination of a Federal officer or agency as to whether to issue or grant a certificate, permit, right-of-way, lease, or other authorization in connection with the construction of an oil delivery system serving the Northern Tier States and which the President finds would inhibit the expeditious construction of such a system in the contiguous States of the United States. Furthermore, all Federal officers and agencies shall, prior to the submission of such report and further congressional action relating thereto, expedite to the fullest practicable extent all applications and requests for action made with respect to such an oil delivery system.

ANTITRUST STUDY

SEC. 19. The Attorney General of the United States is authorized and directed to conduct a thorough study of the antitrust issues and problems relating to the production and transportation of Alaska natural gas and, not later than six months following the date of enactment of this Act, to complete such study and submit to the Congress a report containing his findings and recommendations with respect thereto.

EXPIRATION

SEC. 20. This Act shall terminate in the event that no decision of the President takes effect under section 8 of this Act, such termination to occur at the end of the last day on which a decision could be, but is not, approved under such section.

Mr. MELCHER (during the reading). Mr. Chairman, I ask unanimous consent that further reading of the amendment in the nature of a substitute be dispensed with, that it be printed in the RECORD, and that it be open to amendment at any point.

The CHAIRMAN. Is there objection to the request of the gentleman from Montana?

Mr. RUPPE. Reserving the right to object, Mr. Chairman, and I do not intend to object, I would like to ask my colleague, the gentleman from Montana (Mr. MELCHER), this question: Does the committee amendment presented to the desk reflect the Ruppe amendment as passed by the committee?

SCOMM

#21:26

economic interest, or at least, the national interest of the U.S. appears to them as negotiable in their bid to obtain certain concessions from the Commission or the Congress in return for their cooperation in bringing this gas to market. 1/ Admittedly, the uncertainty of regulation is not as bankable as the 3/4 billion dollars ARCO, for example, had negotiated as advance payments by prospective Alaskan gas purchasers before the Commission found such payments against the public interest. But it shows that the producers, like C.B. Shaw's dinnertime companion, have a price at which they would sell their "service," and all of their protestations to the contrary cannot hide that they are mainly dickering over price. The record, unfortunately, now stands with no firm commitment on the part of any producers to sell natural gas, or even that they will agree to sell it immediately upon tentative certification of a successful applicant.

The State of Alaska's role as a royalty owner, taxing agent, and conservator of its resources is also at issue. The State of Alaska embarked early on upon a course designed to maximize the economic benefits flowing to Alaska from its hydrocarbon resources. This laudable goal for Alaskans, unfortunately, is not always consistent with the general public interest of all of the people of the United States. It may portend, again unfortunately, a confrontation on the merits of an indirect transfer of payments from other parts of the country to Alaska through excessive payments for Alaskan hydrocarbons. These are not easy questions; the State's demands were not crudely put nor outrageous on their face. The difficulty is that they are also not always obvious, and it is not easy to gain a clear picture of the State's demands or whether those who deal with the State privately are in a position to bargain effectively for the public interest. Any Prudhoe Bay field operating plan must be sanctioned by the State, and the producers may, for example, agree to conditions in the field production arrangements which could be quite detrimental to long-term consistent sales of interstate gas.

In addition to the lack of sales agreements, there is still no approved production agreement for oil or gas from the Prudhoe Bay Field. A draft agreement was presented to the parties for the first time on August 18, 1976, some 7 or 8 months after it was first suggested it might be filed. It will be several months still until

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1/ The reasons why the Commission may not have, as yet, set a price for Prudhoe Bay gas are: (1) that the producers and the State have

The State of Alaska's position, in the Presiding Judge's view, is contrary to the law and to effective or equitable regulatory control. The sole basis for its denial of jurisdiction is the claim that a State is not a "person" within the meaning of Section 2 of the Act. 1/ Thus, activities which, by their nature, Congress intended to place under regulation are said to be exempt when performed by a tate. There is no such gap in the law, and one should not be created. The producing and energy-rich tates of the nation, by virtue of their royalty interest where production is from state land and their increasing propensity to reserve the right to take that interest in kind, will have the ever-growing ability to dispose by sale of larger and larger volumes of gas and will expand such a gap to permit larger and larger volumes to escape regulatory control. In this proceeding alone, Alaska has recently entered into contracts to sell in interstate commerce up to 2.6 Tcf of its royalty gas.

Alaska's jurisdictional argument, moreover, is hardly compatible with the Act's purpose to afford consumers an effective bond of protection against excessive rates 1/ or the intention of Congress "to give the Commission jurisdiction over the rates of all wholesales of natural gas in interstate commerce ..." (emphasis added). 2/ Furthermore, Alaska's essential premise is undercut by the holding in F.P.C. v. Corporation Comm'n of Oklahoma, 362 F. Supp. 522; aff'd 415 U.S. 961 (1974), that a state agency is a "person" within the meaning of Section 2 of the Act and thus the U.S. District Courts have jurisdiction under Section 20(a) to enjoin its actions violative of the Act or regulations thereunder. The question of jurisdiction over Alaska's proposed sales is not squarely at issue in this proceeding, and the parties have not provided legal argument on the question only because sales contracts were not filed earlier. The need for the Commission to give prompt attention to and definitively resolve the matter is apparent, since any attempt to finance these projects must be predicated on knowledge of the transactions that are jurisdictional. 3/

1/ Atlantic Refining Co. v. P.S.C. of New York, 260 U.S. 378(1959).

2/ Phillips Petroleum Co. v. Wisconsin, 347 U.S. 672, 682 (1954).

3/ The same claim by the State of Texas is now pending before the Commission in Public Service Company of North Carolina, Inc., Docket No. RP76-102. The State of Alaska has intervened in that proceeding. A finding of jurisdiction there could be dispositive of the issue here.

may disagree with the wilderness values the opponents espouse, either the need to protect them or the need to protect them at the level suggested, are lumped together as lacking an appropriate appreciation of wilderness values or of how U. S. citizens might view them. 1/ This culminates in the Conservation Intervenor's argument that the only issue of importance to decide is that of the Wildlife Range, dismissing in a few paragraphs all other issues as being a wash and almost de minimus in comparison to the importance they place on this issue alone. This is simply not true, and consideration of the Wildlife Range and the protection of its wilderness values is just one of many issues to be considered in this proceeding.

The role of Alaska in these proceedings on physical environmental matters has often been difficult to assess. The State, of course, is keenly interested in economic development of industry and this takes a number of interesting forms: desire for an 800-mile, trans-Alaska pipeline to supply cheap energy to the interior, liquid removal plants in the State rather than at pipeline termini in Canada or in the south 48, and possible industrialization of the Fairbanks and Prince William Sound area including, at the latter, marine terminals and hydrocarbon feedstock-based industrial plants. From an environmental point of view, each of these activities will have a far greater impact upon the State and its citizens' perspective of environmental impact than any activity in the Wildlife Range. The State position on environmental grounds clearly has been influenced by these economic considerations. The simple fact is that the State wants industry in the State, has supported the El Paso application on economic grounds, wants that industry in Prince William Sound, and has bargained with the producers and prospective pipeline purchasers of its royalty gas with tie-in considerations to supply energy for that industry.

1/ One need not go far in the briefs for an example that the key arguments are colored by the perception of the individual. Alcan states that (Alcan Env. R. Br. 14):

> ...Second, the whaling activities of the 19th century left no visible marks on the Arctic Wildlife Range, other than a very few abandoned cabins.

It is ironic that the absence of musk oxen, which were wiped

The State thus opposed the Commission's Staff proposal to site the LNG terminal at Cape Starichkof, although with less hard evidence it insisted that El Paso realign its pipeline.

It is not strange, therefore, that Dr. LeResche's opinion was not sought by the other state planners as to the wilderness value of the Chugach Forest and whether the forest should be protected (140/22,488). Neither Alaskan Arctic nor Alcan will provide to the same degree the tax base and most of the other lagniappes supplied by El Paso. (See socio-economic section infra.) Even if one were to view only superficially the environmental record and briefs, the manifold interests of the State make it more an advocate on economic grounds than a concerned party merely seeking to protect its environmental heritage. 1/

The attitude of the Conservation Intervenors also requires comment. Had they not had a cause celebre issue on the Wildlife Range, they would have opposed more vigorously El Paso's proposed entry to Gravina Point through the virtually undisturbed and wilderness area of the Chugach National Forest. 2/ While

1/ One of the more amusing aspects of Alaska's brief is that while claiming the right for its citizens to pretty near dictate a pipeline choice to the U. S., it lambasts the attempt of the citizens of the City of Kaktovik, which perches on the Wildlife Range, to have their views considered (Br. p. 8). It is not repugnant to this writer to give weight to the views of the people physically affected. In fact, this is only one consideration in reaching this decision, and both views have been given full consideration.

2/ There is less visible evidence of man's presence in the Chugach than along the coast of the North Slope and the Wildlife Range. There is simply no way to avoid the comparison that the building of a road and pipeline through the Chugach National Forest is (1) analogous in almost every respect to building a pipeline through the coastal plain; (2) taken by itself could be more detrimental in both short- and long-term impact upon the environment; and (3) that mitigative measures in revegetation and restoring mountain cuts, from the visual and aesthetic point of view, may be less successful than mitigative measures on the North Slope. Certainly such construction will be visible to more people and will impact an area more susceptible to future compatible recreational use than the Arctic North Slope

XVI

PROPOSED LEGISLATION

A. Section 13 of the Alaska Natural Gas Act of 1976

The State of Alaska has entered into contracts for the interstate sale of its royalty gas which include provisions permitting the State to subsequently withdraw the gas from the interstate market for use within the State. These withdrawal provisions are sanctioned by Section 13(b) of the Alaska Natural Gas Act of 1976.

However, as discussed in the Jurisdiction and Financing sections of this Initial Decision, substantial difficulties arise from the State's asserted right to commit its gas to interstate use with one hand and take it back with the other. The mere prospect of withdrawal imperils the financeability of an Alaskan gas project; actual withdrawal would idle downstream facilities and in turn produce adverse cost impacts.

Moreover, when the Section 13(b) withdrawal provision is coupled with the Act's "equal access" provision, 1/ it becomes readily apparent that the statute in its present form could operate to confer a substantial indirect subsidy to the State. Assuming that the project could be financed and completed, that Alaska's interstate customers (El Paso Natural, Tennneco Alaskan, and Southern) participated in the equity financing with consumer guarantees, and that Alaska thereafter found an intrastate use for its royalty gas, the consumers of the three customer companies would have risked their dollars to help finance the project, only to see consumers in Alaska reap the reward.

For the reasons stated herein, the Presiding Judge respectfully suggests that the Commission, in its recommendation to the President, give consideration to the desirability of amending the Alaska Natural Gas Act of 1976 to delete therefrom Sections 13(a) and 13(b). Absent deletions of these two provisions, direct and total U.S. government guarantees would appear to be the only feasible method of financing.

1/ Section 13(a) of the 1976 Alaska Natural Gas Act would deny the Commission the power to limit access to the transportation system to shippers participating fairly in its equity financing. It is questionable whether the proposal to finance an Alaskan project with consumer guarantees is possible in the face of

Realistically, in the time frame necessary to expeditiously finance these projects, the Commission is incapable of more than strongly suggesting to the producers that their financial assistance to these projects is both fair and proper and in their best interests. However, if the President and Congress deem it appropriate that the producers, as chief beneficiaries of the sale of Alaskan hydrocarbons, should participate in financing construction of a transportation system to market their product--a position pressed obliquely by the Department of Treasury representatives on the record and on brief--legislative methods may be pursued, as Treasury hinted, to secure such participation. 1/ If that should occur, many of the problems discussed below will become less significant.

As far as the State of Alaska is concerned, there is no record evidence that other states have participated in financing this type of gas pipeline project. It is not that financing utility and industrial projects through municipal bonds, direct ownership of generating facilities (e.g., New York), or forgoing certain taxes is unknown to states seeking to ensure an expanding economic base. Given the avowed intentions of the State to invest its revenues and the high rate of return suggested here for either equity or debt, the State may see this as a better investment than it can receive elsewhere. 2/ If, in addition, tariffs require the ultimate consumers to shoulder full debt service responsibility and the bonds issued achieve debt ratings satisfactory to the New York State Insurance Commission, they would probably also satisfy the

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1/ The corollary of not being able to make a horse drink when led to water is that you can make him darn sorry he did not.

2/ While it might be unkind to suggest, there is a likelihood that the State might be willing to aid El Paso if it appeared that such offer might tip the choice towards the State's first love. The State's excellent presentation, through a range of perceptive and knowledgeable witnesses, does not permit ignoring that such an obvious suggestion may be made at a propitious time in the decisionmaking process.

FEDERAL POWER COMMISSION

NEWS RELEASE

WASHINGTON, D.C. 20426

IMMEDIATE RELEASE
February 1, 1977
El Paso Alaska Company, et al.
Docket No. CP75-96, et al.

No. 22869
(accompanies FPC
Release No. 22868)

ALASKAN NATURAL GAS FACT SHEET

This Federal Power Commission prodeeding involves three competing projects proposing significantly different approaches to delivering natural gas from the Prudhoe Bay Area of Alaska's North Slope to markets in the lower 48 states. The 200-square mile Prudhoe Bay Field is estimated to contain 22.5 trillion cubic feet in proven reserves of natural gas.

The FPC is to make a recommendation to the President on the selection of a transporation route for the gas by May 1, 1977, under the Alaska Natural Gas Transportation Act of 1976 (Public Law No. 94-586), passed by Congress October 1, 1976, and signed into law by the President October 22.

The three projects pending before the Commission are:

⊙ Alaskan Arctic Gas Pipeline Company (CP74-239, et al.) -- This project involves the construction of about 3,300 miles of new pipeline and 875 miles of looped (connected and parallel to existing lines) pipeline. The pipeline, ranging in diameter from 30 to 48 inches, would pick up United States reserves in Prudhoe Bay, Alaska, and Canadian reserves in the Mackenzie Delta, Northwest Territories, and proceed to Caroline Junction, Alberta, where the system would divide, with one leg extending into the Pacific Northwest down to California, and the other crossing the U.S. border into Montana and southeast into Illinois. Gas would move to eastern markets by displacement. This project includes transmission facilities proposed by several other Canadian and American companies -- Canadian Arctic Gas Pipeline Limited, Alberta Natural Gas Company Limited, Pacific Gas Transmission Company, Pacific Gas and Electric Company, and Northern Border Pipeline Company.

(over)

The project facilities are designed to initially transport 2.25 billion cubic feet of gas daily to U. S. markets and will cost an estimated $5.9 billion (based on filed July 1975 estimates of gas allocated to U.S. markets).

⊛ El Paso Alaska Company (CP75-96) -- This company would build an 809-mile 42-inch pipeline from Prudhoe Bay along the Alyeska oil pipeline corridor to a liquefaction facility at Point Gravina on the south coast of Alaska. The liquefied natural gas would be transported across water by a fleet of 11 cryogenic tankers 1,900 nautical miles to Point Conception, California, where it would be regasified. Gas would flow to midwest and east markets by displacement. The project is estimated to cost $6.54 billion (based on July 1975 estimates) and would be capable of delivering an estimated 2.4 billion cubic feet of gas per day.

⊛ Alcan Pipeline Company (CP76-433) and Northwest Pipeline Corporation, along with several Canadian companies (Foothills Pipe Lines Ltd., Westcoast Transmission Company Limited, Alberta Gas Trunk Line Limited), propose construction of about 3,000 miles of new pipeline and 1,600 miles of looped pipeline (paralleling the other line). The pipeline, ranging in diameter from 30 to 48 inches, would pick up Prudhoe Bay reserves and follow the Alyeska oil pipeline route as far as Delta Junction, Alaska, and from there would parallel the Alcan Highway to a connection with Canadian pipelines in British Columbia and Alberta, where the system would split the gas between western U.S. and midwest U.S. shippers. Gas would also flow to the east by displacement. This system would have a capacity of approximately 2.4 billion cubic feet per day and would deliver gas both into the Pacific Northwest and across a route similar to the Arctic Gas project extending from northeastern Montana into Illinois. The proposed project will cost an estimated $6.28 billion (as filed).

An associated, although independent project, Maple Leaf, will be built to deliver Canadian reserves from the Mackenzie Delta to Southern Canadian markets.

(continued)

Chronology

March 21, 1974 - Alaskan Arctic Gas Pipeline Company application filed.

September 24, 1974 - El Paso Alaska Company application filed.

January 23, 1975 - FPC order consolidating both applications (in Docket No. CP75-96, et al.).

April 7, 1975 - Hearings began before FPC Administrative Law Judge Nahum Litt.

November 21, 1975 - FPC staff Draft Environmental Impact Statement issued.

April 7, 1976 - Final Environmental Impact Statement issued.

July 9, 1976 - Alcan Pipeline Company and Northwest Pipeline Corporation application filed.

September 1976 - Supplemental Final Environmental Impact Statement issued.

November 12, 1976 - Hearings concluded. (There were a total of 253 days of hearings resulting in 44,458 pages of transcript together with numerous exhibits.)

December 7, 1976 - Final Position Brief of the Commission Staff issued.

December 14, 1976 - FPC issued Order No. 558 prescribing procedures pursuant to the Alaska Natural Gas Transportation Act of 1976.

February 1, 1977 - Initial decision issued by Judge Litt.

March 1, 1977 - Briefs on exceptions to the Judge's decision to be filed by FPC staff and all parties in the proceeding. (Replies to the exceptions will not be permitted.)

(over)

May 1, 1977 - The Federal Power Commission to make its recommendation to the President.

September 1, 1977 - The President to make his recommendation to Congress. He may postpone his decision until up to December 1, at his discretion.

Sixty days after the President's recommendation, Congress may enact a joint resolution. The Alaskan Natural Gas Transportation Act of 1976 (in section 8) provides dates for further executive and legislative review, if necessary.

Maps of the three proposed Alaskan natural gas transportation systems accompany this fact sheet.

- FPC -

For further information
call 275-4006 (Area Code 202) DC-E



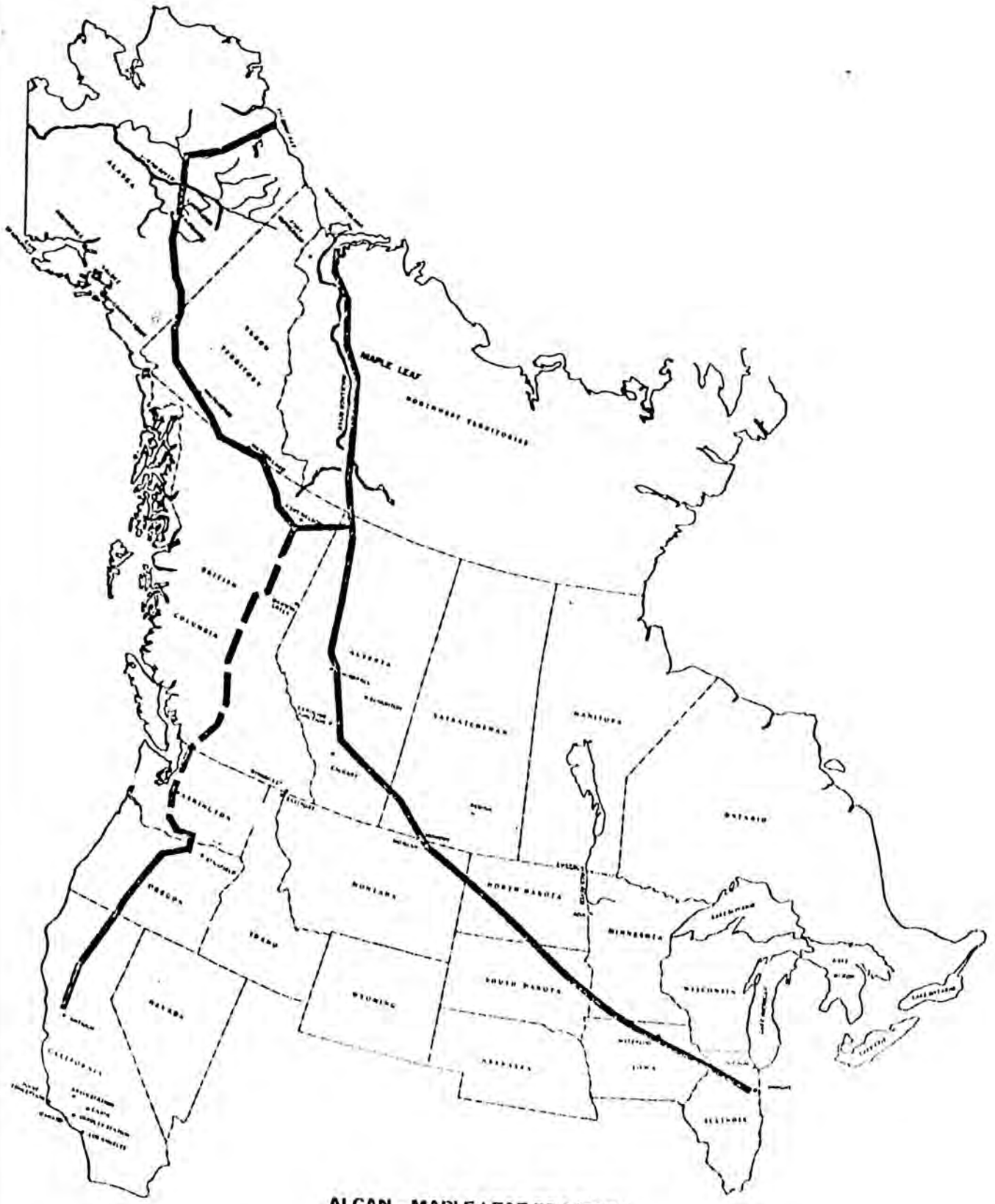




ARCTIC GAS PROJECT



EL PASO ALASKA PROJECT



ALCAN - MAPLE LEAF PROJECTS

Jack Daley

Show cause – Columbia + 2 or 3 others

Answered show

① P 30, 612 – Don't know how much gas going to get

② P30, 615-16 discussion of impact of taking out of rate base. Net income of Columbia is $105 million

③ P32, 305 – Up to 6 trillion cubic feet advance payment of $175

④ P 32, 331-335 – Relationship between Sohio - Columbia - Northern and raising money for finance

⑤ Columbia has $115 million $ as investments + advances for which it does not receive rate base treatment

⑥ BP-Alaska has assigned its interest to Northern Natural P 32, 391

⑦ P 32, 394 Explains relationship between BP - Northern - Columbia - Sohio
floor 2½ trill ceiling 6 trillion

el seq

P10,175 Explains contracts

1. Prelim agreement
2. crude oil agreement
3. agency agreement
4. Stand of Ohio guarantee
5. amend to prelim agreement date Oct 31, 1974
6. amdmt to crude oil agreement

Pipelines Respond to Show Cause Order Involving Termination of Rate Base Treatment for Alaskan Advance Payments and Refunds

Recently, Michigan Wisconsin Pipe Line Co., Northern Natural Gas Co., Columbia Gas Transmission Corp. and El Paso Natural Gas Co. answered the FPC's order issued 12/31/75 -- concurrently with its termination of the advance payments program established in Order No. 465 (R-411) and Order No. 499 (RM74-4) — directing them to show cause why rate base treatment for Alaskan advances they made under contracts executed before Order 499 should not be terminated as of 12/31/75, and why refunds of all carrying charges should not be ordered. The four pipelines argued that the issue of rate base treatment for their Alaskan advances was settled and approved by the Commission under orders which have become final and nonappealable; that the pipelines' good faith reliance on such orders would make refunds of the carrying charges unjust and unreasonable; and that adverse financial effects on them from any refund order would outweigh any possible benefits to consumers.

In the 12/31/75 order terminating the advance payments program in the Lower 48 States, the Commission concluded that while some advances aided in the development of offshore gas reserves, the advance payments program had not had "the significant substantial impact on development of natural gas reserves that was expected of the program at its inception." Moreover, while onshore advance payments proved more successful, the Commission found "as a matter of public policy, it is time to end the advance payment program onshore, as well as offshore, and to use other means to increase the necessary cash flow to onshore producers."

The Commission also evaluated the entire Alaskan advance payments program in order to determine the disposition of both pre-Order 499 Alaskan advances, and those made under contracts executed after the 12/28/73 effective date thereof. Questionnaire responses, the Commission said, indicated that about 64% of the proved reserves associated with Alaskan advances would have been dedicated to the interstate market in any event, but that substantial acceleration occurred as a result thereof. Also, producers who control 35% of the proved reserves emphasized that sufficient capital was not available absent the advance payments program. However, the Commission also referred to opposing comments that, among other things, the program was permitting major pipelines to tie up much of the producer reserves in Alaska.

Alaskan advances, the Commission concluded, are similar to offshore advances in that there is no intrastate market currently to compete with the interstate market, and no prospect of such a market developing in Alaska in the near future. "Assuming that all Alaskan gas will eventually go interstate, we are not convinced, based upon our findings herein on offshore advances in the Lower 48 States, that any appreciable and quantifiable acceleration of development and production of Alaskan gas will occur . . . ." As to the need for capital, the Commission continued, the Alaskan producers which receive the advances have already demonstrated their ability to raise capital on their own, as reflected in their proposals to raise capital and charge the respective interstate pipelines and intrastate distributors the interest theron in return for gas to be delivered at a future date. Furthermore, the Commission agreed with arguments that the Alaskan advance payments program permits a few pipelines to tie up almost all of the Alaskan reserves to the exclusion of others, with little or no benefit to the ultimate consumer.

Accordingly, the Commission decided to terminate rate base treatment, as of 12/31/75, for Alaskan advances made under contracts executed after the 12/28/73 effective date of Order 499, and directed the refund of all amounts collected as a result of including such advances in rate base.

The show cause order here involved was issued separately on 12/31/75. The Commission directed the four pipelines which made Alaskan advances under contracts executed before Order 499, and included such advances in their respective rate bases, to show cause why rate base treatment should not be terminated as of 12/31/75, and why refunds of all carrying charges should not be ordered. (See REPORT NOS. 1033, pp4-8; 1042, pp4-8.)

In their responses, each of the four pipelines stressed that the Commission previously issued orders approving the inclusion of their advances in rate base and providing for appropriate accounting. Having conclusively determined that the rates reflecting the carrying costs on such advances are just and reasonable, the pipelines continued, the FPC is now precluded from directing them to refund those amounts to their customers. Such a refund order would clearly violate the proscription in the Natural Gas Act against retroactive ratemaking.

Columbia Gas rejected arguments by the FPC in support of issuance of the show cause order that advances have not lead to any appreciable acceleration of development and production of Alaskan gas sufficient to justify continuation of the program, and that the program was permitting certain pipelines to tie up Alaskan reserves to the exclusion of others.

While all known proven and developed Alaskan reserves might eventually go to the interstate market, Columbia Gas said, this does not diminish the fact that the advances were extremely important in accelerating the development of the North Slope reserves. "At a time when this nation is suffering a serious gas shortage, any effort which accelerates the development and production of badly needed Alaskan gas obviously is in the public interest." Second, Columbia Gas questioned how construction of a multi-billion pipeline delivery system to the Lower 48 States could ever be financed or certificated without firm gas purchase commitments. Columbia Gas emphasized that the competitive negotiations for the Alaskan gas resulted in the commitment thereof to pipeline purchasers who serve every major area of the country.

The four pipelines also emphasized that apart from the fact that ordering refunds would constitute unlawful retroactive ratemaking, "the Commission must balance the equities of the parties and when this is accomplished, it is clear that in this case, no refunds may be ordered."

For example, Michigan Wisconsin asserted that such action would not only thwart reasonable reliance on the Commission's order expressly approving the its advance payment, but would also deprive it of substantial funds currently being used to finance the acquisition of initial gas supplies for its customers.

Northern noted that it will incur carrying costs of $57 million during the years 1976-1986. "To deprive Northern of the carrying charges on the advances required to be made or to require it to refund the carrying charges already collected pursuant to settlement agreements and final orders of this Commission, would create serious financial hardship for Northern. It would become more difficult for Northern to finance the substantial gas supply projects required in the near term future merely to maintain existing service."

The pipelines also argued that the same concerns which moved the FPC to permit rate base treatment for advances made in the Lower 48 States and reject refunds with respect thereto, are also applicable with respect to the Alaskan advance payments. El Paso stated that in the 12/31/75 order terminating the advance payments program, the Commission clearly recognized the unfairness of retrospectively reversing its policy previously set in Orders 465 and 499 as to the Lower

48 States. The Commission noted concern that pipelines would not be able to break their contracts with the producers, and might thus be required to make advances to producers while receiving no rate base treatment or other economic reimbursement from their customers. Hence, El Paso continued, the Commission decided to permit the advance payments program in the Lower 48 States to expire by its own terms and to permit rate base treatment for advances made after 12/31/75 (all subject to conditions). Further, El Paso said, the Commission decided not to require refunds because it would impose a "tremendous financial hardship upon the pipelines because there is no guarantee whatsoever that the pipelines would be reimbursed by the producers for the carrying charges the pipelines will have to refund to their customers." These same concerns, El Paso concluded, are also applicable in the case of the Alaskan advance payment agreements.

FPC Approves Settlements Involving Petitions by West Virginia Small Producers to Abolish Life-of-Lease Contracts and for Relief From Appalachian Area Rates

On 3/19 and 3/22/76 the FPC approved settlements in proceedings involving the following petitions by the Independent Oil and Gas Association: (1) RI74-188, for relief and a declaratory order to permit West Virginia small producers to renegotiate existing life-of-lease gas purchase contracts to reflect current estimated average costs of service; and (2) RI75-21, for a special area rate for Appalchian Basin gas production, or other special relief for Appalachian area producers from the 42¢/Mcf national rate set in Opinion No. 699, and for an interim ceiling rate.1/

RI74-188

Under contracts involved in this petition, the West Virginia small producers currently receive an average of 31.96¢/Mcf and requested in their petition an increase to their estimated average cost of service of 98.51¢/Mcf (and for a limit to the term thereof to three years).

In its petition, IOGA — who membership includes 90 independent small producers as well as royalty owners, contractors and others associated with oil and gas production in West Virginia -- explained that virtually all sales by its members are made to four large interstate pipelines pursuant to life-of-lease contracts which prohibit price renegotiation or price escalation, and place production completely under control of the pipeline, so that the producers may not unilaterally terminate production regardless of the circumstances. The small producers historically had to accept the pipeline's terms or forego marketing gas production, and all pipelines offer basically identical contract terms and prices.

After the petition was set for hearing, IOGA submitted the first of two settlements proposed in this proceeding, which would have permitted (1) a price increase for flowing gas to 55¢/Mcf; (2) a definite term of years for some of the contracts rather than life-of-lease provisions; and (3) annual escalation of 1¢/Mcf. This initial settlement was rejected on 3/17/75 by the FPC in view of conflicting unit cost computations in the record — including 60.45¢ by IOGA based on questionnaire data collected from 26 of its members, 58.68¢ by Staff assuming a remaining

1/ Neither of these proceedings has general applicability to all producer sales for resale in the Appalachian Basin. Instead, any action applies to IOGA members and other small unaffiliated West Virginia producers similarly situated who filed, within a certain time previously specified by the Commission, for participation.

...nting and Rate Treatment ... Advances Included in Account ... 166, Advances for Gas Ex... ...ration, Development and ...duction	)))))	Docket Nos. R-411 and RM74-4

ORDER ON REMAND FROM COURT OPINION
TERMINATING INVESTIGATION AND
TERMINATING ADVANCE PAYMENT
PROGRAM WITH CONDITIONS

(Issued December 31, 1975)

...e Commissioners: Richard L. Dunham, Chairman; Don S. Smith, John H. Holloman III, and James G. Watt.

On April 28, 1975, the Commission instituted an in...igation of the advance payments program in order to comply ... the mandate of the United States Court of Appeals for ... District of Columbia Circuit, in Public Service Commission ... State of New York v. Federal Power Commission, 511 F. ... (CADC 1975) wherein the Court remanded the record ...ted to Order Nos. 465 and 499 to the Commission with ...uctions to make further findings, and secure further ...ts, data, and relevant evidence, with respect to four ... areas to determine the validity of the Commission's ... in extending the advance payments program for one ... in Order No. 465, and for two years in Order No. 499. ...ifically, the Court held that (1) the data presented by ...mission in Order Nos. 465 and 499 as justification ...s extensions and expansions of the advance payment ...ram did not provide an adequate basis for determining ...ther the program's gas supply enhancing objectives were ...sfactorily met at an acceptable level of ultimate ...mer cost to the consumers, (2) the Commission had ...ed to consider the effect of other methods of enhancing ...tal formation including those implemented by it since ... institution of the advance payment program, (3) the ...ission had failed to focus on the difference between ...eed for and effect of onshore and offshore advances, (4) had inadequately considered the treatment to be ... to advances which result in the acquisition of working ...rests by pipelines or their production affiliates.

In order to comply with the Court's mandate, the Com...ion compiled a list of all natural gas pipelines subject

to its jurisdiction who had made advance payments to producers under the advance payment program. These pipelines were made respondents to this investigation and required by June 15, 1975, to complete and return the questionnaire attached as Appendix B to the order. The questionnaire was similar to the Form 102 used to gather data for the evaluations conducted prior to the issuance of Order No. 465 and Order No. 499 with the significant exception, inter alia, that it required a breakdown of proven and probable reserves on a contract by contract basis.

When the Commission received the completed questionnaires, they were compiled and noticed for comments by order issued July 29, 1975. 1/ In that order, the Commission also made all of the producers, who have received advances from the pipelines (as indicated on the questionnaires) respondents to this proceeding and required them, as well as the pipelines listed in the appendix to the April 28, 1975, order to file comments, data, sworn prepared testimony, exhibits and/or whatever information the respondents may consider to be appropriate on each and every advance payment agreement to which the respondent is a party. 2/ The comments were to be directed to, inter alia, the following Commission inquiries:

(1) How much of the proven and probable reserves related to the particular advance payment agreement would not have been forthcoming to the interstate market but for the advance?

(2) If the advance was a necessary factor in securing the dedication of the reserves to the interstate market, was it due to (1) the fact that the producer had insufficient capital available from alternate sources to undertake the necessary exploration, development, and production activity or (2) competitive pressures from other prospective purchasers or (3) other reasons. If due to competitive pressure from other purchasers or other reasons, specify.

(3) In addition to the information requested in question 2, all producer respondents shall indicate regarding

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1/ By Notice issued August 14, 1975, the due date for such comments was extended to September 20, 1975. Reply comments were to be filed on or before October 20, 1975.

2/ If the advance payment agreement covered more than one prospect, the responses were to be broken down on a prospect by prospect basis.

advance received, what alternate sources of capital available at the time the particular advance was by the pipeline and why such sources were not ient, absent the advance, to ensure exploration, ment and production of the tract covered by the payment agreement, and to ensure the dedication ivery to the interstate market of the proven bable reserves attributable to the advance pay- reement. In discussing alternate sources of l, specific reference shall be made to the exact of the alternate capital; i.e. was the capital ted by the national rate prescribed in Opinion -II, issued December 4, 1974, in Docket No. R-389-B; optional pricing procedure set forth in Order No. FPC 218 (1972); by special relief from area rate ions such as George Mitchell, et al., Opinion No. by other provisions or from other sources.

All respondents shall indicate what portion of gas would have eventually been forthcoming to the tate market without advance payments, such as rom offshore areas, actually reached the market as a result of the particular advance than it have absent the advance payment. In this regard, is a reasonable estimate of the time saved as a of the program's speeding of capital formation? 3/

All respondents shall comment upon the rationale forth in Order Nos. 465 and 499 for permitting rate treatment for advances resulting in the acquisition working interest by a pipeline of a pipeline iliated producer. Also, comments shall be filed as ether the benefits from a working interest should tained in whole or in part by the pipeline or ited to the pipeline's cost of service. The isability of rate base treatment of advances re- ing in the acquisition of working interest by a line or a pipeline affiliated producer should also discussed in light of the Commission's policy, cribed in Order No. 441, of crediting to cost of

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In light of the detail required in the questionnaire and in the comments, the Commission indicated that it would be able to determine which advances are attributable to offshore areas and which to onshore areas and thus evaluate the different factors relevant to each category.

service in the benefits of economic interests other than working interests. 4/

In responding to questions 1 through 5, the respondents were required to file such documentation as essential to support their responses to these questions. In addition to requiring the aforementioned respondents to submit responses to the previously mentioned questions, we also invited parties, including members of our staff, to file comments concerning the issues raised by the Court's opinion, and discussed in the instant order, as well as any other issues relevant to the Commission's advance payment program in relation to capital commitment for required exploration and development.

Furthermore, by order issued September 16, 1975, the Commission issued a notice of oral argument to hear discussion of the issues raised in the Commission's April 28, 1975, order; as well as certain issues raised below in addition to all issues raised by this Commission's advance payment program. Specifically, the Commission's notice stated:

> If the Commission finds after its investigation that the record evidence in this proceeding does not justify the advance payments under contracts subject to Order Nos. 465 and 499, should the Commission then order refunds to consumers of all monies collected as a result of the inclusion of Order Nos. 465 and 499 advances in rate base or should such refunds be limited to costs related to amounts advanced to producers, but not actually spent by the producer for exploration, development and production by December 31, 1975. If the program is to be terminated should the Commission prohibit inclusion in rate base of any further advances

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4/ For purposes of clarification we hereby restate the following definition of "working interest" and economic interest other than "working interests," which were originally set forth in Order No. 441:

Working Interest - An interest embodying operating rights and/or the right to share in production or revenues from the producing venture, so that its receipt of production or revenues will increase as the production or revenues from the producing venture increase, without any termination of such right to receive production or revenues after the return of the amount of any related advance payment.

Economic Interests - All interests other than a working interest.

ade after December 31, 1975, under advance payments contracts executed prior to December 31, 1975?

The Commission's September 16, 1975, notice also called discussion concerning the problems arising from the rnia Public Utilities Commission's program providing terest payments by intrastate natural gas distributors ifornia to producers in Alaska for gas to be delivered future date, and this Commission's advance payment m in Alaska. 5/

The significant results of the investigation were com- and tabulated by the Commission's staff and the reports ttached hereto as Appendices B and C. Appendix B ysis of Producer Responses To Investigation of Advance nt Program" is a compilation of the answers filed by cers to the 5 questions set forth by the Commission's 28, 1975, order. Appendix C is an update, as of April 1, , of the Summary Reports attached to Order Nos. 465 and The Summary Report is based on data submitted by pipe- making the advances and contains a compilation of, alia, advances committed, advances made, and proven tential reserves associated with such advances.

OVERALL EVALUATION OF THE PROGRAM

1. Offshore

Many producer-respondents and pipeline respondents argued advance payments to producers in Offshore Texas Gulf and Offshore Louisiana were beneficial and helpful in pment of offshore natural gas reserves. However, a w of the producer responses indicates, as shown on dule I of Appendix B, that for the total advance payment , 1,020,244,370 Mcf of proven reserves out of a total ,627,619,800 Mcf associated with offshore advances could id, with a high degree of certainty, to have reached interstate market sooner as a result of advance pay- made to offshore producers. 6/ As also indicated on

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Responses were received from the parties listed in Appendix A.

Because of the scope of the Commission's jurisdiction over offshore production, the question of whether or not the offshore reserves would be dedicated to the interstate market is not relevant.

Schedule I of Appendix B, offshore advances accounted for most of the money advanced to producers under the program. More specifically, Schedules I(c) and I(d) of Appendix C show that for Order Nos. 465 and 499, respectively, approximately 90% of the money advanced under those orders was advanced to offshore producers in the Texas Gulf Coast and Southern Louisiana area. 7/

At the oral argument held on October 23, 1975, as well as in the responses filed, several pipelines 8/ argued that offshore advances cannot be shown to have had a quantifiable accelerating effect and that the net result of offshore advances is to determine that one pipeline receives the gas rather than another. Moreover, the pipelines cited the financial burdens heaped upon pipelines resulting from offshore and onshore advances and recommended that the program be discontinued and that Order 499 be allowed to expire by its own terms such that advances made pursuant to contracts entered into after December 31, 1975, would not receive rate base treatment. As aforesaid, some pipelines and producers generally supported offshore advances and stated that they were generally beneficial.

The Public Service Commission of the State of New York (New York) restated its contention that offshore advances have not had an "accelerating" effect and that such advances are mere "commitment fees" enabling one interstate pipeline to get gas from a given prospect, rather than another interstate pipeline. New York also argued that the Commission did not consider the effects of advance payment program in setting the area and national producer rate levels for either offshore or onshore producers.

Our review of the responses from interested parties, as well as the entire record of the investigation, shows that some advances have aided the development of offshore natural gas reserves. However, we cannot find, based on this record, that there was sufficient quantifiable acceleration or initiation of exploration, development and production of offshore reserves to meet the test laid down by the Court of Appeals for these proceedings.

7/ The money advanced in Categories (3) and (4) on these schedules is almost all for offshore prospects.

8/ Transwestern, Texas Eastern, Transco, United, Tennessee, Southern Natural, Florida Gas, Mid Louisiana, and Texas Gas.

We note that this finding is made more difficult by the rently speculative nature of the test we are asked to apply. riad factors which influence managerial decisions with to procuring gas for the interstate market include and monetary policy, general business and economic ions, and the regulatory climate, as well as the managers' tions about each of these. In making judgments about the of decisions based on these factors we are forced to eavily on the self-serving predictions of interested and to speculate ex post facto about events which did cur. Just as one can speculate about the results for tional economy if wage and price controls had not begun 71, we may speculate about the results in the absence of dvance payments program. In either case, however, no than an informed speculation is possible.

Furthermore, we are not able to find from our considera- herein that the advance payment program offshore has had ignificant substantial impact on development of natural eserves that was expected of the program at its inception. ingly, as a matter of public policy, we shall allow the ore portion of the advance payment program to expire as time and date of issuance of this order. Our treatment executory portion of offshore advance payment contracts t to Order Nos. 465 and 499, as well as the propriety of ds, will be discussed later in this order.

2. Onshore Advances

Schedule II of Appendix B indicates that within the lower tates, there was evidence to indicate that advance payments re under all orders (410, 441, 465 and 499) had a benefi- effect. For 58% of the onshore advances ($158 million), hich was associated 2.4 trillion cubic feet (Tcf) of proved ves, 9/ it was indicated by the producers that they had in- ient amounts of capital from other sources, and that the ce was a critical and necessary factor in securing the tion of these reserves for the interstate market. Other re producer responses indicate that onshore advances secured or the interstate market by offsetting such factors as low rstate producer prices, marginal well production, competitive re from the intrastate market and the high risks associated the development of certain properties.

These percentages are of the total producer responses received. Producer responses onshore were received for approximately 90% of the proved reserves indicated in the Summary Report (Appendix C).

At the oral argument, these contentions were restated by a representative for a group of small producers 10/ as well as some of the pipeline participants. New York stated that, in all probability, favorable evidence would be found to support onshore advances. However, New York recommended alternatives to such advances such as interest-bearing pipeline loans to small onshore producers or arrangements onshore wherein the pipeline would receive a working interest. The pipelines opposing continuation of the advance payment program 11/ also stated that onshore advances were beneficial, but recommended that instead of extending the advance payment program, the Commission could best assure development of onshore gas and its dedication to the interstate market through raising the flowing gas rate in Docket No. R-478, and through the use of producer special relief procedures on marginal properties.

Our review of the evidence submitted and compiled in this investigation indicates that there is more record support for onshore advances, than for offshore advances.

As indicated above, there is evidence that much of the new proved reserves associated with onshore advance payments would not have been developed and dedicated to the interstate market but for the advances. As discussed in connection with offshore advances, however, this judgment, too, is based on retrospective predictions about a state of events which did not occur. We do find that to the extent the Court of Appeals' test can rationally be applied, the onshore advances meet this test.

We believe, as a matter of public policy, it is time to end the advance payment program onshore, as well as offshore, and to use other means to increase the necessary cash flow to onshore producers. We note that on August 28, 1975, we issued Opinion 742, 12/ which permits small producers, most of whom operate onshore, to collect a just and reasonable rate equal to 130% of the applicable area or national rate for large producers. Moreover, in Docket No. R-478, we have today issued Opinion No. 748 which increases the rate for flowing gas for producers and we have before us a proposal in Docket No. RM75-14 to review new gas rates for producers. Those proceedings are the appropriate place to consider recognized need for increased cash flow for the exploration, development and production of onshore, as well as offshore reserves, for the interstate market. Moreover, where appropriate, as in the case of marginal properties, we

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10/ See Transcript of Oral Argument, Volume 1 (Tr. 195-205) in Docket Nos. R-411 and RM74-4.

11/ See Footnote 8 above.

12/ ____ FPC ____ in Docket No. R-393.

rage parties to file under our special relief procedures. ncreased cash flow is necessary if we are ever to get more to the interstate market. We shall discuss the treatment executory portion of onshore advance payment contracts to Orders 465 and 499, as well as the refund issue as tes to onshore advances, later in this order.

Alaskan Advances

s of April 1, 1975, the cut-off date for responses for mary Report in Appendix C, there were no Alaskan s made under Order 499. Order 499 was the first and dvance payment rulemaking order specifically permitting se treatment for advances in Alaska. However, we e it necessary and appropriate to evaluate the entire n advance payment program in order to determine the disposition of both pre-Order 499 Alaskan advances ivances made under contracts executed on or after er 28, 1973, the effective date of Order 499. Schedule I endix B indicates that approximately 64% of the proved s associated with advances would have been dedicated interstate market absent advance payments, according ducer responses. The producers also state, however, substantial acceleration occurred as a result of the advances. Schedule II of Appendix B indicates that ses from producers who control 35% of the proved reserves te that sufficient capital was not available absent vance payment program.

At oral argument, several parties stated specific t for the Alaskan advance payment program including l Gas Pipe Line Company, Northern Natural, Panhandle & ine, ARCO, Exxon and Southern California Gas Company, the higher costs of exploration and development and celeration effect these advances are having.

However, Alaskan advances were strongly opposed by the a Group (The Arizona Commission, Tucson Gas & Electric d Arizona Public Service Company) since, it was alleged, jor pipelines are tying up all of the producer reserves Alaska and prejudging the Section 7 proceedings which will place before this Commission regarding certification of and transportation of Alaskan gas to the lower 48 states. Arizona Group noted that Order 529 13/ required pipelines advances in Alaska, as well as in the lower 48 states, eve long-term commitments of the gas associated with

effect on rate schedule

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ssued June 17, 1975, in Docket No. RM75-6; rehearing denied, rder No. 529-A, issued August 15, 1975.

the advance. Thus, areas not served by pipelines making Alaskan advances, such as Arizona, would be precluded from getting any Alaskan gas.

Therefore, the Arizona Group urges that the Alaskan advance payment program be terminated forthwith; that commitments under existing contracts to make future Alaskan advances not be honored; and that the Commission clearly indicate in a policy statement that Alaskan advances or interest payments, such as those approved in California for intrastate distribution companies, will not prejudge the Section 7 certificate proceedings involving Alaskan gas.

Alaskan advances were also strongly opposed by representatives from various California groups including a California consumer group named TURN (Toward Utility Rate Normalization) represented by Sylvia Siegel; the Cities of San Diego, Los Angeles, Santa Barbara, San Francisco; as well as the California Public Utilities Commission. Basically, these parties argued that the FPC's Alaskan advance payment program was being used by producers in Alaska, such as Exxon and ARCO, to "blackmail" the California Commission as well as California consumers, by allegedly "forcing" the California Commission into approving interest payment arrangements between intrastate California distributors and Alaskan producers on the threat that if such arrangements were not approved by the California Commission by a date certain, the producer would terminate the arrangement and seek an advance payment under Order No. 499 from an interstate pipeline from another area of the country and thus commit the Alaskan gas to that interstate pipeline. 14/ Thus, all parties from California (with the exception of Southern California Gas Company) recommended rapid termination of this Commission's advance payment program insofar as Alaskan advances are concerned.

Under Order No. 499, only four contracts have been entered into by pipelines and producers for Alaskan gas; Panhandle and ARCO dated May 30, 1975; Texas Eastern and ARCO dated June 30, 1975; Northern Natural and Exxon dated September 29, 1975; and Michigan-Wisconsin and Exxon dated October 24, 1975. Although amounts have been advanced under

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14/ It should be noted that in statements filed with the F.P.C. after oral argument, ARCO and Exxon replied to the "blackmail" allegations of the California Commission stating, inter alia, that the interest payment arrangements approved by the California Commission were made pursuant to valid California Commission regulations.

four contracts, to date only Panhandle has received rate treatment for a portion of such advances ($16.4 million of $46.4 million advanced). 15/

We note that Alaskan advances are similar to offshore advances in that, as of now, there is no intrastate market to compete with the interstate market and no prospect of a market developing in Alaska in the near future. Assuming that all Alaskan gas will eventually go interstate, we are not convinced, based upon our findings herein regarding offshore advances in the lower 48 states, that any appreciable and quantifiable acceleration of development and production of Alaskan gas will occur sufficient to meet the Court's test. As to the need for capital, we note that both ARCO and Exxon, the recipients of Alaskan advances made under 499, have already demonstrated their ability to raise capital on their own by the fact that Exxon, in the case of this Commission, and ARCO, in the case of the California Commission, have entered into agreements with interstate pipelines and intrastate distributors, respectively, whereby they would not receive advance payments, but would raise the capital on their own, and charge the respective interstate pipelines and intrastate distributors the interest on such capital in return for gas to be delivered at a future date. As this Commission recently found in those orders which disallowed rate treatment in pipeline rate cases for the interest payment arrangements, 16/ such arrangements demonstrate a prima facie case for the proposition that the producer is able to generate sufficient capital on his own so as to obviate the need for advance payments in any form. Furthermore, we agree with those parties in their comments, and at oral argument, opposed this Commission's Alaskan advance payment program as being contrary to the national interest in permitting a few pipelines, among others, to tie up almost all of the Alaskan natural gas reserves, to the exclusion of others, through advance payments of little or no benefit to the ultimate consumer.

After weighing all the factors, the Commission has determined in the public interest to terminate rate base treatment after December 31, 1975, for Alaskan advances made under

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Texas Eastern/ARCO: $16.4 million advanced
Northern/Exxon : $58 million advanced
Mich-Wis/Exxon : $58 million advanced

Northern Natural Gas Company, ___ FPC ___ issued July 11, 1975, in Docket Nos. RP75-87 and RP75-89; Michigan Wisconsin Pipe Line Company, ___ FPC ___ issued May 19, 1975, in Docket No. RP75-96.

contracts executed after December 28, 1973, the effective date of Order 499. Accordingly, any pipeline presently reflecting such advances in its rate base shall be required to file, within 30 days of the issuance of this order, revised rates to reflect elimination of such advances. Moreover, we note that all four of the Alaskan advance payments contracts which are subject to Order 499 contain "escape clauses" which provide, in essence, that should the pipeline not receive rate base treatment for the advances, all monies advanced plus interest will be refunded to the pipeline making the advance and the contract will be terminated. After consideration of the problems presented by the Alaskan advances, and after weighing all the equities related thereto, we find it in the public interest to require any pipeline making advances under the orders herein under consideration to refund all amounts collected as a result of including these advances in rate base.

We are also this day issuing, in Docket No. RP75-49, a proceeding requiring those parties to the pre-Order 499 Alaskan advance payment contracts to show cause why rate base treatment should not end for pre-Order 499 advances made in Alaska as of December 31, 1975, or such other date as the Commission might find appropriate.

It is appropriate at this time that we restate our policy enunciated in our September 16, 1975, Order in Docket Nos. R-411 and RM74-4, that state regulatory approval of arrangements, such as those interest payment transactions approved or being considered by the California Commission, does not and will not obligate this Commission to certify any proposed sales or transportation arrangements of Alaska gas under Section 7 of the Natural Gas Act to the advancing distributor.

REFUND ISSUE AS TO LOWER 48 STATES ADVANCES

As indicated above, we found that onshore advance payments did attract significant new or additional quantities of gas to the interstate market, and thus met our understanding of the court's test for this program, while offshore advance payments did not. However, in the exercise of this Commission's judgment as to proper policy in this field, and the costs and benefits involved, we have decided to terminate the program. The question thus arises as to whether or not refunds of carrying costs (return and associated taxes) charged to rate payers by pipelines making advance payments, should be made, as well as whether advances presently included in rate base should be permitted to remain in rate base. Although these issues were not addressed in the responses, several parties at the oral argument discussed them.

All of the major interstate pipelines, as well as all pro-
, opposed any refunds if the program is terminated. The
state natural gas pipelines who are members of the Interstate
l Gas Association (INGA) argued that if the program is termi-
, no refunds should be allowed because it would be "illegal"
Commission to do so, citing F.P.C. v. Hope Natural
pany, 320 U.S. 591 (1944), which, it is alleged, pro-
"retroactive ratemaking" and requires the Commission
nce consumer interests and pipeline economic health.
er, INGA argued that refunds cannot be ordered because
rt, in remanding the advance payment program to the
sion, permitted the program to remain in effect thus
l, equitable and financial grounds, INGA opposes
if the program is terminated. All of the major
ate pipelines supported this position as did the
Distribution Companies, the producers participating
argument, and the Illinois Commission. Specifically,
ted that a study was made, using the assumptions set
in Orders 465 and 499 regarding the cost of advance pay-
consumers. The results of that study, according to
how that refunds (based upon carrying charge factor
turn and taxes of 13%) would be $292,729,000 for all
s made under Orders 410, 441, 465 and 499, estimated
December 31, 1975. 17/

The Louisiana Land & Exploration Company opposed refunds
ed that the decision whether or not to order refunds was
pon the equities, citing Consumer Federation v. F.P.C.,
vacated this Commission's 180-day emergency sale program)
not a per se legal test, as was implied by INGA. The
rk Commission agreed with Louisiana Land on this inter-
tion of the law, and, on an equitable basis, urged that
pelines who have gotten no financial benefit from the
. not be required to make refunds. If anyone should
unds, New York argued, it should be the producers.
. New York did not recommend that the producers make
either, but did suggest in passing that, in lieu of
, the Commission might want to consider making the pro-
"maybe spend some money onshore and devote it to the
ate market." (Tr. 322).

We agree with New York and Louisiana Land that the
riate test for deciding whether or not to order refunds
alancing of the equities, rather than a per se legal
18/ However, based upon a review of the equities, we

Tr. 17.

See Consumer Federation v. F.P.C.

do not find that refunds from either the pipelines or the producers would be in the public interest. First of all, as we noted above, there was evidence filed which shows that the program was in part a success, as for some of the offshore advances, as well as a higher proportion of the onshore advances. Moreover, ordering the pipelines to make refunds would impose a tremendous financial hardship on the pipelines because there is no guarantee whatsoever that the pipelines would be reimbursed by the producers for the carrying charges the pipelines would have to refund to their customers. Furthermore, we note that the U. S. Court of Appeals turned down the suggestion of the New York Commission that rate base treatment for advance payments be terminated and permitted the advance payment program to remain in effect pending the Commission's investigation of the program on remand. For all of the aforestated reasons, we find that using the Consumers' test, the equities weigh against requiring refunds of carrying charges related to advances made under Orders 465 and 499.

As to advances made on or before December 31, 1975, under Orders 465 and 499, we find, based upon consideration of the equities relating to the refund issue, as well as the factors considered below in our treatment of post-December 31, 1975, advances in the lower 48 states, that rate base treatment for advances made on or before December 31, 1975, should be continued subject to the conditions of Orders 465 and 499, as appropriate.

TREATMENT OF POST-DECEMBER 31, 1975 ADVANCES

As to the issue of rate base treatment of post-December 31, 1975, advances made pursuant to lower 48 states advance payments contracts subject to Orders 465 and 499, INGA argued that the Commission should honor such commitments, and permit rate base treatment. Therefore, INGA argued that pipelines might not be able to break their contracts with producers and might thus be required to make advances to producers while reviewing no rate base treatment or other economic reimbursement from their customer. The New York Commission indicated that, in its opinion, rate base treatment for such advances should be allowed unless it could be shown that no disruption of the reserves dedication provisions of the advance payment contract should occur. The California Commission argued that rate base treatment for such advances should not be allowed since, if the program is found not to meet the Court's test in New York, it would be an empty act to permit rate base treatment for the executory portion of those contracts and thus allow a substantial portion of the advance payment program to continue.

The issue of rate base treatment for post-December 31, 1975, advances under contracts executed under Order 465 and

: be decided on the equities, like the issue of refunds. :d not be in the public interest to place pipelines in :sible financial jeopardy that might result from their :s to renegotiate advance payments contracts made under :65 and 499 containing provisions for making advances December 31, 1975, in the lower 48 states. Our review :e contracts indicates that in the great majority of :cts, the pipelines would be required to make advances :r or not this Commission allowed the pipelines rate :reatment for such advances. Furthermore, we note :hat the U.S. Court of Appeals, by its own motion, :ted the program to remain in effect during this :ion's investigation of the program on remand. :ingly, subject to certain conditions set forth below, reasonable and appropriate to permit the advance :ts program under Orders 465 and 499 in the lower :tes to expire by its own terms and to permit rate :reatment for advances made after December 31, 1975, :t to contracts made under Orders 465 and 499 and :t to the conditions set forth below, as well as the :ions set forth in Orders 465 and 499.

In permitting rate base treatment for the executory :n of lower 48 states advance payments contracts subject :ders 465 and 499, it is necessary that we attach certain :ions to rate base treatment for such advances to ensure :uch contracts may not be used to perpetuate the advance :ts program indefinitely. First, we note that some :e payments contracts permit the addition of new prospects :acts from time to time. In order to limit the scope of :ntracts, it is necessary to provide that rate base :ent will not be authorized for advances on prospects :cts added to advance payments contracts under Orders :d 499 on or after the date of issuance of this order.

In addition, we shall deny rate base treatment for any :es made under the executory portion of existing contracts :are subject to Orders 465 and 499 when such advance is after December 31, 1980.

As to the issue of the appropriate treatment of advances :result in the acquisition of a working interest by a :ine or a pipeline affiliate, New York reiterated its strong :ition to such advances, unless the revenues from such :g interest are credited to the pipeline's cost of service. :tent with the action taken with respect to the advance :t program in general, it is appropriate that we not change :reatment for advances made under Orders 465 and 499 which :t in the acquisition of a working interest by a pipeline :ipeline affiliate.

Our action with respect to Alaskan advances, coupled with our treatment of lower 48 states advances under Orders 465 and 499 and our intent not to issue a notice of rulemaking to extend the advance payments program to contracts executed after December 31, 1975, represents a reasonable and appropriate resolution of the issues raised in the Commission's investigation of the advance payment program in Docket Nos. R-411 and RM74-4.

The Commission further finds:

Good cause exists to terminate the investigation of the advance payment program under Orders 465 and 499, as hereinafter ordered and conditioned.

The Commission orders:

(A) The investigation of the Commission's advance payment program under Order 465 in Docket No. R-411 and Order 499 in Docket No. RM74-4, which investigation was instituted by our order issued herein on April 28, 1975, is terminated as provided below.

(B) Rate base treatment for Alaskan advances made under contracts executed on or after December 28, 1973, the effective date of Order No. 499, shall cease as of December 31, 1975, and any pipeline presently reflecting such advances in its rate base shall file, within 60 days of the issuance of this order, revised rates reflecting elimination of such advances. Any pipeline which has made Alaskan advances pursuant to Order No. 499 shall refund all amounts collected as a result of including these advances in rate base.

(C) Except as provided in Ordering Paragraph (B) above with respect to Alaskan advances, we shall permit the advance payments program to expire as of the time and date of issuance of this order, provided, however, that no rate base treatment will be accorded to advances under contracts subject to Orders 465 and 499 in the lower 48 states which advances are for prospects or tracks added to the advance payment contract on or after the date of issuance of this order; and provided further that rate base treatment shall be denied for advances made under contracts under Orders 465 and 499 where such advances are made after December 31, 1980.

(D) The Secretary shall cause prompt publication of this order in the Federal Register.

RESPONDENTS IN DOCKET NO. R-411 and RM74-4
Investigation of Advance Payment Program

..., Federal, Municipal Governments:

... of Los Angeles
... of San Diego
... of Santa Barbara
...al Energy Administration
...c Service Commission of the State of New York
...c Utility Commission, State of California
...sentative Robert J. Lagomarsino
...sentative John E. Moss
...sentative Thomas M. Rees
...tor Alan Cranston
...tor Warren Magnuson
...tor Lee Metcalf
...tor John V. Tunney (2)

...er Representation:

... Individual Letters of Protest filed

...tributors:

...ern California Gas Company and Pacific Lighting ...vice Company
...ern Indiana Gas & Electric Company
...rn Kentucky Gas Company

...lines:

... Natural Gas Corporation
... Service Gas Company
...ia Gas Transmission Corporation
...lidated Gas Supply Corporation
... Producing Company
...rn Shore Natural Gas Company
...so Natural Gas Company
... Nebraska Natural Gas Company
...an Wisconsin Pipe Line Company
...Louisiana Gas Company
...ssippi River Transmission Company
...al Gas Pipeline Company of America
...ern Natural Gas Company
...west Pipeline Corporation

FEDERAL POWER COMMISSION

BUREAU OF NATURAL GAS

ANALYSIS OF PRODUCER RESPONSES TO INVESTIGATION OF ADVANCE PAYMENT PROGRAM

DOCKET NOS. R-411 AND RM74-4

WASHINGTON, D. C.
NOVEMBER 18, 1975

PRODUCER	ADVANCES RECEIVED $	[illegible] (Mcf)	[illegible] Mcf
Sohio Petroleum Company	175,000,000	6,000,000,000	--
California Chevron	122,730,499	545,612,780	1,096,408,000
Burmah Oil Development	92,199,000	2,315,000	462,556,000
Mobil Oil Corporation	86,940,000	598,666,110	312,142,000
Mesa Petroleum Company	76,552,153	70,525,000	662,131,246
Tenneco *	59,000,000	326,510,010	41,424,668
Cities Service *	53,485,980	194,164,988	689,625,014
Shell	45,277,510	835,051,875	118,613,000
Pennzoil Offshore Gas Operators * 2/	43,466,000	255,594,250	73,764,250
Getty	43,099,178	87,305,374	607,791,975
Skelly	40,486,602	198,935,911	457,260,028
La. Land & Offshore Expl.	37,800,000	69,448,000	16,666,000
Tenneco Oil & Minerals Ltd.	37,500,000	3,300,000,000	1,470,000,000
Exxon	37,018,109	231,600,000	[illegible],599,800
Placid	35,914,425	259,088,041	303,793,614

1/ Includes Alaska and Canada.

2/ Pipeline-affiliated at date of agreements.

* Denotes pipeline-affiliated producer.

Schedule 1

1975 SUMMARY OF ADVANCE PAYMENT STATUS SURVEY
ALL AGREEMENTS REPORTED

	Amounts Committed ($)	Actual Amounts Advanced: Preliminary Exploration ($)	Lease Acquisition ($)	Exploration Drilling ($)	Development Drilling ($)	Proved Reserves ($)	Other ($)	Total Advanced ($)	Status of Recoupment: Amount Recovered ($)	Estimated Non-Recoverable ($)
Agreements Dated Prior to November 10, 1971 (Schedule I(a))										
"Lower 48" States	530,430,395	3,117,975	82,701,753	253,052,917	132,630,620	53,547,468	6,177,558	529,223,291	128,359,668	31,349,284
Alaskan Area	175,750,000	-	-	2,162,191	-	175,000,000	-	177,162,191	-	2,162,191
Canadian Area	101,106,972	379,095	-	16,193,122	-	61,420,997	-	77,993,214	33,458,332	-
Subtotal, All Areas	813,289,367	3,497,070	82,701,753	269,408,230	132,630,620	289,963,465	6,177,558	784,378,696	161,818,040	33,507,475
Agreements Dated on or After November 10, 1971, But Prior to December 29, 1972 (Schedule I(b))										
"Lower 48" States	183,637,294	1,097,272	897,642	5,367,828	120,290,122	44,098,151	2,660,368	174,411,883	40,506,792	6,836,410
Alaskan Area	93,683,135	3,361,113	-	3,902,592	6,000,000	-	-	13,263,705	-	386,588
Canadian Area	200,000,514	-	-	-	30,000,000	514	-	30,000,514	15,000,435	-
Subtotal, All Areas	477,320,943	4,458,385	897,642	9,270,420	156,290,122	44,098,665	2,660,368	217,676,102	55,507,227	7,242,998
Agreements Dated on or After December 29, 1972, But Prior to December 28, 1973 (Schedule I(c))										
"Lower 48" States	836,745,722	2,884,222	-	454,666,115	178,600,509	29,532,600	87,500,000	753,183,446	12,593,465	348,000
Alaskan Area	40,454,607	-	-	25,688,001	12,500,000	-	-	38,188,001	-	-
Canadian Area	16,758,529	6,358,216	-	-	-	-	-	6,358,216	-	-
Subtotal, All Areas	913,958,918	9,242,438	-	480,354,116	191,100,509	29,532,600	87,500,000	797,729,663	12,593,465	348,000
Agreements Dated on or After December 28, 1973 (Schedule I(d))										
"Lower 48" States	493,017,451	4,072,222	929,515	172,047,272	115,034,676	17,942,858	3,710,850	313,743,393	4,312,716	187,500
Alaskan Area	-	-	-	-	-	-	-	-	-	-
Canadian Area	-	-	-	-	-	-	-	-	-	-
Subtotal, All Areas	493,017,451	4,072,222	929,515	172,047,272	115,034,676	17,942,858	3,710,850	313,743,393	4,312,716	187,500
Total, All Periods										
"Lower 48" States	2,049,830,862	11,171,691	84,528,910	883,136,132	546,555,927	145,116,077	100,048,776	1,770,562,013	185,772,661	38,737,194
Alaskan Area	309,887,802	3,361,113	-	31,752,784	18,500,000	175,000,000	-	228,613,897	-	2,548,779
Canadian Area	337,868,015	6,737,311	-	16,193,122	30,000,000	61,421,511	-	114,351,944	48,458,767	-
Total, All Areas	2,697,586,679	21,270,115	84,528,910	931,080,038	595,055,927	381,537,588	100,048,776	2,113,527,854	234,231,448	41,285,973

UNITED STATES OF AMERICA

BEFORE THE

FEDERAL POWER COMMISSION

EL PASO ALASKA COMPANY, et al.) Docket No. CP75-96, et al.

POSITION BRIEF OF THE PEOPLE OF THE STATE OF CALIFORNIA AND THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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Attorneys for the People of the State of California and the Public Utilities Commission of the State of California.

December 3, 1976

UNITED STATES OF AMERICA

BEFORE THE

FEDERAL POWER COMMISSION

EL PASO ALASKA COMPANY, et al.) Docket No. CP75-96, et al.

POSITION BRIEF OF THE PEOPLE OF THE STATE OF CALIFORNIA AND THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

To the Presiding Administrative Law Judge:

The People of the State of California and the Public Utilities Commission of the State of California (CPUC) hereby submit a "position" brief in response to a notice dated November 2, 1976 by the Presiding Administrative Law Judge requesting the "position of parties other than applicants on all issues." 1/

INTRODUCTION

To date the CPUC has submitted briefs relating to "applications and conditions" proposed by the applicants; the siting of a LNG regasification facility in California, assuming certification of the El Paso Alaska project; the need for "western leg" facilities, assuming certification of the Arctic Gas or Alcan project; and the tariffs proposed by each of the applicants, assuming certification of their respective projects.

To date the CPUC has not filed specific briefs on the following issues: environmental, geotechnical, Canadian laws and treaty, cost-of-service allocation between the United States and Canada, economic (construction scheduling, capital costs, cost-of-service), socio-economic, net national economic benefit and financing. The subject "position" brief will discuss the CPUC's position as to some of these issues as they relate to the CPUC's preference for a system to transport natural gas from Prudhoe Bay and the Mackenzie Delta.

1/ On November 23, 1976 the Presiding Law Judge granted the CPUC an extension of time to December 3, 1976 to mail its "position" brief due to the illness of the CPUC's counsel.

Despite the fact that the record contains approximately 45,000 pages of transcript and several thousand pages of exhibits and testimony, several question marks still exist with respect to each of the proposed systems. The real problem is, however, that the majority of these unresolved questions will not be answered until at least one of the projects is approved, financed and construction commences. For example, each of the applicants has labored extensively to provide capital cost and cost-of-service estimates of their respective systems and to cross-examine the estimates of their competitors. After analyzing these estimates, the CPUC has reached the conclusion that for all practical purposes the cost-of-service to its consumers may be a virtual stand-off among the three systems, and that the difficult policy decision which must be made at this time must be based on factors other than "costs" alone.

At the same time, the CPUC would be negligent in not pointing out that no matter which system is certificated, the cost of transportation to the California consumers may range from $1.50/MMBtu to $2.30/MMBtu, based on July 1, 1975 costs, assuming no cost overruns. Of course these estimates exclude the wellhead price of the gas, as well as the costs for gathering, treating and processing the gas prior to its delivery into the main transportation system.

The CPUC is making its decision based on the best evidence of record to date. The procedures set forth in the "Alaskan Natural Gas Transportation System Act of 1976" provide that the President and Congress will make the final decision as to the most appropriate system, if any, to transport Alaskan gas to the lower 48 states. If additional evidence becomes available prior to the time the President or Congress make their decisions, which in the CPUC's mind requires a change of position, it will not hesitate to speak its mind.

Based on the evidence of record in this proceeding, the CPUC believes that the Arctic Gas system, as presently proposed by the applicants, would best serve the interests of the natural gas consumers of California and the United States.

I.

GROUNDS FOR CPUC'S PREFERENCE FOR ARCTIC GAS SYSTEM

A. Gas Supply and Deliverability

At the outset the CPUC wishes to comment on the gas supply and deliverability assumptions set forth in the briefs filed by the applicants, the Commission Staff and the State of Alaska.

It is a truism that the size and design of a gas pipeline transportation system is dependent on the volumes of gas that will be delivered into the pipeline system. The CPUC believes that a transportation system to be constructed in the Arctic regions of North America should be designed to transport not only presently proven salable reserves but "probable" or "potential" reserves, assuming there exists some realistic basis for making the "probable" or "potential" reserve estimates. In this proceeding there is evidence to the effect that daily gas deliveries from Prudhoe Bay for twenty years after commencement of a transportation system may vary from 2.0 Bcf/d to 4.4 Bcf/d, based only on proven reserves in the Prudhoe Bay Field. In this respect it should be noted that only the Alcan sponsors estimate initial deliveries below 2.0 Bcf/d. Alcan estimates a maximum average deliverability of 2.0 Bcf/d and submits that a range of 1.2 Bcf/d to 2.0 Bcf/d is reasonable to maximize oil recovery. However, even the major North Slope producers have testified that at least 2.0 Bcf/d to 2.5 Bcf/d of natural gas will be produced from the Prudhoe Bay Field. The actual volumes to be delivered will, of course, depend upon reservoir performance.

Based on the various estimates made by the applicants, the Commission Staff, the Department of Interior, the State of Alaska and the major North Slope producers, the CPUC believes that an estimate of 2.0 Bcf/d to 2.5 Bcf/d of natural gas from the Prudhoe Bay Field, based on proven reserves only, is reasonable. On this ground alone, the CPUC does not believe that it is in the best interests of the natural gas consumers of California to support a transportation system that is presently designed to transport a maximum of 2.4 Bcf/d to 3.1 Bcf/d of natural gas from Prudhoe Bay. As will be discussed infra, the capital costs of each of the proposed projects make them "marginal" for the consumer, assuming daily deliveries of 2.0 Bcf/d to 2.5 Bcf/d. The only factor that seems to lend weight to support any Arctic transportation system appears to be the promise of additional reserves in the not-too-distant future. Without a transportation system designed from the outset to accommodate such additional reserves, it is questionable whether California should support any project to transport natural gas from the Arctic regions of North America. Instead, California's best interests may rest in investing capital in additional lower 48 ventures, both onshore and offshore.

With respect to the Mackenzie Delta area of Canada, there is evidence supporting daily deliveries ranging from .424 Bcf/d to .855 Bcf/d. The primary difference for the variation lies in the inclusion or exclusion of "probable" or "possible" or "potential" reserves. Despite these variations in deliverability projections, it is important to note that at least .424 Bcf/d of MacKenzie Delta reserves could be delivered to Canadian markets via the Arctic Gas project. This would not be the case with either the El Paso Alaska project or the Alcan project. From California's standpoint, once additional "frontier reserves" are available to eastern

Canadian markets, it may lessen the need for the Canadian government to curtail exports to California from Alberta. Once again, such a factor must weigh heavily in any support being given to a system to tranpsort natural gas from the Arctic regions of North America.

B. Effect of Canadian Laws and Treaty

Each of the applicants have filed extensive briefs relating to (1) the timing of Canadian decisions regarding approval of a transportation system through Canada and the granting of rights-of-ways for such a system; (2) the effect of the draft treaty between the United States and Canada; (3) the powers of provincial governments in Canada through which both the Arctic Gas and Alcan projects will traverse to tax the pipeline, notwithstanding the execution of the above-described treaty. In addition to the submission of briefs Arctic Gas and El Paso Alaska sponsored Canadian experts, who underwent extensive cross-examination regarding these issues.

In recommending support of the Arctic Gas project, the CPUC is certainly aware that ultimate approval of this project depends in large measure on Canadian approval of the Canadian Arctic portion of the Arctic Gas project. Such approval, in turn, depends on the Canadian government's decision as to the timing for a pipeline system from the Mackenzie Delta area and the disposition of native claims settlements in the Northwest and Yukon territories of Canada.

If this Commission approves the Arctic Gas project, but the Canadian government decides against it, it would be necessary for the United States to reassess its position. However, in light of the projected schedules set forth in the Alaskan Natural Gas Transportation System Act of 1976, the United States would still have sufficient time to make any necessary readjustment to its position, assuming Canadian denial of the Arctic Gas project. However, the CPUC submits that it behooves the United States to make the Canadian government aware that it is in the best interests of both the United States and Canada to construct a system initially that will transport Prudhoe Bay reserves to the lower 48 states and, at the same time, transport Mackenzie Delta reserves to Canadian markets. The Commission's recommendation of approval for the Arctic Gas project would be the initial step in that direction.

At the present time it appears that the major concerns to the United States of a pipeline transporting Alaskan gas through Canada are twofold:

1. The possibility of the Canadian federal government refusing to allow expansion of the pipeline in Canada in order to transport additional Alaskan reserves to United States markets;

2. The possibility of a provincial government levying a confiscatory ad valorem property tax on that portion of the pipeline within its province. 2/

It appears that a final treaty between the United States and Canada and any legislation necessary to implement a treaty in order to alleviate these problems would be brought to fruition shortly after the United States and Canada chose a transportation system that was in the mutual interests of both countries. Thus, the Commission could approve the Arctic Gas project, subject to the condition that a treaty between the U.S. and Canada be executed, ratified or otherwise implemented which offers some reasonable assurances that none of the provinces through which the Arctic Gas system would traverse will confiscatorily tax the proposed pipeline system and that future expansion of the pipeline system in Canada will not be prohibited arbitrarily by the Canadian government.

In its brief El Paso Alaska sets forth a picture of "horrors" which the Canadian government could implement, notwithstanding a treaty. The CPUC is more persuaded by the arguments of Arctic Gas to the effect that when the Canadian provincial and federal governments see that the Arctic Gas system serves the mutual needs of Canada and the United States, no discriminatory or confiscatory actions will be taken by the governmental entities of Canada with respect to the proposed system. It is in the best interests of the United States to trust our Canadian neighbors. However, if such trust proves to be misplaced, Arctic Gas has described several areas where the United States could retaliate. But, the joint interests of Canada and the United States in constructing and operating a hydrocarbon transportation system, serving both the United States and Canada, in a time of a severe energy shortage make the need for retaliation very unlikely.

2/ When these proceedings commenced, a great deal of conflicting evidence existed with respect to the powers of the provincial governments to act in a discriminatory or confiscatory manner with respect to a pipeline transporting Alaskan gas through Canada, notwithstanding the existence of a treaty between the United States and Canada. However, after extensive cross-examination of witnesses for El Paso Alaska and Arctic Gas (Alcan did not sponsor an expert witness on Canadian law), it appears that fears of interference with construction, operation, repair, use or alteration of the pipeline, expropriation, diversion of supplies and indirect discriminatory taxation by the provincial governments are unfounded.

C. Economic Issues - Capital Costs, Construction Schedules, Cost of Service

Each of the applicants has submitted extensive evidence relating to the capital costs, construction schedules and cost-of-service per unit of their respective systems and the systems of their competitors. The CPUC does not envy the job of the Presiding Law Judge and the Commission in ferreting out this conflicting evidence in order to determine whose estimates are most reasonable. For example, depending upon whose assumptions are being used, the average unit cost-of-service of the three systems range from $1.25 per MMBtu to $2.34 per MMBtu.

For our purposes, the CPUC has accepted the estimates of each of the applicants as to the capital costs, construction schedules and cost-of-service of their respective systems summarized in the initial "economic" briefs submitted by each applicant.

Though the CPUC is "accepting" the applicant's estimates as to their respective systems, it submits that each of the applicants is being "conservative" as to its own estimates and "liberal" as to attacks on the estimates of its competitors. As stated above, the CPUC believes that no matter which system is approved, the unit cost of transportation to California markets will range from $1.50 to $2.30, excluding the wellhead price of the gas, costs of gathering, treating and processing the gas and costs of distribution. 3/

3/ As Alcan has succinctly stated in its initial "economic" brief, the record presently is devoid of evidence relating to the wellhead price, costs of gathering, processing and distribution (pages 59-64.). Without this information, it is not possible for the Commission to precisely determine the cost of Alaskan gas to the end users in Alaska and in the lower 48 states. In order to satisfy the mandate of Section 5(c) of the Alaskan Natural Gas Transportation Act of 1976, it appears that some type of Phase II hearing will be necessary. However, such a Phase II hearing would not allow sufficient time for the Commission to meet the May 1, 1977 deadline set forth in the Act.

Based on the North Slope producers' statements of record to the effect that they will not enter into gas purchase contracts at least until a gas transportation system is approved, it does not appear that the above-described information required by Section 5(c) of the Act would be available until after the President and Congress have made a decision as to an appropriate transportation system. If this assumption is correct, perhaps the Commission should recommend to Congress that the Act be amended to take these facts into consideration.

1. Capital Costs

The applicants have made the following capital cost estimates for their respective systems:

		Billions of Dollars
El Paso Alaska	-	$6.57
Arctic Gas	-	$8.60
Alcan	-	$6.28

The above-specified capital costs are based on July 1, 1975 dollars, and include AFUDC. The El Paso Alaska estimates assume facilities designed to transport 2.4 Bcf/d from Prudhoe Bay. The Arctic Gas estimates assumes facilities designed to transport 4.5 Bcf/d (2.25 Bcf/d from Prudhoe Bay and 2.25 Bcf/d from the Mackenzie Delta area). Of the above-specified figure $2,754,114,000 would be the portion of the capital costs chargeable to transport Canadian gas on a mcf-mile basis of allocation. Thus, the total capital costs of Arctic Gas' facilities for transportation of Alaska gas will be $5,851,756,000. The Alcan estimates assume facilities designed to transport 2.4 Bcf/d from Prudhoe Bay.

It appears that many of the differences between the applicants' estimates and the estimates made by their competitors are well within estimating ranges. Therefore, for purposes of comparison it seems reasonable to accept the estimates of the applicants as to their respective projects. However, based on the experience of the Alyeska oil pipeline, the CPUC submits that the above-specified capital cost estimates are probably conservative. The CPUC is not in a position to forecast which of the proposed projects will suffer more or less cost overruns. Each of the projects face different problems as evidenced by the environmental and geotechnical evidence submitted for the record herein.

For reasons stated herein, the CPUC believes that for approximately the same capital costs to the American consumers the Arctic Gas system would provide these consumers a more fuel efficient system capable of transporting large additional future reserves from both Alaska and Canada. Neither the El Paso Alaska system nor the Alcan system can promise the same type of performance.

2. Construction Schedules

The applicants have made the following estimates as to construction schedules for their respective systems:

El Paso Alaska	-	60 months
Arctic Gas	-	66 months
Alcan	-	36 months

Both El Paso Alaska and Alcan allege that their projects entail "significantly lowered construction risks" than the Arctic Gas project. Based on the experience of the Alyeska oil pipeline, the CPUC believes that each of the above-described schedules are probably optimistic. However, the CPUC is not in a position to forecast which of the proposed projects will suffer more or less delays.

Assuming the validity of the above-described construction schedules, the issue as to approval of the Arctic Gas project versus the Alcan project becomes one of approving a project which will transport both Prudhoe Bay and Mackenzie Delta reserves initially, with the design capacity to transport significant additional reserves in the future, or approving a project which can transport Prudhoe Bay reserves only and is not designed to transport additional reserves, absent significant additions to plant which, in turn, result in additional fuel loss. It should be noted that the fuel use by the Arctic Gas system will be 6.87% as compared to a fuel use by the El Paso Alaska and Alcan projects of 13.2%. As stated above, the CPUC believes that the best interests of California gas consumers lie in the approval of a project which will at the outset provide for the transportation of both Prudhoe Bay reserves and Mackenzie Delta reserves in a fuel efficient manner, with the capability of transporting significant additional reserves in the future at no additional expense. The CPUC believes that the Arctic Gas project offers such a prospect.

3. Cost-of-Service to California Consumers

Predicated upon their estimates of capital costs and construction schedules, as well as their proposed financing plans, the applicants have made the following estimates as to the unit cost of transportation to the California market for each of their respective systems:

	$/MMBtu
El Paso Alaska	1.52 to 1.74
Arctic Gas	1.26 to 1.52
Alcan	1.35 to 1.50

As with their estimates of capital costs and construction schedules, the CPUC believes that the applicant's unit cost-of-service estimates are conservative. Also, despite cross-examination of the applicants' witnesses sponsoring these cost-of-service estimates, the CPUC believes that the attacks by the applicants upon their competitors' assumptions almost negate each other. After taking into consideration the "conservative tendency" of each applicant's cost-of-service estimates, the CPUC believes the above-specified ranges indicate a slight advantage of the Arctic Gas project over both the El Paso Alaska or Alcan projects with respect to unit cost-of-service to California.

D. Allocation of Costs Between U.S. and Canadian Consumers

After reviewing the evidence and briefs submitted by Arctic Gas and Alcan with respect to the allocation of costs between U.S. and Canadian shippers using their respective systems, the CPUC believes that both Arctic Gas' and Alcan's methods of allocation are administratively feasible, assuming approval by the NEB of these methods. Because of the greater number of Canadian pipeline systems involved in the Alcan system as compared to the Arctic Gas system, it appears that Arctic Gas' allocation proposals would be easier to administer. However, the CPUC believes that Alcan's brief on the allocation issue makes a persuasive case that its proposed allocation methods are workable and manageable.

E. Environmental and Geotechnical Issues

As the Commission Staff pointed out in its environmental brief, each of the three proposed systems have undesirable environmental impacts. However, like the Commission Staff, the CPUC believes that the Arctic Gas project is environmentally preferable to either the El Paso Alaska project or the Alcan project. 4/ The Commission Staff found the El Paso Alaska project to be the least environmentally preferable system, even assuming El Paso Alaska used its realignment alternative. Again, the CPUC agrees with the Commission Staff's conclusion.

As a general matter the major drawback of the Arctic Gas system is that it will disrupt wildlife and ecosystems in the Alaska National Wildlife Range (ANWR). The major shortcomings of the El Paso Alaska project are that it intrudes the Chugach National Forest, its route outside the Alyeska oil pipeline corridor

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4/ Though the Commission Staff found its Fairbanks Corridor/Red River alternative to be environmentally preferable for transporting Prudhoe Bay reserves only, it found the Arctic Gas project to be the "best environmentally" if Mackenzie Delta gas and Prudhoe Bay gas are both to be considered.

is environmentally unsound; it contemplates locating LNG liquefaction, regasification and marine terminals in seismically sensitive areas of Alaska and California without adequate seismic design to withstand maximum credible earthquakes. The most significant problem with the Alcan system is its inability from the date of completion to transport additional reserves from the Arctic region which are expected to be produced in the future.

The CPUC believes that the fact the Arctic Gas project will traverse the ANWR is offset by the following major factors: First, unless the Arctic Gas system is built, there will be no access to the Mackenzie Delta reserves until at least the late 1980s. Unless the Mackenzie Delta reserves are transported to Canadian markets in the mid-1980s, the possibility of curtailment of Canadian exports to the United States becomes more certain. Neither California nor many other states in the lower 48 can afford such curtailments of Canadian supplies.

Second, transportation of natural gas by the El Paso Alaska or Alcan systems would be much more energy consumptive than transportation via the Arctic Gas system. For example, assuming California received 650 MMcf/d of Prudhoe Bay reserves, similar to the volumes its local distributors contracted for under the now terminated advance payment agreements with Atlantic Richfield Company (ARCO) and Exxon Company, U.S.A. (Exxon), the fuel usage to deliver these volumes to California under the three proposed systems would be as follows:

Alcan	El Paso Alaska	Arctic Gas
88 MMcf/d	62 MMcf/d	33 MMcf/d

Thus, Alcan would use almost three times as much fuel, and El Paso Alaska almost twice as much fuel, as Arctic Gas to transport the same volumes of gas to California. Alcan would use approximately 160 MMcf/d of natural gas more than Arctic Gas to transport 2400 MMcf/d to the Canadian/Lower 48 border.

Third, the United States is a highly energy-consumptive society. Despite conservation efforts, the United States will continue to use inordinate amounts of fuel, including natural gas. Unless this country is willing to drastically change its life style, and there has been no indication of such a desire to date, it will be necessary to find ways to transport as much energy as possible from areas like the North Slope and Mackenzie Delta. Only the Arctic Gas project offers this opportunity. If traversing the ANWR is a necessary trade-off for this result, the CPUC believes the United States should be willing to make the trade-off, especially when one considers the stringent measures which Arctic Gas has developed to mitigate the impact on the ANWR. Of course, the CPUC, like the

Commission Staff, does not believe that Arctic Gas' proposed mitigation measures will be totally effective. For example, the pipeline will disrupt the "wilderness" value of the ANWR more than at any time in the past. The new technology, like snow roads and chilled pipelines, are susceptible to error, despite the extensive studies already undertaken and still to be undertaken by Arctic Gas. Complete enforcement of the proposed mitigation measures, such as revegetation, may be idealistic. However, if the United States has made a commitment to obtaining substantial volumes of natural gas from the North Slope of Alaska, the CPUC submits that it must be willing to assume some of the risks inherent in transporting these reserves from the Arctic regions.

Fourth, the extensive environmental planning by Arctic Gas, as compared to El Paso Alaska and especially Alean, gives preference to the Arctic Gas project. Arctic Gas has presented for the record a much more detailed project in terms of engineering and design than either El Paso Alaska or Alcan. While El Paso Alaska and Alcan have much environmental and geotechnical research to do prior to construction, Arctic Gas can proceed to construction based on approximately 150 man years of research.

Fifth, the Arctic Gas system does not traverse as many seismically dangerous areas as either Alcan or El Paso Alaska. In addition, there seems to be insufficient evidence of record to support the technical or economic feasibility of El Paso Alaska's seismic designs. Alcan must still complete substantial studies to define its seismic problems and to determine the precise routing of its system through the Yukon.

Sixth, the evidence of record indicates that each of the applicants will face the problems of frost heave. However, Arctic Gas has conducted much more-detailed studies to deal with the frost heave problem than has either El Paso Alaska or Alcan. If the assumption is correct that the potential for frost heave is greater in areas of discontinuous permafrost, it appears that the Alcan project may have to contend with the potential of frost heave for 584 miles of discontinuous permafrost and 793 miles of fringe discontinuous permafrost, as compared to Arctic Gas with 510 miles of discontinuous permafrost and 290 miles of fringe discontinuous permafrost.

Seventh, Alcan brags about the fact that much of its construction will occur in non-winter months, as compared to Arctic Gas and El Paso Alaska. However, it appears that non-winter construction raises other problems relating to permafrost, namely subsidence, settlement and degradation of the permafrost. Alcan has not adequately described how it will deal with these problems.

Eighth, both Alcan and El Paso Alaska must rely heavily on the Alyeska Pipeline Co. for much of their environmental and geotechnical information. Despite the fact that Alyeska has supplied substantial information to El Paso Alaska and Alcan to date, the possibility of a breakdown of communications exists at any time. Such a breakdown would leave both El Paso Alaska and Alaska "high and dry." Arctic Gas, on the other hand, has during the past eight years built up its own library of information. It need not rely on Alyeska for any important information relating to Arctic Gas' proposed transportation system.

Alcan's major attack against the Arctic Gas system seems to be the fact that Arctic Gas intends to use a high-pressure 48" O.D. pipeline for its project. Alcan claims its "conservative" approach is more certain of success than Arctic Gas' unproven technology. Of course, Alcan fails to note that its "conservative" approach also guarantees an obsolete system upon the date of completion at a cost of $6 to $7 billion. The CPUC submits that the extensive research undertaken by Arctic Gas makes its proposal worthy of approval, especially considering that the completion of the Arctic Gas system will provide a system capable of transporting substantial volumes of additional future reserves. Arctic Gas is not a "fly-by-night" operation. It is a consortium of oil and gas companies from the United States and Canada who have built their enterprises on previously untried and unproven techniques. The fact that the technology is not yet "proven" should not mitigate against its acceptance. Rather, it should make the regulator wary of approving a tariff which places all of the risks of cost overruns or project failure on the gas consumer.

Based on the foregoing reasons, the CPUC submits that the Arctic Gas project is environmentally preferable to either the El Paso Alaska or Alcan projects. However, the CPUC requests that any approval of the Arctic Gas project include the conditions set forth in Appendix B of the Commission Staff's initial environmental brief, dated November 19, 1976. In addition, the CPUC agrees with the Commission Staff's request for a "Federal surveillance team to monitor the construction of the certificated pipeline" and some type of enforcement mechanism in the event the construction techniques used violate the conditions set forth in the certificate.

F. Socioeconomic Issues

From a socioeconomic standpoint the State of Alaska places the competing systems in the following order of priority: El Paso Alaska, first; Alcan, second; Arctic Gas, third. Apparently the State of Alaska has decided that the socioeconomic benefits of having a pipeline traverse its State from north to south outweigh the detriments, such as in-migration and resulting unemployment, increased demand for services, and shortages of goods and services.

The CPUC does not doubt that the State of Alaska thinks its support of the El Paso Alaska project is in the best interests of the citizens of Alaska. However, the CPUC must consider the interests of the natural gas consumers in California. For the reasons stated herein, the CPUC believes that the Arctic Gas system would be more beneficial to the People of the State of California than either the El Paso Alaska project or Alcan project.

G. Specific Comparisons Among Competing Systems

In addition to the issues discussed above, a direct comparison between the Arctic Gas system and the El Paso Alaska system and between the Arctic Gas system and the Alcan system provides further evidence why it is in the best interests of the California gas consumers to support the Arctic Gas project.

1. Arctic Gas System vs. El Paso Alaska System

The CPUC favors an overland transportation system, such as the Arctic Gas system, over a combined pipeline/LNG system, such as the El Paso Alaska system, for the following reasons: First, if the El Paso Alaska project is approved, between 60 percent and 80 percent of California's total gas supplies in 1985 would be LNG delivered to West Coast terminal facilities. The exact percentage of LNG would depend on the volumes of other supplemental gas supplies, such as coal gas, Indonesian and Cook Inlet LNG, and gas from El Paso's Algeria II project, received by California.

Reversal of the flow of the pipeline facilities of El Paso Natural Gas Company (El Paso) and Transwestern Pipeline Company (Transwestern) east-of-California to implement the El Paso Alaska project, combined with the possible abandonment of two pipelines in California owned by Southern California Gas Company (SoCal) and two of El Paso's pipelines east-of-California in order to transport Alaskan oil from the West Coast to the midwest (SOHIO West Coast-MidContinent Oil Pipeline Project) may result in the inability of California to receive gas from Texas, New Mexico and the Rocky Mountains in the future, assuming new discoveries are found in these regions. Such a reversal of flow would also make it more difficult to transport additional supplies of coal gas or other SNG from New Mexico, Wyoming or Arizona.

Second, if the El Paso Alaska project is approved, the approval of any other LNG projects, such as the Pacific Indonesia project or the Pacific Alaska project, might require the construction of more than one LNG regasification facility in California and would definitely increase the tanker traffic along the California coast by adding 232 to 308 trips per year by 165,000 cubic meter cryogenic tankers.

Such additional LNG tanker traffic must be considered in conjunction with additional tanker traffic for North Slope oil which will commence by 1978. If additional reserves of North Slope gas become available, an expanded LNG tanker fleet would be required for the El Paso Alaska system. The additional tanker traffic would merely add to the congestion along the California coast, especially in the Santa Barbara Channel, where Outer Continental Shelf development will be in progress.

A proliferation of LNG regasification facilities on the coast of California and additional LNG tanker traffic tanker along the coast of California is not in the best interests of the people of the State of California, when an overland pipeline system exists as a viable alternative to transport gas from the North Slope of Alaska.

Third, the evidence in this proceeding indicates a strong probability that additional reserves will be proven both on the North Slope of Alaska and in the Mackenzie Delta area of Canada. For example, DeGolyer and MacNaughton, consultants for Arctic Gas, have estimated additional potential reserves on the North Slope of Alaska at 41.8 Tcf. The State of Alaska's Division of Geological and Geophysical Surveys has estimated additional potential reserves offshore the North Slope of Alaska at 46.5 Tcf. The Department of the Navy has estimated potential reserves in Naval Petroleum Reserve No. 4 of 78.6 Tcf.

Arctic Gas has estimated potential reserves in the Beaufort Sea near the Mackenzie Delta area of 50 Tcf and introduced into the record testimony by Dome Petroleum Limited before the National Energy Board (NEB) in Canada that potential reserves in the Mackenzie Delta/Beaufort Sea Basin may range from 250 to 320 Tcf. Even if these estimates appear to be somewhat optimistic, it is the potential for those future reserves which the transportation system should be designed to meet. Otherwise, as stated above, it is questionable whether such a large capital investment should be made for only proven reserves already discovered on the North Slope and in the Mackenzie Delta area. The El Paso Alaska project is not designed to transport any of the Mackenzie Delta reserves. In order to transport additional North Slope reserves, it will be necessary to expand its LNG operations. As stated above, it is not in California's best interest to support a proliferation of LNG facilities when a viable alternative exists to transport not only North Slope gas but also Mackenzie Delta gas. This is especially true where the transportation of the Mackenzie Delta gas might lead to a continuation of exports of Canadian gas to California and other states in the lower 48 which are dependent on Canadian gas supplies.

Fourth, despite the numerous safety factors proposed for the El Paso Alaska system, the potential for harm to persons and property is greater from an LNG system than an overland pipeline system, especially where the proposed sites for the liquefaction and regasification facilities lie in areas of potential seismic activity.

Fifth, a greater probability of "outages" exists from an LNG operation than from an overland pipeline system. For example, storms, fog or other forms of bad weather could delay a LNG carrier for several days. Mechanical breakdowns of tankers, liquefaction and regasification facilities are more likely to occur and are more difficult to repair than an overland pipeline system because of the complexity of an LNG system as compared to a pipeline system. Finally, maritime union problems are certainly possible for a Jones Act LNG fleet, notwhithstanding the execution of "no strike" contracts.

El Paso Alaska has attempted to counter the "outages" problem by showing that it can technologically reverse the flow of the pipeline system from "west-to-east" to "east-to-west" within 8 hours in the event of an outage which affected LNG deliveries into the West Coast terminal. El Paso Alaska believes that this technological contingency should assuage any fears which California may have concerning insufficient supplies of gas to California, assuming an LNG "outage". Unfortunately, the CPUC is still much concerned that other states east-of-California would not be amenable to having their supplies of gas cut-off in case of a LNG outage which adversely affected California. Even assuming their willingness to aid a sister state in distress, El Paso Alaska would be merely prorating the effect of the outage. The fact remains that the probability of a severe outage is greater with a LNG system than an overland system, and that in the event of an outage some natural gas consumers in the lower 48 states will suffer. The CPUC does not see the justification for taking these risks when a viable overland system exists to transport the North Slope reserves.

2. Arctic Gas System vs. Alcan System

The CPUC supports the Arctic Gas system rather than the Alcan system for the following reasons: First, the Alcan system is not designed to transport Mackenzie Delta reserves. Absent the transportation of Mackenzie Delta reserves to Canadian markets, curtailment of present Canadian exports to California is more likely. The CPUC prefers a system which will give more assurance that exportation of Canadian gas will continue at present levels, and the Arctic Gas system, rather than the Alcan system, provides this greater assurance.

Though it is true that a combination of the Maple Leaf and Alcan projects would provide a transportation system for Mackenzie Delta reserves, as well as Prudhoe Bay reserves, a Maple Leaf/Alcan system would require approximately 2000 more miles of pipeline than the Arctic Gas system and would not have the cheap expansability of the Arctic Gas system in the likely event that additional reserves are proven on both the North Slope and in the MacKenzie Delta area.

From an environmental standpoint, it is not in the public interest to approve a system which would require extensive additional mileage of pipeline through mountainous regions when a much shorter and more direct pipeline system is set forth as an alternative.

Second, in order to be able to finance both the Alcan project and the Maple Leaf Project, Alcan's witnesses have testified that they would have to urge the Canadian government to separate the construction of both projects by at least 16 months. However, these same witnesses have testified that the Maple Leaf project has a priority status in Canada over any other proposed project, because the Maple Leaf Project serves Canadian interests only, as opposed to any of the other proposed projects pending before the NEB whose main interests are in serving the needs of lower 48 customers. If the Maple Leaf project has such a priority status, it seems doubtful whether the Canadian government would postpone its construction in favor of constructing the Alcan project which serves only lower 48 customers. In addition, the capital needed to build the Maple Leaf project may not leave sufficient capital to finance the Alcan project. The CPUC submits that Alcan has not carried its burden of proving that its project could be financed within the time frame it proposes.

Third, the Alcan system will build upon already existing low-pressure pipeline facilities for a major portion of its system. To increase the design capacity of the proposed Alcan system to 2400 MMcf/d will require much additional compression and increased fuel use to transport the gas. The CPUC estimates that the Alcan system would use 160 MMcf/d more gas to transport 2400 MMcf/d than would the Arctic Gas system. To put this figure in perspective, the 160 MMcf/d would be equivalent to the volumes of gas already committed to Southern California Gas Company for its Cook Inlet project. The 160 MMcf/d of gas is also equivalent to 30,000 bbl/d of oil.

To argue that Alcan could use a higher pressure system for its Canadian facilities, if necessary, fails to recognize the major purpose for the Alcan project, namely to utilize existing low-pressure facilities which may have idle capacity to transport Alaskan reserves.

Fourth, as stated above, the economics of both the Arctic Gas and Alcan projects are very near the point where it would be more cost effective for California to pursue alternate sources of gas. In addition, there is a substantial chance of cost overruns for either project. The major attraction of a North Slope gas transportation system at this time is the probability of the discovery of substantial new reserves. This could be expected to provide more gas to California and to improve the economic viability of a pre-existing transportation system. The Arctic Gas system, with its much larger capacity, could take advantage of new sources, whereas the Alcan project could not do so as cheaply or as effectively.

H. Tariffs

The CPUC has discussed the tariffs issue in its initial tariff brief dated June 30, 1976 and in its reply tariff brief dated December 3, 1976. Therefore, the CPUC will not repeat its general position regarding the tariff mechanisms proposed by the applicants. However, it should be noted that the sponsors of the Alcan project are requesting approval of a cost-of-service tariff which will charge consumers during the early build-up period of the Alcan project for gas which they will not receive. The sponsors of the Arctic Gas project and El paso Alaska project, on the other hand, are requesting a phased tariff procedure which would charge consumers a cost-of-service only for the gas they receive even during any build-up period. The CPUC believes that the phased tariff procedure is preferable for California gas consumers in that these consumers will not be charged for gas which they may not receive at a later time. This is especially true in the event certain customers receiving initial volumes of Alaskan gas are later curtailed or removed from the system as a result of an allocation program.

I. Financing

In its brief dated June 30, 1976, relating to El Paso Alaska's financing brief, the CPUC stated its belief that absent capital contributions or some type of backstopping by the North Slope producers and/or the federal and state governments, neither the Arctic Gas or El Paso Alaska projects would obtain financing for their projects. At the time of the CPUC's statement, the Alcan project was not a part of the instant proceedings. However, the CPUC's previous statement is equally applicable to the Alcan project.

The CPUC is aware of recent testimony submitted by the Department of Treasury with respect to methods of financing any of the proposed projects (Vol. 250). The Presiding Law Judge has scheduled December 7, 1976 as the date for the filing of reply financial briefs. After analyzing these reply briefs, the CPUC may deal in more depth with the financing issue as part of the "wrap-up" brief which is due on December 15, 1976. However, at this point the CPUC remains convinced that in order to finance any of these projects, risk sharing between consumers, shippers and producers will be necessary, as well as some form of governmental backstopping of the project, in case of failure of completion or excessive cost overruns.

II

NECESSITY FOR "WESTERN LEG" FACILITIES AS PART OF ARCTIC GAS PROJECT

The CPUC has already submitted a brief stating its reasons for opposing the Commission Staff's recommendation that the Arctic Gas system not include direct delivery facilities from Caroline Junction, Alberta to California. 5/ Therefore, the CPUC will not repeat its contentions at this time. Suffice it to say that the CPUC supports the Arctic Gas system, including the PGT facilities, as presently proposed by the applicants.

III

VIEWS OF CALIFORNIA ENERGY RESOURCES, CONSERVATION AND DEVELOPMENT COMMISSION REGARDING ALASKAN NATURAL GAS TRANSPORTATION SYSTEM

In order to carry out its mandate of representing the People of the State of California and in order to present the Commission with the views of all California agencies who have stated a desire to have their views expressed in this proceeding, the CPUC hereby incorporates by reference the attached resolution adopted by the California Energy Resources, Conservation and Development Commission (Energy Commission) (Appendix A). The resolution indicates that the Energy Commission requests that the Commission recommend an overland pipeline system which includes a western leg for direct delivery to California and which "most closely incorporates the following characteristics":

1) Earliest possible completion date;

2) Lowest cost of service;

3) Least environmental impact particularly including impact on sensitive wildlife areas;

4) Provides access to the largest deliverable gas supplies;

5) Relies on proven pipeline construction techniques;

5/ See Brief of the People of the State of California and the Public Utilities Commission of the State of California In Response To Brief of the Federal Power Commission Staff On Arctic Gas Project Western Lateral To California, dated September 29, 1976.

6) Maximizes the use of existing rights-of-way;

7) Provides an acceptable financing plan requiring the least possible governmental subsidies;

8) Provides the most direct delivery system for California;

9) Enjoys the committed support of both the United States and Canadian governments;

10) Provides the greatest incentives for maintaining continued access to Canadian gas already contracted with California consumers.

IV

LNG SITING ISSUE ASSUMING APPROVAL OF EL PASO ALASKA PROJECT

On August 6, 1976 and October 6, 1976 the CPUC submitted initial and reply briefs relating to the issue of siting a LNG regasification facility on the coast of southern California, assuming the El Paso Alaska project, as opposed to either the Arctic Gas project or the Alcan project, was recommended for approval by the Commission. In its briefs the CPUC concurred with the positions of the Commission Staff and the Sierra Club that Oxnard, rather than Point Conception, was the preferable site for a regasification facility, assuming certification of the El Paso Alaska project. However, the CPUC questioned the conclusions of the Commission Staff and the Sierra Club that only one regasification facility would be necessary, assuming certification of the three projects currently pending before the Commission to bring LNG to California, namely the El Paso Alaska project, the Pacific Indonesia project and the Pacific Alaska project.

Certain state agencies and legislators in California have taken exception to the positions stated by the CPUC in the above-described briefs. In order to carry out its mandate of representing the People of the State of California and in order to present the Commission with as complete a record as possible in the subject proceeding, the CPUC incorporates by reference herein the attached resolutions adopted by the Energy Commission (Appendix A) and the California Coastal Zone Conservation Commission (Appendix B).

The Energy Commission specifically contends that the CPUC acted prematurely in choosing Oxnard as the preferable site for the El Paso/Alaska project for the following reasons: First, the public safety factor regarding the proposed facilities at Point Conception, Oxnard and Los Angeles Harbor is still undetermined. The risk assessment studies prepared by Science Applications, Inc. (SAI) for all three facilities and submitted for the record by Western Terminal LNG Company (Western Terminal) as Exhibits WL-51, WL-52, and WL-53 were based on preliminary data and anticipated design (Tr. 25178). The SAI studies were published in December 1975, and do not fully reflect certain critical engineering details and design progress. For example, seismic analysis for the Oxnard marine facility was completed in July 1976, and the related gimbal joint study was completed in September 1976.

Second, disagreement exists between the Commission staff and SAI regarding the behavior of LNG vapor clouds and other key risk determinants, such as marine vessel traffic. Attention is directed to a letter from the Commission staff to Western Terminal, dated October 26, 1976, in Western LNG Terminal Company, Docket No. CP75-83-2, requesting additional information as to 21 technical points relating to the SAI risk assessment studies and models and assumptions upon which those studies were based. The information requested in this letter indicates that several important areas relating to public safety remain unanswered.

Third, witnesses for Western Terminal stated that they were convinced "internally" that the proposed facilities "presented no undue hazard to the public" and that SAI's risk assessment studies were performed primarily for "defense in permit proceedings", and for the purpose of "convincing the public" (Tr. 24959). Witnesses for SAI stated that no changes in design or operations were suggested because "the risks were extremely low and therefore there was no reason to suggest any changes in the design". Western Terminal did not produce "internal" studies or documents which led them to the conviction that the facilities were acceptably safe, prior to completion of the SAI risk assessment studies. Therefore, the SAI work must be treated as an advocacy document until such time as technical review by qualified, independent peers has established its scientific validity. This review process has only just begun. SAI's conclusions and methods have not been shown to enjoy general acceptance in the scientific community, and they have not been accepted or relied upon by any identifiable authority other than Western Terminal.

Fourth, contingency planning appears woefully inadequate to assure public safety in the event of a major safety incident, however unlikely.

Fifth, pre-permitting safety review must be regarded as preliminary and inconclusive. For example, the review conducted for the Commission by the National Bureau of Standards was only a preliminary step; many critical issues were not and could not be addressed because of the preliminary status of engineering work. Other problem areas were identified but, based on information and belief, responses were left open-ended. It has not been adequately established that safety monitoring in the post-permitting phase, from final design through construction and operation, will be adequately provided for. The recently enacted California Coastal Act (California Public Resources Code, Section 30000, et seq.) will require positive findings that any LNG facility proposed for siting in a populated area is consistent with public safety. The California Coastal Commission intends to exercise this responsibility.

Sixth, additional studies are being conducted within California, regarding all three of the proposed sites for LNG regasification facilities. A preference for any site would be premature, until these studies are completed. For example, the City of Oxnard recently issued a Draft Environmental Impact Report (EIR) regarding Western Terminal's proposed facility at Oxnard. The first public hearing regarding the Draft EIR was held on November 4, 1976. A Final EIR for the project is required by the California Environmental Quality Act (California Public Resources Code, Section 21000, et seq.) prior to the issuance of any local or state permits. Also, from a public policy point of view, completion of the State EIR process appears indispensable to a decision as to the acceptability of Oxnard as a site for a LNG regasification facility.

At this point, it should be noted that in preparing its Draft EIR, the City of Oxnard had an independent safety study performed. It refused to rely on the SAI risk assessment study to establish the safety of the proposed facility at Oxnard. Based on information and belief, a Final EIR for the Oxnard facility will be certified in March or April, 1977. The Final EIR for the Oxnard facilities will be submitted to the FPC as soon as it has been certified.

The preparation of an EIR for the proposed Point Conception site has recently begun. The reason for the delay has been Western Terminal's failure to file the necessary applications with the County of Santa Barbara until just recently. As stated above, with respect to the Oxnard EIR, completion of the State EIR process is indispensable to a decision regarding the acceptability of Point Conception as a site for a LNG regasification facility.

By Order dated May 19, 1976, the Federal Power Commission denied petitions by the CPUC and the County of Santa Barbara for local hearings regarding the proposed LNG facilities at Los Angeles Harbor, Oxnard and Point Conception. At the same time, it has granted requests for local hearings at other sites in the lower 48 states, e.g., Everett, Massachusetts. After the Commission has denied the requests of state and local agencies for local hearings in California, it would be premature for California to endorse any site until the

various State EIR processes have been completed. After the Oxnard and Point Conception EIRs have been subject to local public hearings and local exposure, there will be a better indication as to which site, if any is more acceptable for a LNG facility. Also, until the Oxnard and Point Conception EIRs have had such local exposure, it seems premature to argue, as the CPUC did, that the possibility of injunctive action is more likely at Point Conception than at the other proposed locations.

The issue of seismic safety is presently under detailed technical review by the California Seismic Safety Commission (Seismic Safety Commission). The Seismic Safety Commission expects to issue an official report regarding each of three proposed sites by the end of 1976. 6/ Design data presented to this Commission in the El Paso Alaska or Pacific Indonesia proceedings has been preliminary in many respects. For example, important studies relating to the design of the trestle at Oxnard were only completed in September, 1976. These studies have not been submitted for the record in either the El Paso Alaska or Pacific Indonesia proceedings. Until the Seismic Safety Commission has completed its study as to the proposed sites at Point Conception, Oxnard and Los Angeles Harbor, judgment as to the seismic issues should be reserved.

The Energy Commission is preparing a study relating to the issues of reliability of the proposed LNG regasification facilities. The study will be completed by the end of 1976 and will be available for presentation in the Pacific Indonesia and/or Pacific Alaska proceedings.

Finally, the California Coastal Act includes a strong presumption in favor of remote siting, with the burden of proof on the applicant to establish safety. The above-described EIRs for Oxnard and Point Conception will be a vital element of state decision-making for all state permitting agencies, particularly the Coastal Commission and State Lands Commission, with respect to both safety and environmental issues. Since the County of Santa Barbara has not adopted the Commission staff's Final EIS in the El Paso Alaska proceeding, it would be inappropriate to base a site preference on the Commission staff's environmental analysis which downgrades Point Conception.

6/ It should also be noted that the U.S. Navy, acting through its Naval Facilities Engineering Command, has actively participated in technical discussions relating to seismic issues with respect to both the Los Angeles Harbor and Oxnard sites. Based on information and belief, the Navy has intervened in the Pacific Indonesia and Pacific Alaska proceedings because of the proximity of major naval facilities to both Oxnard and Los Angeles Harbor. In its recent comments on the Draft EIS for the Pacific Alaska project, the Navy agreed with the Commission Staff's conclusion that "the LNG terminal facilities should not be constructed at the proposed Los Angeles site in view of the seismic problem, the shipping congestion in Los Angeles Harbor and the resulting threat to a highly populated area."

Based on the foregoing, the Energy Commission submits that if this Commission recommends approval of the El Paso Alaska project, it should approve siting of the El Paso Alaska project at a remote site consistent with the California Coastal Act and the California Environmental Quality Act. The proposed sites at Los Angeles Harbor and Oxnard are not remote. Some remote site, on or offshore, should be approved by the FPC subject to the condition that a permit be obtained from the California Coastal Commission. In addition, the Commission should take cognizance of the California Resources Agency's concerns on the environmental issues at each of the proposed sites. 7/

If the El Paso Alaska project is not certificated, the Energy Commission would recommend siting a facility at some remote location (either onshore or offshore) for both the Pacific Alaska and Pacific Indonesia projects, until the unanswered safety questions are resolved by the appropriate California agency. These recommendations are without prejudice to the possible siting of a facility at Oxnard, depending on the development of the record in the Pacific Indonesia proceeding.

Some clarification of the intent of paragraph 7 of the Energy Commission resolution (Appendix A) appears necessary in order to conform the resolution's language to the Commission's mandate under the Natural Gas Act.

Paragraph 7 of the Energy Commission resolution reads as follows:

"7) That, however, if the Federal Power Commission should approve the El Paso Alaska proposal and must, therefore, select one of the three proposed California sites in the El Paso/Alaska proceeding, it should tentatively approve a site subject to:

"a. Permit approval by the State Coastal Commission and review by the State Seismic Safety Commission;

"b. Strict permit conditions which prohibit unrelated secondary (or induced) industrial and residential development adjacent to the site or within a "fire hazard" radius of the site; and

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7/ See Comments filed by California Resources Agency as to the Commission Staff's Draft Environmental Impact Statement and Final Environmental Impact Statement in the El Paso Alaska proceeding and the Draft Environmental Impact Statements in the Pacific Indonesia and Pacific Alaska proceedings.

"c. Completion and evaluation, including public hearings of the expanded alternate site analysis for the Point Conception EIR."

In its initial brief on LNG siting, the CPUC urged that any certificate for the El Paso Alaska project include language similar to that found in Opinion No. 622 (Columbia LNG Corp., et al., Docket No. CP71-68, et al), to wit:

> "The authorizations granted herein shall not take effect as to any part of any facility, or operation of any part of any facility, until all necessary federal, state and local authorizations as to that part of the facility, or operation thereof, have been secured. A copy of each such authorization for each facility or part thereof, shall be submitted to the Commission prior to the commencement of service of such facility or part thereof. Such authorizations shall include, but are not limited to, building permits, Coast Guard clearances of vessels and harbor operations, and statements of compliance with applicable industry codes or regulatory codes governing the design, construction and operation of facilities in a safe manner." (Ordering Paragraph F(3).)

The CPUC submits that paragraphs 7(a) and (b) of the Energy Commission's resolution (Appendix A) is merely an extension of the principle set forth in the above-quoted condition. The resolution requests that any certificate of public convenience and necessity issued by the Commission for the El Paso Alaska project be conditioned on the issuance of appropriate local and state permits. These local or state permits, in turn, may include conditions which prohibit unrelated secondary (or induced) industrial and residential development near the site. However, the CPUC must point out the difficulties it sees in forcing third parties other than the applicant to limit the growth of the surrounding area. It seems that the feasibility of such a permit condition by a state or local agency rests in the eminent domain power of the applicant, as a public utility, to condemn property in the surrounding area so as to avoid secondary development.

Paragraph 7(c) of the Energy Commission resolution (Appendix A) merely highlights a point made previously, namely that approval of Point Conception be conditional upon completion of the CEQA EIR proceedings now underway within the County of Santa Barbara. Based on information and belief, the Point Conception EIR being prepared by the County of Santa Barbara will include an alternate site analysis of offshore as well as onshore sites, and the Energy

Commission requests that this alternate site analysis be completed prior to any final approval of Point Conception as a site for the El Paso Alaska project, assuming that project is approved by the Commission. Again, the intent of paragraph 7(c) of the Energy Commission resolution seems to be included in the above-quoted condition which the CPUC has already asked the Commission to include in any certificate for the El Paso Alaska project.

At this point it should again be stressed that the CPUC is requesting that the Commission approve the Arctic Gas project, as presently proposed by the applicants. Prior to the time of the Commission's final action in this proceeding, it is very probable that the records in the Pacific Indonesia and Pacific Alaska proceedings will have closed. If additional evidence is introduced into the record of these proceedings which indicates that Oxnard is not in fact the most-preferable location for an initial LNG regasification facility in California, the CPUC will certainly not be adverse to altering its position. However, based on the evidence of record herein, the CPUC still believes that Oxnard is preferable to Point Conception as a site for a LNG regasification facility for the El Paso Alaska project. Hopefully, however, the Commission's choice of the Arctic Gas project will make any choice between Oxnard and Point Conception or any other location moot at least as far as this proceeding is concerned.

CONCLUSION

The CPUC respectfully urges the Commission to recommend approval of the Arctic Gas project, as presently proposed by the applicants.

Respectfully submitted,

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Richard D. Gravelle

/s/ J. CALVIN SIMPSON

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Dated: December 3, 1976

APPENDIX A

RESOLUTION NO.:

STATE OF CALIFORNIA

State Energy Resources
Conservation and Development Commission

RESOLUTION

WHEREAS the California Public Utilities Commission has been directed by recent state legislation (SB 2008) to "represent the united interests" of (state agencies) in federal regulatory energy proceedings and to consult with state agencies, specifically the ERCDC (Section 5401 of the Public Utilities Code); and

WHEREAS the ERCDC staff has prepared or in preparation comprehensive reports designed to identify emerging trends related to energy supply, demand, and conservation and public health and safety factors pursuant to Section 25309 (the Warren-Alquist Act) "to provide the basis for state policy and actions in relation thereto"; and

WHEREAS ERCDC staff has acquired and analyzed information in order to ascertain future energy problems and uncertainties including:

(a) The production of Alaskan North Slope oil and its projected use in the State;

(b) Impacts of petroleum price increases and projected conservation measures on the demand for energy and indirect effects on the need for offshore oil development and Alaskan oil delivery into the State;

(c) Potential shipments of Alaskan oil through the State;

(d) The impact on the State of national energy policies including Project Independence and its successors;

(e) Implications of natural gas decision making for California

in accordance with Section 25005.5 of the Public Resources Code (SB 1479); and

WHEREAS the CPUC, in consultation with the Governor's Office of Planning and Research and ERCDC staff, has established procedures for consultation with other state agencies in federal energy proceedings; and

WHEREAS the CPUC will file a final brief in the El Paso Alaska case by November 30, 1976, which will set forth a statement of policy, based upon the record before the FPC, of other state agencies (CPUC telegram, October 28, 1976);

THEREFORE BE IT RESOLVED that the General Counsel's Office, in coordination with the Executive Director and Commission staff, shall recommend to the Commission appropriate responses to CPUC's request for assistance and to have evidence, expert witness(es), and statements of policy prepared when appropriate for the following federal regulatory energy proceedings (described in depth in attachments) pursuant to the ERCDC's consultation responsibilities according to the provisions of SB 2008:

1. El Paso Alaska Company, FPC Docket No. CP75-96, et al.;
2. Pacific Indonesia LNG Company, FPC Docket No. CP75-160, et al.;
3. El Paso Natural Gas Company, FPC Docket No. CP75-362;
4. Proposed Rulemaking for Approved States' Coastal Zone Management Program, FPC Docket No. RM76-38;
5. Request for Rulemaking on LNG Site Selection Criteria, FPC Docket No. RM76-13;
6. Pacific Alaska LNG Company, FPC Docket No. CP75-140;

THEREFORE BE IT RESOLVED that the Energy Resources Conservation and Development Commission finds that an overland pipeline delivery system for natural gas from Alaska's North Slope including a western leg for direct delivery to California should be selected by the Federal Power Commission which most closely incorporates following characteristics:

1) Earliest possible completion date;
2) Lowest cost of service;
3) Least environmental impact particularly including impact on sensitive wildlife areas;
4) Provides access to the largest deliverable natural gas supplies;
5) Relies on proven pipeline construction techniques;
6) Maximizes the use of existing rights-of-way;
7) Provides an acceptable financing plan requiring the least possible governmental subsidies;
8) Provides the most direct delivery system for California;
9) Enjoys the committed support of both the United States and Canadian governments;
10) Provides the greatest incentives for maintaining continued access to Canadian gas already contracted with California consumers.

3) That given the current state of knowledge concerning LNG safety, the proposed Oxnard and Los Angeles LNG terminal sites should not, at the present time, be considered "remote from human populations concentrations";

4) That the State of California has a law and a process (the California Coastal Act, SB 1277) for resolving LNG-related land use, environmental, and safety questions and for issuing coastal permits for LNG terminals;

5) That it would be inappropriate for California to advocate a specific remote site (on or offshore) until such time as the state has completed its environmental impact, supply contingency, and seismic and LNG safety studies;

6) That certification of an overland natural gas pipeline system is in California's and the national interest, in part because diversification of supply sources minimizes risks and enhances the reliability of energy delivery systems; and

7) That, however, if the Federal Power Commission should approve the El Paso Alaska proposal and must, therefore, select one of the three proposed California sites in the El Paso/Alaska proceeding, it should tentatively approve a site subject to:

   a. Permit approval by the State Coastal Commission and review by the State Seismic Safety Commission;

b. Strict permit conditions which prohibit unrelated secondary (or induced) industrial and residential development adjacent to the site or within a "fire hazard" radius of the site; and

c. Completion and evaluation, including public hearings of the expanded alternate site analysis for the Point Conception EIR.

Dated: November 18, 1976

STATE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

Richard L. Maullin
Chairman

APPENDIX B

(385)

398

CALIFORNIA COASTAL ZONE CONSERVATION COMMISSION
1540 Market Street, San Francisco 94102 — (415) 557-1001

Dtd. NOV 15 1976

RECEIVED
NOV 15 1976
LEGAL DIVISION

EL PASO ALASKA CO. et al. (Docket No. CP75-96, et al.)

WHEREAS, on November 4, 1976, the California Coastal Zone Conservation Commission, by resolution adopted by unanimous vote, authorized the staff to transmit the following to the Federal Power Commission:

WHEREAS, the California Public Utilities Commission has submitted a reply brief to the Federal Power Commission in the matter of El Paso Alaska Company, et al. (Docket No. CP75-96, et al.).

WHEREAS, the reply brief contains the following statement:

> "California continues to support Oxnard as the most preferential location for the first regasification facility on the coast of southern California."

WHEREAS, the California Legislature adopted and the Governor signed into law on September 30, 1976, the California Coastal Act of 1976, which establishes the California Coastal Commission and directs the Commission to approve, deny or condition permits for development, including LNG facilities, on the coast of California in accordance with the policies in the Act.

WHEREAS, among the policies in the California Coastal Act of 1976 that the Commission must use to evaluate any permit for an LNG facility is the following:

> "Only one liquefied natural gas terminal shall be permitted in the coastal zone until engineering and operational practices can eliminate any significant risk to life due to accident or until guaranteed supplies of liquefied natural gas and distribution system dependence on liquefied natural gas are substantial enough that an interruption of service from a single liquefied natural gas facility would cause substantial public harm.

"Until the risks inherent in liquefied natural gas terminal operations can be sufficiently identified and overcome and such terminals are found to be consistent with the health and safety of nearby human populations, terminals shall be built only at sites remote from human population concentrations. Other unrelated development in the vicinity of a liquefied natural gas terminal site which is remote from human population concentrations shall be prohibited. At such time as liquefied natural gas marine terminal operations are found consistent with public safety, terminal sites only in developed or industrialized port areas may be approved." (California Public Resources Code, Section 30261 (b).)

WHEREAS, the reply brief states that the Oxnard site is preferred by California and, therefore implies that the site is "remote from human population concentrations" or that "... the risks inherent in liquefied natural gas terminal operations [have been] sufficiently identified and overcome and such terminals [have been] found to be consistent with the health and safety of nearby human populations...";

WHEREAS, the brief implies that more than one site will be permitted on the California coast, which further implies that "engineering and operational practices can eliminate any significant risk to life due to accident or [that] guaranteed supplies of liquefied natural gas and distribution system dependence on liquefied natural gas are substantial enough that an interruption of service from a single liquefied natural gas facility would cause substantial public harm."

Therefore, the California Coastal Zone Conservation Commission submits the following response to the CPUC's reply brief:

Recognizing the need for a state policy concerning LNG terminal siting, the Legislature and the Governor established such a policy in the California Coastal Act of 1976, and established the California Coastal Commission as the state agency directly responsible for implementing that siting policy. Thus, the State of California has moved expeditiously to establish a statewide policy for LNG siting and to implement that policy. Moreover, that siting policy is an integral part of the coastal zone management program submitted by the State to the Department of Commerce for certification under the Federal Coastal Zone Management Act.

UNITED STATES OF AMERICA

BEFORE THE FEDERAL POWER COMMISSION

In the Matter of:	)	
	)	Docket Nos. CP75-96, et al.
El Paso Alaska Company, et al.	)	

STATEMENT OF POSITION ON BEHALF OF

SIERRA CLUB
THE WILDERNESS SOCIETY
NATIONAL AUDUBON SOCIETY
ALASKA CONSERVATION SOCIETY

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Attorneys for Conservation Intervenors

December 3, 1976

UNITED STATES OF AMERICA
BEFORE THE FEDERAL POWER COMMISSION

In the Matter of:	)	
	)	Docket Nos. CP75-96, et al.
El Paso Alaska Company, et al.	)	

STATEMENT OF POSITION ON BEHALF OF
SIERRA CLUB
THE WILDERNESS SOCIETY
NATIONAL AUDUBON SOCIETY
ALASKA CONSERVATION SOCIETY

The position of the Conservation Intervenors has been clear from the beginning of this proceeding, and was recently detailed in our Brief on Environmental Matters. The Conservation Intervenors believe that construction and operation of a pipeline across the Arctic National Wildlife Range, the last patch of Arctic Wilderness with any chance of preservation, is not in the long term public interest, and thus the Arctic Gas proposal should not, and indeed as a matter of law cannot, be licensed.

In addition, the Conservation Intervenors are convinced that a pipeline along the Alyeska pipeline corridor and other established utility rights of way and highways is the most rational method to accommodate development of North Slope energy resources with the preservation of some of the remaining truly wild sections of our nation's heritage.

In this respect either the Alcan or the El Paso projects would be vastly superior to the Arctic Gas system if their proposed environmental impact mitigation measures are fully implemented. The Alcan system causes some concern because of its length since it uses a western lateral, and because of its deviations from common utility corridors in some areas in Canada. 1/ But on the whole, as between the Alcan and El Paso systems, we believe that Alcan rates as superior to El Paso since it avoids problems of LNG safety, siting in California, and crossing the Chugach National Forest.

Our position, while importantly influenced by environmental

1/ Some of the deviations are justified on environmental grounds to avoid following an earlier corridor into sensitive habitat.

factors, is also based on our analysis of other major issues in this case -- cost, financability, likelihood of practical success of construction plan, timing of completion, etc. But because our analysis indicates that no system is clearly superior with respect to all these issues when taken together, we believe that environmental protection, and principally the integrity of the Arctic Wildlife Range, emerge as the pivotal issues upon which the case must ultimately be decided.

Each of the projects has considerable disadvantages, with the result that none is overwhelmingly superior to the others in terms of costs and engineering. For example, the construction advantages to El Paso of using the Alyeska pipeline route (if its realigned case is selected) are offset to some degree by the complications and fuel inefficiency of the LNG conversion process. Thus, although El Paso's pipeline is shortest and takes greatest advantage of Alyeska information, experience and facilities, its total system is complex and is the most expensive in terms of presently projected costs. 2/

Similarly, the advantage of traversing generally flat terrain by Arctic Gas is outweighed by its strict, unforgiving construction schedule and the lack of ready access imposed by its winter construction plan. The latter is required because of the extreme sensitivity during the summer of the Arctic environment that would be bisected by the Arctic Cas pipeline. Thus the underpinning of Arctic Gas' whole project, upon which rest all its claimed advantages of costs, timely completion and environmental acceptability, is the successful implementation of winter construction and the use of a snow haul road. Snow roads have never been used as the principal material conduit for a project such as this, and Arctic Gas' test facility

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2/ El Paso's capital cost estimate in 1975 dollars is $6.57 billion for its 2.4 bcf/d case (Exhibits EP-200, 207, 228, 212, 265, WL-46); Alcan's estimate is $6.28 billion (Exhibit AP-14); Arctic Gas' total capital cost estimate is $8.05 billion, with $6.20 billion of that allocated to the U.S. under the reasonable assumption of 1.0 bcf/d from the Mackenzie Delta. (Exhibit AA-73, as modified by AA-141).

was not subjected to sustained heavy traffic. 3/ Thus there is a substantial risk that the Arctic Gas project would not be completed within the time frame or cost estimate submitted here.

The Alcan pipeline would be somewhat longer than its competitors and would have a smaller ultimate capacity than Arctic Gas. However, Alcan would have the practical and economic advantages of a capability to scale up in capacity to accommodate the quantities of gas that actually become available. The recent evidence that Alcan's design would allow up to 2.9 bcf/d of gas flow on an average day 4/ would indicate that it could easily accommodate the reasonably foreseeable available supply from the North Slope. In addition, Alcan would have the advantage of the construction experience and access provided by previous pipeline and road work all along the line. This means that Alcan's cost and time requirements can be more reliably estimated than either of the other two projects.

In terms of cost, all of these projects would be immensely expensive, and costs for each will likely escalate so much that figures proffered by the Applicants now will prove to be meaningless. Certainly comparisons of cost of service are not realistic, since the apparent advantage for Arctic Gas today is dependent upon the success of an excessively risky construction scheme, and upon a gas supply projection that is unsupported at this time. 5/ The magnitude of the ranges of projected cost of service for each project, under various assumptions as submitted by all the Applicants, illustrates the futility of attempting to compare costs of these three projects. In fact the ranges of costs of service overlap each other. 6/ All these figures show is that depending upon what circumstances obtain when construction is finally undertaken, the costs of all three are likely to be greater

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3/ Exhibit EP-236, p. 12; Dau, Tr. 23/3,427).

4/ Lange, Tr. 218/37, 98-01, 38,055, 38,063-64; Neuss, Tr. 219/38,200; Mirosh Tr. 222/38,813; Phillips, Tr. 241/42,162).

5/ Exhibit AA-71, cited by Arctic Gas for the cost figures contained in it's Initial Brief Relative to Economic Considerations, Nov. 19, 1976, p. 23a, is based upon Mackenzie Delta gas supplies of 2.25 bcf/d.

6/ Initial Brief of the Alcan Project On Economic Matters, Nov. 19, 1976, App. A, p. 1; Exhibits AA-71, 73, 80, 140, 141, AP-12, 14, 19, EP-265.

than expected. And since each system is fundamentally different, inflation and technical difficulties may affect each in different ways. Thus all figures submitted to the record here must be recognized as guesswork and nothing more. Any claim to a cost advantage by any Applicant here is simply mythical.

Arctic Gas has the advantage of traversing terrain of lower seismic risk than Alcan or El Paso, but the disadvantage of attempting to invade the heart of the Northwest Territories before progress has been made in Canada's settlement of Native claims in the region. While the former problem can be designed for, the latter may require the project simply to wait until the claims are settled.

Thus there are no clear substantial advantages to any of the three projects when costs, engineering and construction method are weighed together. The longest route, Alcan, would be the most straight-forward to construct; the shortest, El Paso, involves the most technical complexity; and the Arctic Gas route is riskiest overall, though the terrain is gentlest.

As to financing, an acceptable financing plan can, and inevitably will, be fashioned irrespective of which system is chosen, although Arctic Gas and Alcan may have somewhat more difficulties due to their Canadian financial requirements. Alcan can probably be on line in less time than either El Paso or Arctic Gas. And while its design is not complete and many environmental studies must still be done, this is the case to some degree with the other projects as well. 7/ Both Alcan and El Paso will produce more positive and less negative socio-economic effects than Arctic Gas, particularly in the State of Alaska. 8/

All of these factors, plus a reasonable guess as to the amount of gas likely to become available, must be weighed by the decision-makers

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7/ Arctic Gas has substantial drilling and design work left on many of its river crossings on the North Slope, and on a 30 mile section of the route where no drilling has yet taken place. (Clark, Tr. 19/2,969, 2,974; Cooper, 20/3,204, 3196-99; Clark, Tr. 154/25,445). El Paso has not yet chosen its route alignment, and thus site specific fish and wildlife studies are yet to be conducted.

8/ See Brief of the State of Alaska on Socio-Economic Matters, Nov. 23, 1976.

here. Trade-offs must be made among certainty of completion, the risk of unexpected delays and costs, efficiency of transportation to a wide range of lower 48 markets, and international politics. In this process of decision-making one thing is clear. Only the Arctic Gas project threatens a magnificent wilderness with a gas pipeline and the probability of additional oil and gas development. Neither of the other two projects forces a present decision to destroy the precious dwindling resource of Arctic wilderness. Since Arctic Gas has no overwhelming advantage of cost, timing and construction, the long term public interest demands that the unique world asset that is the Arctic National Wildlife Range be preserved.

Respectfully submitted,

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Before the
Federal Power Commission

El Paso Alaska Company, et al.) Docket No. CP75-96, et al.

POSITION BRIEF OF
THE COMMISSION STAFF

Allan W. Anderson, Jr.
Brian J. Heisler
Commission Staff Counsel

Washington, D. C.
December 7, 1976

TABLE OF CONTENTS

		Page
I	INTRODUCTION AND STATEMENT OF POSITION	1
II	BRIEF DESCRIPTION OF COMPETING PROJECTS	4
	(1) Alaskan Arctic Gas Pipeline Company, et al. (Arctic Gas)	4
	(2) El Paso Alaska Company, et al. (El Paso)	4
	(3) Alcan Pipeline Company, et al. (Alcan)	5
III	BASIS FOR COMPARISON	6
IV	PROJECT COMPARISONS	11
	(1) Overall Project Conception	11
	(A) The Arctic Gas Project	11
	(B) The El Paso Alaska LNG Project	13
	(C) The Alcan Project and the Maple Leaf Project	14
	(2) Economics	18
	(3) Environment	28
	(4) Engineering	29
	(5) Gas Supply	32
	(6) Financing	33
	(7) Tariff	34
	(8) Canadian Law and Treaty	34
	(9) Markets	35
V	CONCLUSIONS AND RECOMMENDATIONS	37
	Appendix A	
	Appendix B	

El Paso Alaska Company, et al.) Docket No. CP75-96, et al.

POSITION BRIEF OF
THE COMMISSION STAFF

I. INTRODUCTION AND STATEMENT OF POSITION

The enormous record in this case 1/ coupled with the need for expedition to meet the spirit and letter of the Alaska Natural Gas Transportation Act of 1976 (Public Law 94-586) necessitated the adoption of a segmented individual issue by issue briefing schedule. This process has been under way since early 1976 and is due to conclude with the filing of Wrap-Up briefs on December 15, 1976. Appendix A lists the series of briefs filed by Staff starting on May 28, 1976. This brief states the position of the Commission Staff on the overall question of which of the three competitive projects is superior. It is not intended to be a summary of the series of briefs filed previously by Staff because some issue areas are common to all three proposals, and the conclusions we reach in these specific issue areas do not for the most part favor one applicant over another. In the interest of a concise statement of the Staff position in this case, we have attempted to distill our thinking on this very complex case into the shortest document possible. The arguments and project comparisons which are presented in Section IV cover, in our opinion, the key issues in the case, but the list of issues contained therein is by no means exhaustive. The specific issue areas in the project comparisons are presented in the order of significance as we perceive them, in terms of their relative weight in deciding the superiority of one project over another. This does not mean that issue areas lower in the list are not significant in this case in and of themselves, quite the contrary; rather, in our opinion such areas are relatively less significant in deciding between the projects. For example the area of tariffs is of enormous significance to Staff but is of little moment in determining which of the three projects is superior.

For a full statement of our arguments, conclusions, and positions on specific issue areas, reference should be made to individual Staff briefs and the Staff final environmental impact statement (FEIS). Section IV (2) of this brief constitutes Staff's economics brief.

1/ 44,584 pages of transcript in 253 volumes (days) together with countless exhibits.

Based upon the analysis that follows and our overall experience in participating in the preparations for and conduct of the hearing in this case, the Staff has reached a position on which of the three projects 2/ best serves the public convenience and necessity.

Staff supports the Arctic Gas project modified and improved by the elimination of the "western leg" lateral to California, which has been shown on this record to be high risk, uneconomic, unnecessary, and environmentally unsound. The modified Arctic Gas project supported by Staff, shown in Figure No. 1, is a trunkline which would provide equitable access to Prudhoe Bay gas for all regions of the nation. Shorn of the unnecessary $700 million California lateral 3/, the recommended Arctic Gas project consists of a 48-inch and 42-inch diameter high pressure natural gas system that can deliver Mackenzie Delta gas to the Trans-Canada pipeline system for transmission throughout Canada, and at the same time can deliver Prudhoe Bay gas to central locations in the United States, from which it can be delivered to all existing continental markets. In our opinion, the only Arctic Gas trunkline transmission facility that can be certificated at this time excludes the western leg. Particularly significant in this opinion is the fact that only 12-1/2% of the Prudhoe Bay gas has as of this time been placed under contract. 4/ If the Prudhoe Bay gas is purchased by transmission and distribution companies spread throughout the continental 48 states, as has been assumed on the record and as we think is highly probable, this modified Arctic Gas trunkline in conjunction with the existing interstate natural gas pipeline network will be all that is required to move Prudhoe Bay gas to distributors and ultimately to the consumers of this gas. If particular purchasing companies in specific regions of the nation contract for more or less gas than has nominally been assumed in this record, then the certification of anything more than the modified Arctic Gas trunkline could turn out to have been a costly mistake. We believe the certification of this Arctic Gas system, modified by the elimination of the California lateral, is prudent, reasonable, and in the public interest, conditioned upon subsequent evidence of gas purchase contracts and financing.

2/ Arctic Gas project, El Paso Alaska project, Alcan project

3/ The original Arctic Gas project was amended to reflect the deletion of a $300 million eastern extention from the Chicago area to near Pittsburgh and by the requested withdrawal of Interstate Transmission Associates proposal for a second western leg to Los Angeles.

4/ By the State of Alaska whose royalty gas contracts do not contain price provisions and are subject to legislative approval in the future.

Figure 1



FPC STAFF SUPPORTED ARCTIC GAS TRUNKLINE PROJECT

II. BRIEF DESCRIPTION OF COMPETING PROJECTS

(1) Alaskan Arctic Gas Pipeline Company, et al. (Arctic Gas) 5/

The Alaskan Arctic project (Figure 2) involves the construction of 3,486 miles of 48-, 42-, 36- and 30-inch diameter pipeline. 6/ Under this proposal a 48-inch diameter pipeline will be constructed from Prudhoe Bay, Alaska, east to the Mackenzie Delta in the Northwest Territories of Canada. From the Delta a 48-inch diameter pipeline will be constructed through Caroline, Alberta, to Empress, Alberta. At Empress the facilities will intertie with those of Trans-Canada Pipelines Limited and a new 42-inch diameter pipeline to the U.S. border at Monchy, Saskatchewan. A new 30-inch pipeline will be constructed from Caroline to the Alberta-British Columbia border at Coleman, Alberta. From Coleman, Alberta, the existing facilities of Alberta Natural, PGT, and PG&E, as far south as an intertie with the Southern California Gas Company (SoCal) system at Hinkley Station in California, will be expanded with a total 36-inch diameter pipeline loop. A new 42-inch diameter pipeline will be constructed from the border at Monchy to Dwight, Illinois. This system is designed to transport 2.25 Bcf/d of Prudhoe Bay gas to U.S. markets and 2.25 Bcf/d of Mackenzie Delta gas to Canadian markets. As proposed, 1,530 MMcf/d of Alaskan gas will be delivered to Northern Border at Monchy for delivery to markets in the Midwest and East; the remaining 659 MMcf/d will be transported through the western leg for delivery to Northwest Pipeline Company (22 MMcf/d), PG&E (200 MMcf/d), and SoCal (437 MMcf/d).

(2) El Paso Alaska Company, et al. (El Paso) 7/

As proposed, El Paso (Figure 3) will construct an 809-mile 42-inch diameter pipeline from Prudhoe Bay, following the Alyeska oil pipeline corridor, to an eight-train LNG liquefaction facility and terminal at Point Gravina on the south coast of Alaska. A

5/ Includes the transmission facilities proposed by Canadian Arctic Gas Pipeline Limited, Alberta Natural Gas Company Limited (Alberta Natural), Pacific Gas Transmission Company (PGT), Pacific Gas and Electric Company (PG&E), and Northern Border Pipeline Company (Northern Border).

6/ Only 1,903.9 miles are actually involved in applications before this Commission; the remaining are within the jurisdiction of Canada (2,281 miles) and the State of California (418 miles).

7/ Includes the facilities of Western LNG Terminal Company (Western LNG).

fleet of eleven, 165,000 cubic meter cryogenic tankers will be built to transport the LNG 1,900 nautical miles to Point Conception, California. Terminal, regasification facilities, and 251 miles of 42-inch diameter pipeline from Point Conception to Cajon, California, will be constructed by Western LNG. These facilities have been designed on the basis of the delivery of a nominal 3.2 Bcf/d to the liquefaction plant.

El Paso has made alternate showings which describe the facilities predicated on the deliver of 2.4 Bcf/d to the liquefaction plant and realignment of the Alaska pipeline closer to the Alyeska pipeline. The 2.4 Bcf/d case involves essentially the same pipeline with less compression, a six-train liquefaction plant, and the use of eight cryogenic tankers. El Paso maintains that it is ready, willing, and able to build any of the three alternatives (Applications Brief, page 9). Western LNG has also provided showings that correspond to the 2.4 Bcf/d case.

(3) Alcan Pipeline Company, et al. (Alcan) 8/

Alcan (Figure 4) proposes the construction of 1,800 miles of new pipeline in Alaska and Canada and the expansion of existing facilities in the provinces of Alberta and British Columbia and the States of Oregon and Washington. A 42-inch diameter pipeline will be constructed from Prudhoe Bay to Fort Nelson, British Columbia. The route will follow the Alyeska oil pipeline as far as Delta Junction, Alaska, from there the Alcan Highway through the Yukon Territory to Fort Nelson where it will connect with the existing facilities of Westcoast. A 36-inch diameter pipeline will be built from Fort Nelson to a point of interconnection with the facilities of AGTL near Lake Zama, Alberta. The Westcoast facilities will be expanded through the addition of 201 miles of 36-inch diameter pipeline looping, and the AGTL facilities will be expanded by the use of an unknown amount of 42-inch diameter pipeline looping. A 30-inch diameter pipeline

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8/ Includes Northwest Pipeline Corporation (Northwest), Foothills Pipe Lines (Yukon) Ltd. (Foothills), Westcoast Transmission Company Limited (Westcoast), the Alberta Gas Trunk Line Limited, and the Alberta Gas Trunk Line (Canada) Limited (AGTL). Only the facilities of Alcan and Northwest are within the U.S. and subject to this Commission's jurisdiction.

looping of 359 miles will be constructed by Northwest on its existing system between Sumas, Washington and a proposed new intertie with PGT at Kent, Oregon. A new 36-inch diameter pipeline will also be constructed in Saskatchewan connecting the existing AGTL facilities at Empress, Alberta, with the Northern Border facilities at Monchy. The Alcan project envisions the construction by Northern Border of a 36-inch diameter pipeline along its currently proposed route and the expansion of the existing PGT and PG&E facilities south of Kent, Oregon.

As will be discussed in other sections of this brief, Staff believes the Maple Leaf project must also be considered with Alcan; therefore, this project is included in Figure 4 and described as follows. The Maple Leaf project is a system for the delivery of Mackenzie Delta gas to Canadian markets sponsored by Foothills, Westcoast, and AGTL. The Maple Leaf group proposes to construct 898 miles of 42-inch diameter pipeline from the Mackenzie Delta to the existing AGTL system and 155 miles of 30-inch diameter pipeline laterals connecting this facility with Parsons Lake and the existing facilities of Westcoast. The existing facilities of AGTL and Westcoast will also be expanded to transport the 800 MMcf/d to 2,400 MMcf/d anticipated from the Mackenzie Delta.

III. BASIS FOR COMPARISON

The Arctic Gas project was filed with this Commission and the Canadian National Energy Board (NEB) on March 21, 1974. The initial filing with the Commission was deficient in many significant ways. This fact was not disputed by the applicants. They themselves highlighted some of the omissions and explained the rationale behind their filing schedule.

The El Paso Alaska project was filed with the Commission on September 24, 1974. The El Paso Alaska filing also lacked significant required information.

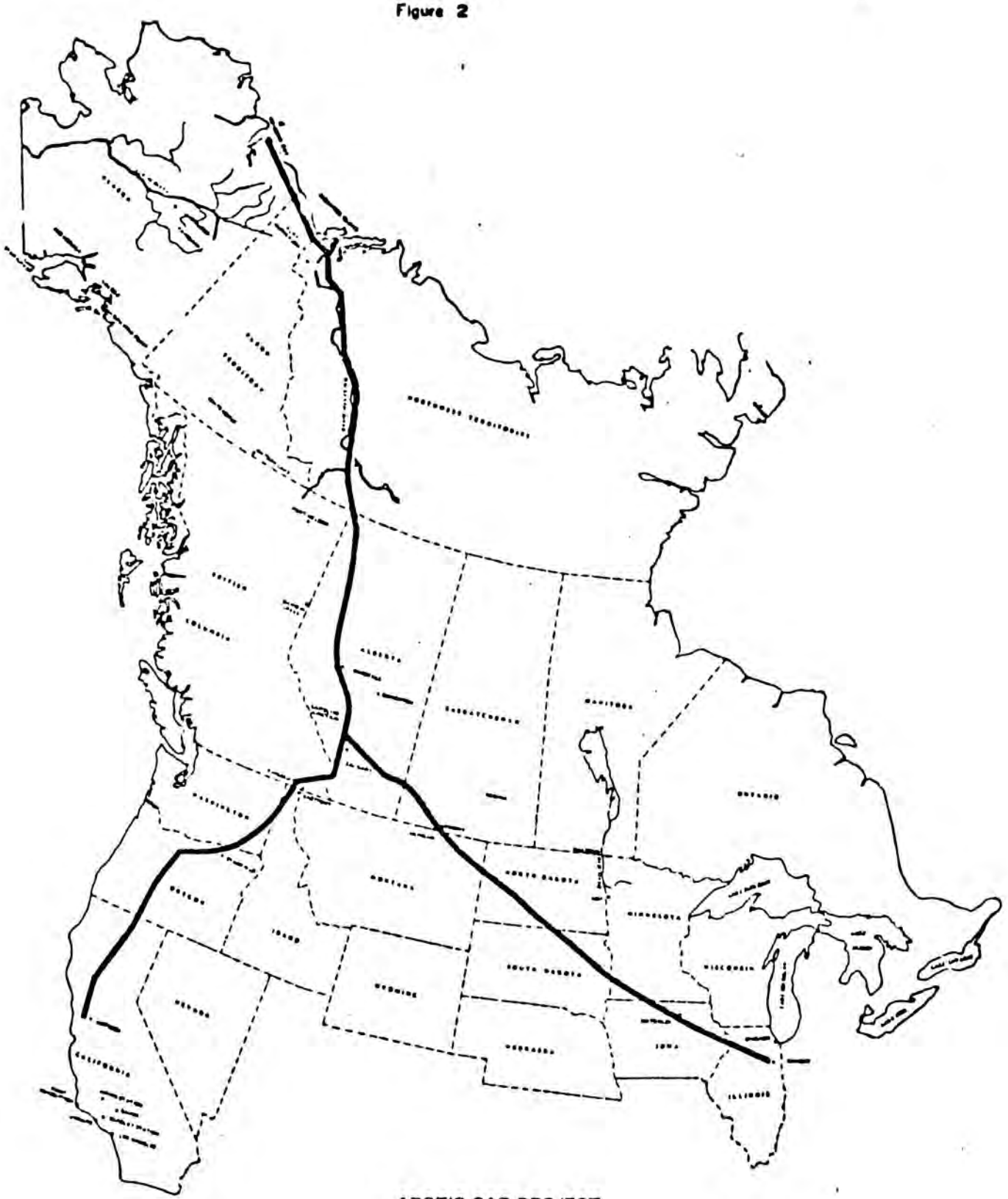
The two above filings went through a long and laborous process of refinement resulting in very tightly reasoned, highly defendable presentations which included the testimony, exhibits, backup studies, and supporting workpapers of the expert witnesses presented.

The Alcan project was filed on July 9, 1976, after a massive and impressive effort on the part of its sponsoring Canadian and U.S. companies. The process of perfecting the Alcan project was carried out in a much shorter time period than the other two projects. As a result, the degree of certainty that can

be attached to the cost projections associated with the Alcan project is significantly less than for the other two projects, in our opinion. By the same token, the minor adjustments and improvements that occurred during the hearing process did not run to full completion. On balance, though, Staff believes that the Alcan project was fairly presented and adequately reviewed. The enormous problems the Staff has with the Alcan project stem from the fundamental concepts underlying the project, not how or to what degree it was presented on the record. We are of the opinion that another year of hearing on the Alcan project, as filed, would add very little evidence that would be of value in deciding for or against Alcan. This is not to say that we cannot see many ways in which we would modify the Alcan project.

The Staff approach throughout the proceeding has been to modify the El Paso Alaska and Arctic Gas projects and to then compare them. In considering the Alcan filing in terms of Staff-supported testimony modifying and improving the filed proposal, we came to an interesting conclusion. The modified Alcan project we ended up with was in essence the Arctic Gas project. Our reasoning was essentially this. If you have approximately 3.25 Bcf/d of gas to transport, you do not incrementally expand two existing low-pressure transmission systems that are, for all intents and purposes, full. You take advantage of the economies of scale and build the largest diameter new facility that can be justified. Secondly, if the Maple Leaf project is assumed, and the Alcan project sponsors so assume, conventional natural gas industry logic suggests that one should look at a 400-mile leg to bring Prudhoe Bay gas east to the Delta and then expand the Maple Leaf line to 48-inch diameter. These changes to the Alcan and Maple Leaf projects would result in basically an Arctic Gas project.

Figure 2



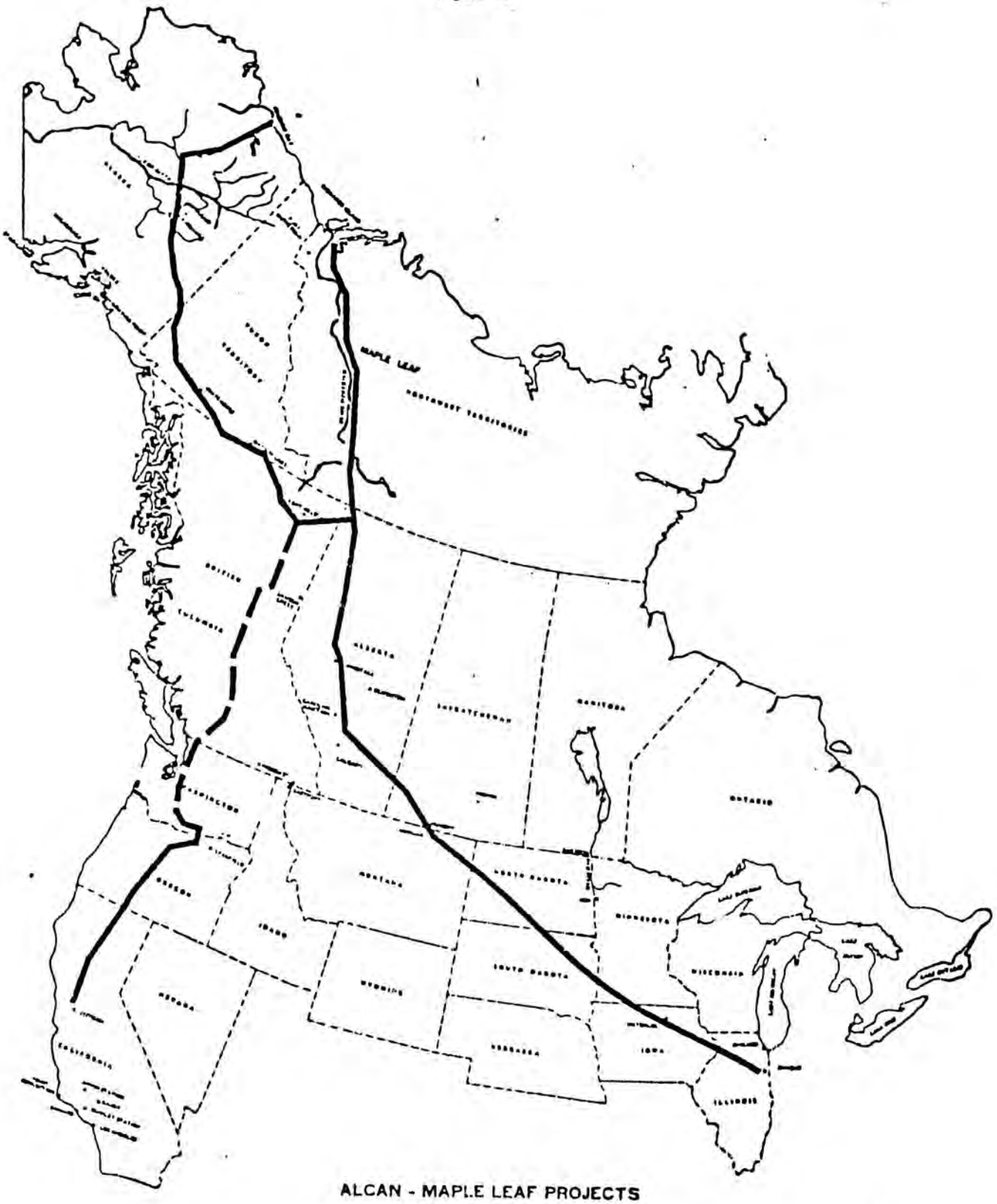
ARCTIC GAS PROJECT

Figure 3



EL PASO ALASKA PROJECT

Figure 4



ALCAN - MAPLE LEAF PROJECTS

IV. PROJECT COMPARISONS

(1) Overall Project Conception 9/

The three competitive projects in this case present significantly different approaches to the problem of delivering North Slope Alaska natural gas production to market in the lower 48 states. The fundamental underlying conceptual structure of each of the three projects is highly significant: in our opinion, the selection of the preferred project turns upon this decisive factor. This is the case because the key determinants in choosing between the alternative projects, such as economy, environment, engineering etc., all of which we consider in detail below, are to a large degree predetermined by the initial choices made in the formulation of each project.

(A) The Arctic Gas Project

Even a casual view of a topographic map of North America will reveal that the sponsors of the Arctic Gas project have chosen the most logical natural gas pipeline route from Prudhoe Bay across western Canada to the central United States. This is a physical fact. When the existence of a natural gas field in the Canadian Mackenzie Delta region is given recognition, the choice of the Arctic Gas route becomes overwhelming in its appeal. A natural corridor exists along the Beaufort Sea to the Delta and then south along the Mackenzie River Valley to Alberta. The mountains are, for the most part, skirted. Across Alberta the route follows existing natural gas lines to Empress, then strikes an essentially straight line for the midwestern region of the United States. In the process, two major existing natural gas trunklines serving western, central, and eastern Canada are crossed, three major pipelines in the United States are intersected and the major north-south transmission facility serving the region of the United States west of the Rocky Mountains is crossed. The fundamental logic of the Arctic Gas route is unassailable. If the realities of territorial sovereignty and the geography of wildlife preservation had been different, to the point of falling out of the decisional equation, there would have been no alternative proposals, period!

9/ The arguments presented here are based upon evidence that is woven throughout the entire 44,584 pages of transcript in this case. Staff's subject area briefs (see Appendix A) and those of other parties give ample record citations for particular points.

The choice of an all-land pipeline brings with it the benefits of over thirty years of natural gas pipeline technology. The Arctic Gas project 48-inch diameter 1680-psig proposal is a consistent next step in the evolution of high pressure natural gas pipeline design, if history is any guide. There will be problems, there are significant uncertainties, but the alternative is dramatically higher transmission costs. The risks are prudent and should be taken, in our opinion.

The combination of the Mackenzie Delta Field reserves in Canada with the Prudhoe Bay Field reserves in Alaska, as a foundation of supply for a joint project which takes full advantage of the economies of scale, minimizes the risks which are inherent in connecting these supplies. 10/ The effects of the uncertainties of gas reserve and deliverability projections are reduced by a joint project. Should the dictates of maximum oil recovery from the Prudhoe Bay oil field result in natural gas deliveries lower than the producer-projected minimum of 2.0 Bcf/d, there remains the very real chance that the Mackenzie Delta Field will out perform the assumed initial 1.0 Bcf/d projected by the Arctic Gas and Alcan sponsors. If the Delta Field does not come on as fast and to the degree projected, there is the possibility that Prudhoe Bay oil lifting will allow gas deliveries greater than the initial high-side 2.5 Bcf/d estimated by the field owners. The significance of this advantage to the Arctic Gas project is pervasive. The effects of it touch upon many key issue areas; neither of the other two competitive projects has this advantage.

The reliability of land pipelines is well documented. The natural gas network that spans the nation has been an unqualified success. Our standard of living is due in large part to this low cost, efficient, and reliable energy delivery system. The basic technology, upon which the Arctic Gas project is predicted, is elemental, low level, and highly reliable.

The direct route chosen by the Arctic sponsors together with the connection of two major reserve pools in one project, allows capital cost levels, transmission fuel requirements and construction material requirements that approach the physical minimums associated with the movement of natural gas. These are advantages and combinations of advantages that are formidable, and the superiority of the Arctic Gas project which we discuss below under specific topic heads largely flows from these central considerations.

10/ The resulting route also traverses the most promising potential gas reserve areas on the Arctic coast of the U.S. and western Canada.

(B) The El Paso Alaska LNG Project

The concept underlying and delimiting the El Paso Alaska project is that Prudhoe Bay gas should be delivered to the lower 48 states in such a manner that exclusive United States jurisdiction is maintained. Stated another way, the assumption--implicit or explicit--is that transit of Alaska gas across Canada is precluded or at very least unwise. This cardinal principle of the El Paso project is its paramount strength or its critical weakness, depending upon how the Canadian government decides its best interests will be served.

Viewed in the context of economics, engineering, environment, the history of the industry, etc.--in short in any way other than international politics--the El Paso project suffers significantly as a result of the physical realities of the circuitous route it must follow in order to stay within United States controlled areas. A water route is dictated, and this in turn necessitates the conversion of the transit Alaska gas into and out of the liquid state. At each step, costs in the broadest sense are necessarily incurred.

Water transit involves complex ships of a size not yet in existence. Ship movement introduces a line of discontinuous storage batch movement of gas between beginning and end links of continuous flow pipeline in the chain from gas field to market. The change in state required entails significant energy costs which can only be recovered under ideal conditions. The overall fuel requirements associated with land-water-land movement of natural gas are substantially greater than those associated with conventional land movement.

The liquefaction facility in Alaska and the corresponding regasification receiving terminal in California, in conjunction with the operation of ships, result in higher annual operating costs throughout the life of the project and introduce a risk of service interruptions. To a large degree, these types of costs are difficult to reduce and are prone to escalation due to inflation.

The required water route results in the significant environmental impact disadvantage associated with the El Paso Alaska project. The thermal pollution problems, the safety questions raised by LNG terminals and ships, the facility reliability uncertainty, and the passage through high-risk seismic activity areas in Alaska and California all result from the route selection dictated by the El Paso Alaska project concept.

The El Paso Alaska route extends 800 miles due south from Prudhoe Bay in a direction that points as much toward Honolulu as it does to San Francisco, let alone Chicago. The primary direction from Prudhoe Bay to the major market regions of the nation is southeast. As a result, the El Paso Alaska project lays the North Slope gas down on the California coast at one edge of the national natural gas market. An imaginative and innovative, but less than ideal, reverse flow proposal on the existing east-west El Paso Natural Pipeline is required to move North Slope gas to mid-continent points where it can be delivered throughout the nation.

Finally, by avoiding Canada, the El Paso Alaska route gives up the economic and risk reduction advantages of combining the Mackenzie Delta reserves with Prudhoe Bay reserves.

(C) The Alcan Project and the Maple Leaf Project

The underlying principles of the Alcan project appear to be as follows: (1) Prudhoe Bay gas should transit Alaska to Fairbanks and then follow the Alcan Highway to Fort Nelson; (2) the two existing western Canadian north-south transmission systems should be incrementally expanded to move Alaskan gas commingled with existing Canadian traditional production area gas; (3) an arbitrary 30%-70% split of Prudhoe Bay gas should occur at Fort Nelson; (4) 30% of the Alaskan gas should go south in the Westcoast Pipeline system, and 70% should go east to Zama Lake and then south in the Alberta Trunk system; (5) a design pressure of 1250 psig should be used on all new portions of the Alcan system; (6) no pipeline greater than 42-inch diameter should be utilized even if it is economically justified; (7) no co-ordinated corporate entity or Canadian and-U.S.-related entities should be created to construct the Alcan project; (8) the sequence of corporate entities which would build, own, and operate the Alcan system would basically follow state and provincial boundaries with individual corporations for each political subdivision down to the U.S. border; and (9) Prudhoe Bay gas should be brought on stream in the following sequence; 1.2 Bcf/d in year one, 1.6 Bcf/d in year two, and 2.4 Bcf/d in year three of the project.

The underlying principles of the Maple Leaf project appear to be as follows: (1) Mackenzie Delta gas should be brought on stream approximately 18 months after Prudhoe Bay gas begins to flow in the Alcan project, (2) the Mackenzie Delta gas should be commingled with existing Canadian traditional production area gas and with Prudhoe Bay gas south of Fort Nelson and Zama Lake; and (3) Mackenzie Delta gas will be rolled-in with the existing Canadian gas stream for transportation rate purposes.

The same two corporations sponsor the Alcan and Maple Leaf projects within Canada. These corporations, Westcoast Transmission Company and Alberta Gas Trunk Line Company, have indicated that their first objective is to build the Maple Leaf project, but that the Alcan project can be built first and the Maple Leaf project deferred into the late 1980's or longer if the Canadian Government chooses to do so.

The separability of the Alcan and Maple Leaf projects presents problems for any decision maker in comparing the Alcan project with the Arctic Gas project. The Arctic Gas project is predicated upon combining the Prudhoe Bay gas with the Mackenzie Delta gas to achieve significant economies, as we have discussed above. Comparing the Arctic Gas project, which connects the Mackenzie Delta reserves, with the Alcan project which does not, present problems that are not involved in the comparison of the Arctic Gas project, with the El Paso Alaska project. This is true even though the El Paso Alaska project does not connect the Delta reserves either. The Arctic Gas and the Alcan projects are international in scope. The needs and best interests of two nations must by law be considered. In the case of the U.S. go-it-alone El Paso Alaska project or the Canadian go it alone Maple Leaf project, there are impacts upon each nation as a result of the other nation selecting its unilateral project, but these effects are indirect and do not require that either government necessarily take the other governments' interests into consideration.

For our purposes Staff believes that from a logical, from a practical and from a legal point of view we must combine the Alcan and the Maple Leaf projects in attempting to select the superior route of the three applications before us. The two projects are on file in Canada before the National Energy Board, they have been consolidated and are being heard together. The Arctic Gas project connects the two reserve pools. The only logical approach we can see, is to look at what options the Alcan project leaves for Canada to connect Delta Gas and to compare the economic, engineering, financing etc. consequences of doing this with the Arctic Gas project. From a practical point of view there is no basis on this record for determining what the Alcan project would look like in detail, the detail required by the rules and regulations, if the Maple Leaf project were assumed to be delayed or never built. Staff defies anyone to segregate out the specific facilities, the specific costs associated with those facilities and point to the specific flow diagrams that would be associated with the Alberta Trunk portion of the Alcan project standing alone. Staff can not do it, Arctic

Gas could not do it and more importantly the Alcan sponsored witnesses for Alberta Trunk could not do it on the stand. This situation obtains for Westcoast and for Northwest Pipeline to a lesser degree. Northwest's facilities presentation is predicated upon the resumption of deliveries at Sumas in 1983, which according to testimony put on by Westcoast is predicated upon the Maple Leaf project being on stream by 1983. The Alcan project was presented for this record on the basis that the Maple Leaf project would track along 18 months later. The detailed subject area by subject area presentations are so intertwined, interconnected, and co-ordinated that at very best only a generalized Alcan project can be envisioned, absent any Maple Leaf project at all.

Based upon the above considerations we treat the Alcan project and the Maple Leaf project as one system in comparing it with the Arctic Gas and El Paso Alaska projects.

The Alcan and Maple Leaf system combines the Prudhoe Bay and Mackenzie Delta reserves in an enormously inefficient way. Approximately 1200 more miles of pipeline would be required to bring these two streams of gas together in northwestern Alberta, than in the Arctic Gas project. South of this junction point in Alberta the 30%-70% split of Alaska gas is arbitrary and appears to have been dictated by considerations other than economics. Alcan's own cost exhibits show that the use of the Westcoast system is significantly more expensive than the Alberta Trunk system would be. In similar fashion routing the California gas through the Northwest pipeline in Oregon and Washington is more expensive than using the existing or new Pacific Gas Transmission system. These curious facts are readily apparent and basically uncontested. Alcan even proposed a tariff arrangement to average out the transmission costs of their split stream approach, in order to avoid the obvious discrimination between shippers.

No!

No meaningful express line studies across Alberta were conducted by either company or by any participant in the Alcan and Maple Leaf projects. Subsequent to the filing of applications for the total Alcan and Maple Leaf system, Staff requested that a 42-inch diameter line from Sousa to Empress be analyzed and the results supplied for the record. The response from the Alcan and Maple Leaf sponsors was succinct and revealing "these

questions require us to analyze new designs which we have not proposed and have not sought authorization to construct" (Tr. 44,381).

The ultra-conservative engineering approach assume by the Alcan and Maple Leaf system sponsors in respect to maximum line pressure on new pipeline, leads necessarily to an uneconomic system. The filed for 1250 psig initial maximum design pressure with a very tentitive future escalation to 1440 psig with experience, became as the hearing progressed the 1440 psig design derated in early years to 1250 psig. The Alcan and Maple Leaf witnesses final word appears to be - 1680 psig systems as proposed by El Paso Alaska and Arctic Gas are probably feasible in the future, but are too speculative for use at this time.

The 2.4 Bcf/d ceiling on transit United States gas in the Alcan and Maple Leaf system was at first a cardinal principle underlying the fundamental concept of the project. The passage of time left this critical consideration in a kind of limbo. The policy witnesses attempted to explain the simple and clear contractual language away near the close of the record (witness Blair Tr. 41,868 to 41,896). The most revealing fact is that there is no basis in the record in this case to do anything other than speculate what it would cost to transport Prudhoe Bay volumes in excess of 2.4 Bcf/d in the Alcan and Maple Leaf system.

The above cited conceptual design considerations underlying the Alcan and Maple Leaf system virtually guarantee that any careful issue by issue comparison with the vastly superior Arctic Gas project will rebound to Alcan's disfavor. This is the overwhelming result of our analysis.

(2) Economics

The applicants have marshalled an imposing array of expert cost witnesses who have not only designed, developed, and presented the proposed projects but have also evaluated and criticized the proposals of the competition. Staff has not independently costed out the three systems proposed. This is entirely beyond our means. Fortunately the process of a contested administrative hearing with three competitive applicants has provided a detailed fully cross-examined record in the area of overall economics. Staff believes this record is excellent in respect to capital costs and unit cost of transportation, and we basically rely upon it in what follows.

The projects presented here do not involve traditional design or construction techniques. In the case of the El Paso Alaska proposal, only 16 percent of the estimated capital cost 11/ could be considered as even approaching traditional-type facilities. Approximately 53 percent of Arctic Gas' estimated cost involves construction north of existing Canadian facilities. 12/ The Alcan, Foothills, and Westcoast facilities necessary to deliver Prudhoe Bay gas into the existing systems represents approximately 60 percent of the total costs of all the facilities envisioned for this project (Exhibit AP-14).

We believe that the propensity for cost overruns increases the further north the construction. Staff considers that the Arctic Gas construction south of Lake Zama involves traditional techniques and costs, and thus any overrun that may occur would in all likelihood be a result of general economic pressures within the U.S. and Canada. Although we are highly skeptical of the costs shown for the expansions on the Westcoast and Alberta Gas Trunkline systems, primarily because the applicants failed to provide conclusive cost allocation information, the cost overruns on the Alcan and Maple Leaf systems south of Fort Nelson and Lake Zama would also fit in the general economic category.

11/ Total cost less the Alaska Pipeline, LNG plant, and tankers (EP-174, 178, 182, 185, 265 and WL-46).

12/ The cost of facilities from Prudhoe Bay to Sousa (AA-139) as a percentage of total cost (AA-71).

Because of a heavier reliance on new techniques and on an unconventional type of transportation mode, it appears that the El Paso project would be much more susceptible to inordinate cost overruns than the other proposals. Unlike the other proposals, El Paso's more southerly transportation mode is the much less traditional cryogenic tanker fleet. Furthermore, the design of both the LNG plant and tankers involves a technological advance, though probably sound, that may subject the project to a greater degree of possible overrun. As noted earlier, only approximately 16 percent of the El Paso project could be considered as traditional construction. Although this type of analysis is subjective and difficult to quantify, it must still be one of the major considerations in determining the best of several proposals.

It is Staff's view as expressed above that the Arctic Gas project is conceptually the best project in that it is the shortest route for the delivery of Alaskan gas into the major area of the lower 48 states, as well as being the most fuel efficient in that it provides the cheapest method of delivering U.S. gas to U.S. consumers and Canadian gas to Canadian consumers. Therefore, in analyzing the economics of the three proposals we will prepare the El Paso project and the Alcan and Maple Leaf projects with Arctic Gas.

Arctic Gas indicated that its proposal for the delivery of 4.2 Bcf/d will cost an estimated $8.6 billion, of which $2.75 billion will be attributable to the transportation of Canadian Gas, (Exhibit AA-71, as adjusted by Dau, Tr. 233/40,531). 13/ The average fifth year transportation cost as calculated by Arctic Gas is $1.238 per MMBtu (Exhibit AA-141). The facilities required for the delivery of 3.25 Bcf/d (no expansion case) are estimated to cost $7.95 billion, of which $1.82 billion is attributable to Canadian gas (Exhibit AA-73, as adjusted by Dau, Tr. 233/40,531). The average fifth year transportation cost for this no expansion facility is $1.392 per MMBtu.

13/ All of the capital costs shown herein were based on July 1975, estimates. This is basically true of the entire record. To the extent inflation occurs, all of the cost figures will escalate.

As the result of an analysis of the Arctic Gas project done by Green Construction Company for El Paso (Exhibit EP-255), the answering testimony presented by El Paso contended that there would be a delay of more than two years in the completion of the Arctic Gas project. As a consequence of this delay, the cost overrun was estimated at 42 percent for the 3.5 Bcf/d case and 44 percent for the 2.5 Bcf/d case (Argetsinger, Tr. 183/30,745). Accordingly, El Paso recalculated the incremental delivery cost per MMBtu for Arctic Gas as follows: (Jack, Tr. 189/32,232 and Exhibit EP-259).

	3.5 Bcf/d Case	2.5 Bcf/d Case
West	$1.653	$1.922
Midwest	$1.753	$2.151
East	$1.820	$2.227

The total estimated capital cost shown by El Paso for its base case (3.2 Bcf/d) is $7.92 billion 14/; with $6.57 billion being the estimate for the lower volume 2.4 Bcf/d case. 15/ The incremental delivery cost per MMBtu shown by El Paso for each case is as follows: (EP-265)

	3.1 Bcf/d	2.4 Bcf/d
West	$1.476	$1.610
Midwest	$1.759	$1.950
East	$1.807	$1.998
Average	$1.669	$1.836

The comparisons herein are based upon the cost of the proposed El Paso pipeline route, not its realignment case, which would add $200 million to its base case. These increased costs are primarily due to the need for thicker walled pipe, as required by U.S. regulations when situated in close proximity to the Alyeska haul road, and increased gravel needs (Wright, Tr. 169/27,698-710). When balancing these increased costs and other geotechnical problems against the environmental benefits of this alternative, Staff believes the prime alignment is the better of the El Paso options.

14/ Sum of the costs shown in Exhibits EP-174, 178, 182, 185, 265 and WL-35.

15/ Sum of the costs shown in Exhibits EP-200, 207, 228, 212, 265 and WL-46.

Arctic Gas responded with testimony indicating that the facility capital cost estimates should be approximately 12.6 percent greater than those shown by El Paso. This projected cost increase was shown as being in the major areas of Alaskan pipeline construction, LNG plant facilities, and ship construction (J.T. Mitchell Tr. 168/27,645-62, Martino Tr. 156/25,802-7 and DeLeon Tr. 156/25,848-56). Witness R.G. Anderson (Tr. 162/26,696-713) illustrated that the transportation cost under the 3.2 Bcf/d case, which reflected the adjusted capital costs and fuel use at $1.00 per MMBtu for the first full year of operation, ranged from $1.84 per MMBtu for deliveries to PG&E and $2.41 per MMBtu for deliveries to the Northern Border group (Exhibit AA-79).

In our opinion, Arctic Gas successfully rebutted the arguments of Green Construction except for the possibility that some cost overruns might occur because of a late start-up and early closing date for winter construction in the Arctic regions. This occurrence, which would be in probability terms very low, would most likely in all cases not delay the project but cause cost overruns through additional equipment and manpower utilized to finish the project as scheduled. Some additional costs may be incurred because of a modification of Arctic Gas' frost-heave program but this is not expected to be large. Arctic Gas may also have overestimated initial Mackenzie Delta reserves. However, in view of these possibilities, the estimated cost shown by Arctic Gas may be a little too optimistic, though nowhere near the disparity shown by Green Construction.

On the other hand, we believe that the answering testimony of Arctic Gas, as cited above, adequately described and quantities the problems inherent in the El Paso proposal. Therefore Arctic Gas' contention that El Paso's cost could be at least 12 percent greater appears to be quite reasonable, particularly in view of the greater degree of nontraditional construction involved. 16/ The recalculation of an illustrative cost of service utilizing a fuel-use cost of $1 per MMBtu is also consistent with the showing of Arctic Gas and necessary for a fair and equitable comparison. It is quite apparent that the high fuel-use aspects of an LNG mode of transportation make its proponent reluctant to include such costs in an illustrative transportation showing.

16/ These overrun calculations did not consider the lack of meaningful base data for proper seismic design of the El Paso pipeline and both the Point Gravina and Point Conception LNG terminals, which Staff believes could lead to further overruns (See Staff's Geotechnical Briefs).

It is Staff's opinion that the following costs of service per MMBtu are the most appropriate estimates for each project. 17/

	Northern Border Delivery Points	California
El Paso	$2.41	$1.84
Arctic Gas	$1.61	$1.32

As noted earlier, there is a possibility that the Arctic Gas cost may be slightly higher; however, because of the wide disparity in the unit-cost estimates, it is doubtful that such an adjustment would make any appreciable difference in the outcome.

These unit cost figures are based upon the Arctic Gas project as proposed. If the Arctic project is modified as we propose by the elimination of the unnecessary $700 million western leg, the unit cost of transportation to California will be reduced by at least $.095 and that to Northern Border delivery points by at least $0.4. 18/ These are minimum savings figures which assume full displacement for 20 years. If displacement to California is required for only 36 MMcf/d for four years, as Staff projects, these unit cost of service savings would be more on the order of the full cost of service of the entire $700 million western leg. 19/ The nominal annual cost of service on a $700 million facility is $140 million (20%). Comparing this figure with the Arctic Gas derived $49 million annual cost of service savings resulting from elimination of the western leg, Staff concludes that the above unit-cost savings will be at least double if our assumptions about Canadian export curtailments prove to be correct.

$.04

17/ Since the lower volume cases are more assured and reflect a higher unit cost for each project, the comparisons are made on that basis.

18/ Volume 197, Tr. 33,382; Tr. 33,414; Tr. 33,469; Tr. 33,470-1; Tr. 33,476; Tr. 33,487. The nominal $.04 per MMBtu is derived by dividing the overall $49 million annual cost of service savings in two, half to the east, half to the west. The $24.5 million annual savings resulting is divided by the nominal 1530 MMBtu daily Northern Border delivery multiplied by 365 days in a year.

19/ Volume 197, Tr. 33,469, Line 18.

The derivation of specific unit cost of transportation savings on nominal delivery volumes, in the absence of gas supply contracts, is piling unknowns upon unknowns. The unit cost figures we site above are as valid as those shown by Arctic Gas. For purposes of a decision on the western leg, Staff relies upon the virtual stipulation between Staff and Arctic Gas that overall, the elimination of the western leg saves the Arctic Gas project $49 million per year in its cost of service, as a minimum. 20/

It cannot be emphasized too much that in order for the El Paso project to reflect a lower unit cost, the most pessimistic Arctic Gas costs would have to be compared with the most optimistic El Paso projection, and the fuel costs of El Paso must be left out. Any variation within this limitation results in Arctic Gas' unit costs being lower.

Alcan's presentation reflected an estimated total capital cost of $4.72 billion for the Alaskan and Canadian portions of its system and $1.56 billion for the facilities of Northwest and other non-participants within the lower 48 states (Ex. AP-14). Staff believes, as discussed in this brief, that the estimated cost of the Maple Leaf project, $3.14 billion (Exhibit ST-31), should be included as part of the cost of the total system. The transportation cost (per MMBtu) for the first full year of operation under the Alcan proposal was shown as follows (Exhibit AP-14):

Los Angeles	$1.55
San Francisco	$1.54
Northwest Pipeline System	$1.38
East Terminus of Northern Border System	$1.59

with or without fuel ?

Answering testimony of Arctic Gas illustrated that the cost of the Alcan project from Prudhoe Bay to Sousa, Alberta, would be at least 12 percent greater 21/ based only upon a re-estimate of pipeline construction cost (Brackett, Tr. 245/42,778). Arctic Gas' witnesses also recalculated the cost of service for the Alcan system and argued that it would be as follows for the third year of operation (Exhibit AA-140):

20/ Volume 197, Tr. 33,476.

21/ $3.757 billion (AP-14) versus $4.216 billion (AA-139).

	Per MMBtu
Northwest Pipeline	$1.536
San Francisco	$1.674
Los Angeles	$1.718
Northern Border Delivery Points	$1.775

The Alcan proponents have presented several arguments that Staff must disagree with. First, that the Alcan and Maple Leaf projects can be considered independently (Br. p. 14). These projects are intertwined, as we have discussed above, and therefore their total cost must be considered when making a comparison with the Arctic Gas project. What is to be compared is the total cost of the facilities required to deliver Prudhoe Bay and Mackenzie Delta gas to their respective U.S. and Canadian markets and the appropriate allocation of such costs to the U.S. consumer. 22/ The estimated cost of the Westcoast (Item AP-T) and Alberta Gas Trunkline (Item AP-U) facilities under the Alcan project are inexorably intertwined with the facilities needed for the attachment of the Mackenzie Delta gas. In fact, after considerable cross-examination on the subject (Tr. 227/39,704, et seq.), witnesses for Alberta Gas Trunkline were still unable to detail with any specificity which facilities would be necessary for each project and their related costs.

Therefore, when comparing the Alcan and Maple Leaf projects with the Arctic Gas base case, a Maple Leaf cost of $3.2 billion (Exhibit ST-31) for its full-volume design is applicable, and for comparison with the non-expansion case a $2.7 billion cost for the 800 MMcf/d facilities should be utilized (Kiely, Tr. 141/ 22,706).

Alcan's other argument that should be addressed is the proposition that escalated costs should be shown in order to fully reflect the advantage of that system (Br. p. 36). To begin with, Staff does not believe that the expedited Alcan schedule is realistic 23/ and will therefore result in such a cost saving as is anticipated. This is regardless of other possible cost overruns. Regardless of this scheduling discrepancy, the

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22/ The other cost that could be considered in this comparison is the estimated $1.0 to $1.5 billion expansion required for the TransCanada system. Although our record is devoid of information on this matter and since the cost would be applicable to both the Arctic Gas and Alcan and Maple Leaf proposals and further would not be allocable to U.S. consumers, there is less need for its inclusion.

23/ See Geotechnical Reply Brief pages 15-18.

main reason that Alcan can show this supposed savings on escalated costs is the ability of the Alcan and Maple Leaf projects to shift all of the cost of the construction in the later years to the Canadian consumer. First of all, increased costs due to inflationary trends may or may not be true costs, depending upon their relationship to the overall economy. However, if this escalated cost is of the proportion and effect envisioned by Alcan, then why should the Canadians in their own interest permit the Maple Leaf project to lag behind the Alcan project by 18 months, when the so-called escalated cost of a cheaper Arctic Gas project would be borne by the consumers of both nations?

When comparing the Alcan and Maple Leaf projects with Arctic Gas, it is imperative that the functional aspects of the several segments of each project be analyzed. To begin with, the Arctic Gas facilities necessary for the delivery of Prudhoe Bay and Mackenzie Delta gas to the Lake Zama area of Alberta and Fort Nelson, British Columbia, are estimated to be $4.785 billion (Exhibit AA-139). This function will be performed by Alcan and Maple Leaf at a capital cost very optimistically estimated at $6.115 billion. 24/ Even considering untenable arguments that the Alcan costs should not include the Maple Leaf project, the facilities to transport Alaskan gas only to Lake Zama by Alcan are estimated to cost $3.757 billion. For this price, the consumer will get a low-pressure 42-inch pipeline with a very small amount of very high-cost expansability. We are certain that considering the differences in the length of the two pipelines, 1,272.4 miles for Arctic Gas (Exhibit AA-35) versus 1,646 miles for Alcan (Application in Docket No. CP76-433), that had Arctic Gas opted for a 42-inch pipeline following its route to transport only U.S. gas, the cost of this half measure would be less than the Alcan project. The Alcan route is 30% longer and follows mountainous terrain. The shorter Arctic Gas route follows a coastal plain and a river valley.

Even if a 42-inch pipeline had been proposed by Arctic Gas, with the Delta gas accommodated through additional looping, the overall cost, though more than the current proposal, would in all probability be cheaper than the Alcan and Maple Leaf projects.

24/ See Exhibit AA-17 for the facilities from Prudhoe Bay to the B. C.-Alberta border, Item by Reference AP-U for the cost of the extension from the border to Lake Zama and Exhibit ST-31 for the cost of the Maple Leaf facilities from the Mackenzie Delta to Lake Zama.

Within the lower 48 states, Alcan projects a cost of $1.558 billion (AP-14) for the facilities of PGT/PG&E, Northwest, and Northern Border. These facilities, of course, were predicated upon Northwest receiving the State of Alaska's royalty gas and a reduction in the facilities required for Northern Border. In view of the state's contractual arrangement with Tennessee, Southern and El Paso Natural, this proposal may no longer be applicable. The facilities in the lower 48 states proposed by Arctic Gas are estimated at $1.607 billion (AA-71).

Alcan argues that the expansion of the existing Westcoast and Alberta Gas Trunkline systems to accommodate the Alaskan volumes only will cost an estimated $991 million (AP-14). Exhibit ST-31 reflects an estimated cost of $783 million for the facilities relative to the transportation of Delta gas. Although, as noted earlier, the Alcan witnesses were unable to indicate the actual cost allocation between these two projects, it does appear that the Maple Leaf costs might be slightly less (Kiely Tr. 141/22,706). The Canadian Arctic facilities which are south of Lake Zama plus the Alberta Natural expansion are shown to cost an estimated $2.381 billion for the transportation of U.S. and Canadian gas; of this, $870 million could be attributed to Canadian use. 25/

The advantage for this segment, therefore, seems at first glance to rest with Alcan, with a savings in the order of $600 million for the joint project or $520 million for costs to U.S. consumers. However, not only will this slight saving be offset by an inordinately greater cost north of Lake Zama, but the resulting facilities will be of a much lower capacity and will be completely integrated with the existing Canadian pipelines wherein the U.S. consumers will, according to the proposed tariff, pay a disproportionate share of the incremental costs. 26/

Although it is possible that a single direct facility from Fort Nelson to Monchy might be more efficient and cheaper to construct and operate, the Alcan witnesses indicated that such a study was not made nor was one planned; therefore, any consideration of an improved Alcan system is mere conjecture.

25/ Canadian Arctic and Alberta Natural costs from Exhibit AA-71 less cost to Sousa shown in Exhibit AA-139.

26/ See Staff Allocation Brief.

When comparing the estimated capital costs presented by the Alcan and Maple Leaf proposals themselves, which Staff feels are neither realistic nor supportable, with those of Arctic Gas there is no doubt of the superiority of the Arctic Gas project.

As will be noted below under the environmental section (3) the Fairbanks Corridor Alternative would be environmentally preferable to all three of the applied for projects, even if such an alternative includes a pipeline from the Mackenzie Delta along the Dempster highway to the vicinity of Whitehorse (Richards Island lateral). It must be emphasized that this environmental preferance is not for the low pressure, thin walled pipeline being proposed by the Alcan project . What is contemplated in this environmentally preferred system is a 48-inch and 42-inch diameter high pressure project similar to the Arctic Gas project re-aligned to the Fairbanks corridor. The testimony of Staff witness Kiely (Tr. 141/22,681, et seq.) discusses the probable economic consequences of such a project. The cost of a 48-inch diameter pipeline from Prudhoe Bay, through Fairbanks, along the Alcan Highway (including south of Fort Nelson) to Caroline and Empress, Alberta would be in the neighborhood of $6.5 billion (Exhibit ST-31). The facilities currently proposed by Arctic Gas from Empress to Dwight, Illinois are estimated at $1.3 billion (Exhibits AA-35 and 71). A Richards Island lateral with a capacity of 2.4 Bcf/d would cost approximately in excess of $2 billion; thus, the total cost of the environmentally preferable alternative would be in the range of $10 billion, more than 16% greater than the Arctic Gas project as proposed. In view of this, it is still Staff's position that such an alternative is not economically viable when compared with the Arctic Gas project.

Staff's position with respect to economics and unit cost can be summarized as follows:

(a) The Arctic Gas showing of capital and unit cost although slightly optimistic, appears to be reasonable. In particular, the argument of the Green Construction witnesses was, in the main, successfully rebutted.

(b) The El Paso project is more susceptible to capital cost overruns because of the greater use of new and untried technology. The 12 percent increase envisioned by the Arctic Gas witnesses is reasonable, as is their inclusion within the cost of service of $1.00 per MMBtu for fuel use.

(c) The costs of both the Alcan and Maple Leaf projects must be considered when comparing with Arctic Gas. Alcan's construction schedule is unrealistic, and the supposed saving on escalated cost is indefensible.

(d) The Alcan and Maple Leaf projects are much costlier than the Arctic Gas project for both the U.S. and Canadian consumers. Not only are Alcan's projected unit costs higher, particularly in the west, but because of highly questionable capital cost estimates and inequitable and unsupported allocation methods, they are also highly suspect.

(e) On comparison the Arctic Gas project will be the ~~will be~~ cheapest of the three, both on a capital and unit-cost basis.

(3) Environment

The Alaska Natural Gas Transportation Systems Environmental Impact Statements evaluating the proposals of Arctic Gas, El Paso Alaska, and Alcan represent the most exhaustive study undertaken by the FPC environmental Staff to date. Working in cooperation with Staff members of the U.S. Department of the Interior (DOI), the Commission Staff issued a three-volume DEIS in November 1975 which adopted the 16-volume DEIS prepared by DOI, a five-volume FEIS in April 1976 which adopted the 11-volume FEIS prepared by DOI, and a two-part Supplement to the FEIS in September 1976. This massive effort culminated with the presentation of more than 40 environmental Staff witnesses in the Administrative Hearings to support the findings of the FEIS.

The Staff's conclusions concerning the environmental impact of the Arctic Gas, El Paso Alaska, and Alcan proposals have been based on a recognition that if gas is to be transported from Prudhoe Bay to the lower 48 states, facilities will have to be constructed. In this context, the overall projects as proposed by Arctic Gas, El Paso, and Alcan are each considered environmentally acceptable, presuming that the mitigating measures proposed by the applicants and those that would be developed and required by Federal agencies would be implemented and successfully enforced. These mitigating measures would significantly reduce potential impact and hold environmental damage to a minimum.

Staff's environmental analysis concludes that there are undesirable aspects associated with each project. It is clear that if one of the three proposals is certificated and built, impact associated with scenic, recreational, and game sanctuaries would not be avoided. In particular, the Arctic Gas system traverses the Arctic National Wildlife Range and the El Paso system traverses the Chugach National Forest and Prince William Sound areas which are highly worthy of preservation. The Alcan project lacks the necessary expansion and flexibility required to transport additional volumes of gas to the lower 48 states, suggesting that additional pipeline looping would be needed in the future. Both El Paso Alaska and Alcan projects would require that the Maple Leaf Pipeline system be constructed in Canada if transportation of the Mackenzie Delta gas is to become available for future Canadian consumption. The El Paso project, the least environmentally desirable of the three proposals, requires pipeline and LNG facilities to be built in areas of high seismic risk and unique beauty.

Staff believes that the Arctic Gas proposal, without the western leg, is environmentally preferable to the other two proposals, and it is preferable to any other route, including Staff's Fairbanks Corridor Alternative, if it included the Maple Leaf Pipeline system. However, the Fairbanks Corridor Alternative, suggested by the Commission Staff, with the Richard Island Lateral, remains environmentally superior to Arctic Gas, El Paso Alaska and Alcan if both proposed and non-proposed systems are considered (Tr. 23,772, 23,604-23,605; ST-52, p. 389; 23,613). This 48-inch diameter high-pressure system could provide the flexibility for expansion not available with the Alcan proposal, as well as environmental benefits not available with either Arctic Gas or El Paso Alaska. 27/ The above conclusions do not consider economic feasibility. These considerations are covered elsewhere in this brief. For an economic analysis of the Staff's Fairbanks Corridor proposal, see Section IV (2) above.

(4) Engineering

The particular terrain that is traversed by each of the proposed Alaskan natural gas transportation systems and their selected mode of operation determines the nature and extent of the engineering required for each project. Staff

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27/ A description of this alternative appears on page A-7 of Exhibit ST-18 and Tr. 23,527-23,529.

believes that the alignment of the Arctic Gas project with its proposed design parameters is clearly superior to the other two projects. The Arctic Gas system has been designed against a background of extensive research and engineering planning. Its proposed alignment avoids areas of high seismic risk, mountainous terrain, and high soil liquefaction potential. In contrast, the El Paso system would employ sophisticated liquefied natural gas (LNG) technology to build terminals in areas of high seismic vulnerability. El Paso has not conducted the necessary base line studies to accumulate the geological information to adequately design its system and estimate costs. The El Paso pipeline passes through rugged mountainous terrain. The Alcan project also traverses high seismic and mountainous areas in Alaska and Canada, but not to the degree of El Paso. Alcan faces a soil liquefaction problem along a portion of its route in Alaska from Delta Junction to the Alaska-Yukon border. The Alcan pipeline system is based upon engineering principles and facility limitations which would necessiate further construction and looping once additional supplies of natural gas are found in northern Alaska. The Arctic Gas project is superior to the other two proposals in terms of fuel usage.

The Arctic Gas project is based upon a enormous engineering effort into every important area of design. Arctic Gas has pioneered research in many of these areas like frost heave and construction equipment. It has conducted seismic surveys, soil liquefaction studies, pipe stress tests, and the testing and design of new construction equipment. The design of its pipeline gives gas consumers the most efficient system in terms of net energy at least cost to the consumer. Its alignment avoids mountainous areas and high seismic zones. The Shallow Bay area of the Mackenzie Delta is the only geological area where liquefaction might occur; however, recent tests suggest that the soil liquefaction potential is low. The 1680 design is a consistent next step in the evolution of pipeline design.

The Alcan project crosses moderate seismic areas in Alaska 28/ where the liquefaction potential of soils is high and ground shaking and its secondary effects would be the main earthquake hazard. In the Canadian section of the proposed Alcan system, the pipeline would face a danger of fault rupture in the Shakwak Valley where extentions of the Denali Fault are believed capable of magnitude 7 earthquakes. No studies have been performed and presented to this Commission, to support the finding that an adequate design for earthquake and soil liquefaction protection

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28/ Livengood, Alaska to the Yukon, Alaska border.

has been made or that costs for such protection have been adequately estimated. The proposed Alcan pipeline would closely follow the operational Alyeska oil pipeline. Special provisions would have to be made to assure that the Alyeska VSMs or the oil pipeline would not be damaged by Alcan construction where the natural gas pipeline would cross or lie near the operational oil pipeline. It is possible to design suitable construction procedures; however,.one mistake could damage the Alyeska pipeline, i.e. a single blasting shot going awry. The Alcan pipeline would also be less efficient than the Arctic Gas line in terms of fuel usuage due to Alcan's lower wall thickness pipe, lower operating pressure, and longer route. Gas consumers would also lose valuable Btu's which will have to be stripped from the Prudhoe Bay gas stream in order to make the gas suitable for its transportation through the Alcan pipeline. 29/ Arctic Gas does not have this problem. The construction of the necessary gas conditioning plant in Prudhoe Bay and the necessary engineering and environmental studies for the Alcan pipeline make its proposed construction schedule impractical and unrealistic.

The El Paso system transporting gas through a rugged mountain area to a geologically dangerous Alaskan shoreline for further transportation to an earthquake region in California has the least desirable geotechnical alignment of the three proposed systems. El Paso's pipeline would cross the Denali Fault, traverse the Chugach mountains in Alaska where many faults may exist, and terminate at Point Gravina, another major earthquake region. El Paso has not conducted the necessary work to establish a proper seismic design for its terminal at Point Gravina, nor has it surveyed and studied the adjacent offshore region. At Point Conception, California, the receiving terminal for El Paso Alaska LNG ships has likewise not been designed adequately to assure that it would withstand the maximum credible earthquake expected at such site. Again the baseline studies necessary for such design have not been done. The El Paso system is extremely fuel inefficient when compared to a pipeline, even with the most advanced LNG technology. In addition to using the gas for fuel, the LNG system uses electricity and fuel oil to operate the regasification facility and tankers. Over the life of the El Paso LNG project, on a conservative basis, it can be expected to consume as addition fuel

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29/ Some of these Btu's extracted from the gas could be put into the Alyeska oil line; however, oil consumers would not necessarily be the gas consumers served by the Alcan project.

between 1/2 to one full years supply of delivered Prudhoe Bay gas. If the Arctic Gas's figures for fuel consumption are accepted, El Paso would deliver 6 percent less gas to market at a 2.25 Bcf/d of Alaskan input level, which over a 20-year period would equate to 1.2 years delivery of gas. 30/ The El Paso system requires a technology at its LNG vaporization and regasification terminals and ships which far surpasses presently operating LNG facilities.

(5) Gas Supply

All of the proposed systems are designed to transport gas from Prudhoe Bay to the lower 48 states. Prudhoe Bay contains the largest hydrocarbon reservoir on the North American Continent. Initial deliveries of gas from the North Slope of Alaska will approximate 2.0 to 2.5 Bcf/d in at least the initial years of production. Staff witness Wayne Thompson testified that a gas sales rate of 2.25 Bcf/d through year 1992, and thereafter a rate of 4.0 Bcf/d, could be achieved. All three of the proposed systems would be able to accommodate the initial volume. However, if additional volumes of gas should become available from nearby areas or Prudhoe Bay volumes reach a high level, Alcan and to a lesser extent El Paso are at a disadvantage to the Arctic Gas system, because of their capacity constraints and fuel usage.

The Kuparuk and Lisburne formations in the Prudhoe Bay area are possible future sources of additional supply. The Department of Interior estimates that reserve additions from these areas could reach 2.5 Tcf and 2.4 Tcf respectively. The most promising areas of potentially large gas reserves on the North Slope are the Arctic National Wildlife Range (ANWR) and the Beaufort Sea area. Potential reserve estimates in the ANWR are in excess of 14.5 Tcf and the potential reserves in the adjacent Beaufort and Chukchi sea provinces are estimated at 46.5 Tcf. If additional reserves are forthcoming from these areas, the Arctic Gas system would be the best system of the proposed three to transport such gas.

30/ With 26 trillion cubic feet of gas and with 6 percentage points difference in efficiency, 1.56 Tcf more gas would be delivered to market under Arctic's proposal assuming the same input volumes (See AA-127, p. 11, 16; Mitchell 168/27,653-27,657).

The Arctic Gas project would also benefit Canada through the transportation of gas from the Mackenzie Delta region of Canada. The transportation of Mackenzie Delta gas would further provide benefits to U.S. consumers by reducing the transportation costs associated with Prudhoe Bay gas. The shipment of Prudhoe Bay and Mackenzie Delta gas in one pipeline provides lower transportation costs for gas purchasers from both areas. It can be expected that approximately .7 Bcf/d of gas will be available from Mackenzie Delta in its early years of production. Canada has in recent years been allowing export permits to terminate. It is very doubtful, though, that Mackenzie Delta gas volumes will rise in the future to the level that exports of gas to the U.S. can be resumed at prior levels. Staff concludes, based upon NEB reports, that at best the connection of the Mackenzie Delta reserves will slow down or flatten out curtailment of Canadian exports of gas to the U.S. Rising Canadian domestic needs will absorb the Delta production in a relatively short period of time. The fact that Canada is now a net importer of oil may cause growing pressure upon its current surplus position in natural gas (Exhibit PG-126, page 140).

(6) Financing

The primary determinent to successful financing is the economic viability of a project (Tr. 25,655; 18,565). The project must be able to generate operating revenues sufficient to meet its expenses, service its debt, and provide an adequate return for equity investment and at the same time market a product which the public can afford and will purchase. This assures that a capital market exists which can provide funds to the project. If two projects are equally attractive in terms of economic viability, the cost of financing itself becomes important.

As discussed earlier, Staff believes that the Arctic Gas project is vastly superior to the other two projects in terms of economic viability. It is able to deliver gas to the lower 48 states at a lesser cost than the El Paso and Alcan projects. Lending institutions are available in Canada, the United States and Euro-dollar areas which can provide capital funds to the project. The Canadian market, however, could be somewhat strained because of its proposed portion of the Arctic Gas capital. This could result in additional financing costs, although the funds would probably be available. 31/ The Alcan and Maple Leaf projects would strain it possibly even more.

31/ Over its construction period, Arctic Gas would account for a portion of new gross new corporate issues in Canada higher than normally taken by any one issuer (See Staff Financial Brief).

In terms of financial costs, the El Paso project is more attractive. The cost of capital for the Canadian portions of the Arctic Gas or Alcan projects will be higher whether the capital comes from Canada or U.S. markets. The El Paso project also has the benefit of Federal subsidies through the U.S. government guarantee under Title XI of the Merchant Marine Act of 1931, as amended (Jiorle/Tr. 25,524-25,525).

(7) Tariff

Each of the three main applicants in this proceeding have filed pro forma tariffs designed to delineate the typical terms and conditions upon which gas transmission service would be rendered. The issues involved with tariff matters are common to all three applicants and would apply equally to all systems on an overall comparison basis except in the instance discussed below.

The one area where a tariff matter does have importance in an overall comparison between the applicants involves the proper allocation between U.S. and Canadian gas as it transits Canada in the same pipeline. Both Alcan and Arctic Gas have proposed a different manner to allocate costs between the U.S. and Canadian gas. Staff believes that the Arctic Gas procedure of utilizing the Mcf-mile method is a fair and equitable way of allocating costs. However, the proposed Alcan procedure is not fair and equitable to U.S. shippers. Alcan's method of cost allocation segregates its individual Canadian systems and assign costs to U.S. markets on an incremental basis. Alcan would freeze Alaskan gas costs at the initial looping stage of the AGT and Westcoast systems, which is the most expensive stage of any system's expansion. Later additons of other gas would get the benefit of lower costs. For this reason and others, as outlined in our cost allocation brief, Staff believes Alcan's Canadian allocation procedures are inequitable.

(8) Canadian Law and Treaty

Arctic states in its Canadian Reply Brief (p. 27) that Staff believes Canadian issues are "not real." This is inaccurate. The record evidence and legal argument of the parties have greatly reduced the number of conceivable unknowns which flow from the transit of U.S. gas across Canada. Moreover, these conceivable unknowns are not likely to affect the interests of the United States adversely, given the unprecedented trading relationship and history of cooperation between the two countries and the recent hydrocarbon treaty. The treaty is useful to the analysis not so much for its terms and conditions or for speculation about how protocols might be applied to a specific natural gas transportation system, but rather as evidence

that both governments are committed to carrying past cooperation into the future. Based in large measure on an evaluation of the persuasive record contribution of the State Department, 32/ Staff concludes that the Canadian law and treaty issue offers little if any guidance in a choice of an Alaskan Natural Gas Transportation System. The risks associated with the transit of United States gas across Canada are "real", but Staff believes they are modest and can be prudently incurred.

(9) Markets

The record in this proceeding contains considerable market and end-use information, but only with respect to those markets served by the respective potential shippers. However, reliability of this information is questionable. Since the major portion of the Prudhoe Bay reserves has not been contracted for, the identification and extent of specific markets to be served is merely speculative. Furthermore, in view of the time that will be required to complete any of the projects, we believe that these projected market studies may no longer be representative of the actual situation. The projected market requirements and anticipated supplies are too speculative to be utilized, particularly for comparative purposes. At the time such gas becomes available for curtailments, experienced during the interval coupled with a higher cost of gas, especially if deregulation becomes a fact, may result in a dramatic alteration in consumption patterns, not only for the participants but for the nation as a whole.

Although the future market requirements of individual pipelines may be speculative, it is apparent that the nation is presently experiencing a natural gas shortage 33/ and further, that future supply projections show a continued decline resulting in an even greater shortage. It is for this reason that Staff has recommended that, in spite of the absence of gas purchase contracts, a trunkline facility should be authorized at this time, but that such facilities be only those required to transport Alaskan gas to the lower 48 states and which would serve all regions of the country with a minimal amount of additional facilities (Lathom/Tr. 108/14,169-70).

32/ Exhibit EP-231, p. 173-188.

33/ "The Congress finds and declares that--(1) a natural gas shortage exists in the contiguous states of the United States; . . ." (Public Law 94-586).

Thus, the choice of an applicant does not revolve around which market its facilities will serve but rather which will best provide access to Prudhoe Bay gas for all markets. The trunkline of the Arctic Gas project best meets this criterion. It has been adequately demonstrated on the record that all regions of the country can be served either directly through the Northern Border facilities or by displacement. The proximity of the terminal point of the Northern Border Pipeline at Dwight, Illinois, to the center of the nation's major natural gas market area is graphically illustrated by Exhibit ST-46, and its relationship with the nationwide grid of existing pipeline facilities is evident when the proposed route is compared with Item by Reference ST-A.

V. CONCLUSIONS AND RECOMMENDATIONS

The modified Arctic Gas project which economically connects the Mackenzie Delta reserves to existing facilities within Canada and the Prudhoe Bay reserves to existing facilities within the United States, is vastly superior to the El Paso Alaska project and the Alcan and Maple Leaf system. The evidence is overwhelming.

Staff supports the Arctic Gas project modified and improved by the elimination of the "western leg" lateral to California, which has been shown on this record to be high risk, uneconomic, unnecessary and environmentally unsound. 34/ The project supported by Staff is shown in Figure 1. Reference is made to Appendix B which is a check list of Staff proposed action on specific docketed applications in this case.

In Section IV(1)(c) we concluded, for the reasons stated therein, that the Maple Leaf project must be considered with the Alcan project. Having taken this position for our purposes in reaching a position we hasten to point out the obvious. It is possible that the Canadian Government will decide that it is in Canada's best interests to defer indefinitely into the future, consideration of any and all projects south along the Mackenzie River corridor, no matter what the economic consequences for Canada and the United States. We believe, however, that our responsibilities in this case are to develop a record based upon traditional economic, engineering, environmental and other factors and to take a position based upon these factors and these factors alone. Determinations as to what the United States Government should do in respect to authorizing an Alaskan gas project, if use of the Mackenzie Valley corridor is precluded, would depend upon the reason for the Canadian rejection of a Mackenzie Valley corridor and a Canadian decision on what was not precluded. Consultations between the two governments would be necessary, and should include the participation of each government's working level Staff who were intimately involved in the development of the decision-making process. Only in the case when no Alaska gas would be permitted to transit Canada

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34/ Staff's position on the "western leg" or California lateral is fully covered in three specific briefs, which are listed in Appendix A.. . September 9, October 29 and November 19, 1976. The November 19th brief deals with Section 5(b)(1)(c) of Public Law 94-586 in respect to the "western leg".

is there a clear Staff choice of an alternative to the Arctic Gas project, without the need for more information. In this particular situation the El Paso Alaska project, in one of its variations, would be all that the United States could authorize.

Respectfully submitted,

Allan W. Anderson, Jr.
Commission Staff Counsel

Brian J. Heisler
Commission Staff Counsel

Washington, D.C.
December 7, 1976

APPENDIX A

Federal Power Commission Staff Briefs
Filed in El Paso Alaska
Company, et al. Docket No. CP75-96, et al.

Issue Date	Title of Brief
May 28, 1976	INITIAL TARIFF BRIEF OF COMMISSION STAFF
July 16, 1976	COMMISSION STAFF GENERAL CONDITIONS AND SCOPE OF PROCEEDINGS BRIEF (Supplement filed September 13, 1976)
September 8, 1976	COMMISSION STAFF BRIEF ON THE ISSUE OF SITING OF THE PROPOSED CALIFORNIA LNG GASIFICATION TERMINAL
September 13, 1976	BRIEF OF THE COMMISSION STAFF ON ARCTIC GAS PROJECT WESTERN LATERAL TO CALIFORNIA
September 13, 1976	BRIEF OF THE COMMISSION STAFF ON THE COOK INLET/CAPE STARICHKOF ALTERNATIVE
September 15, 1976	COMMISSION STAFF GAS SUPPLY BRIEF
October 4, 1976	REPLY BRIEF OF THE COMMISSION STAFF ON THE COOK INLET/CAPE STARICHKOF ALTERNATIVE
October 12, 1976	GAS SUPPLY REPLY BRIEF
October 29, 1976	REBUTTAL BRIEF OF THE COMMISSION STAFF ON ARCTIC GAS PROJECT WESTERN LATERAL TO CALIFORNIA
November 12, 1976	INITIAL GEOTECHNICAL BRIEF OF THE COMMISSION STAFF
November 19, 1976	BRIEF OF THE COMMISSION STAFF ON SECTION 5(b)(1)(c) OF PL94-586
November 19, 1976	INITIAL ENVIRONMENTAL BRIEF OF THE COMMISSION STAFF
November 26, 1976	BRIEF OF THE COMMISSION STAFF ON NATIONAL SECURITY AND CANADIAN MATTERS

Issue Date	Title of Brief
November 26, 1976	INITIAL SOCIO-ECONOMIC BRIEF OF THE COMMISSION STAFF
December 1, 1976	ANSWERING TARIFF BRIEF OF THE COMMISSION STAFF
December 3, 1976	GEOTECHNICAL REPLY BRIEF OF THE COMMISSION STAFF
December 3, 1976	BRIEF OF THE COMMISSION STAFF ON COST ALLOCATION ISSUE

Briefs to be Filed by Staff Prior to December 15, 1976:

STAFF NET NATIONAL ECONOMIC BENEFITS BRIEF

STAFF FINANCING BRIEF

STAFF WRAP-UP BRIEF

Reply briefs may be filed on socio-economic and environmental issues.

APPENDIX B

CHECKLIST FOR REGULATORY ACTION ON STAFF'S ARCTIC GAS TRUNKLINE

(1) Grant applications of Alaskan Arctic Gas Pipeline Company in Docket Nos. CP74-239, CP74-240

(2) Grant applications of Northern Border Pipeline Company in Docket Nos. CP74-290, CP74-291, with election filing for up to fully-powered case

(3) Deny applications of Pacific Gas Transmission Company in Docket Nos. CP74-241, CP74-242

(4) Permit withdrawal of Interstate Transmission Associates (Arctic) in Docket Nos. CP74-292, CP74-293

(5) Hold in abeyance */ action on the application of Northwest Pipeline Corporation in Docket No. CP76-174, directing submission of description of facilities needed for "Rye Valley" displacement in conjunction with termination of NEB Lic. GL-4

(6) Hold in abeyance */ the following pro forma Section 3 and 7(c) applications by shipper companies until perfected by submittal and Commission approval of gas purchase contracts: Columbia Gas Transmission, et al. CP75-257, Natural Gas of California (PGT) CP75-247, Pacific Interstate Transmission Company CP75-248, Northwest Alaska Company CP75-250, CP75-251 and Northwest Pipeline Company, Michigan Wisconsin Pipeline Company CP76-43, Natural Gas Pipeline Company of America CP76-49, Nothern Natural Gas Company CP76-45

(7) Deny stale Section 3 application of Pacific Gas Transmission Company in Docket No. CP71-182 for new import from Alberta.

(8) Deny the following pro forma Section 7(c) applications rendered moot by eastern displacement: Columbia Gas Transmission Corporation CP76-48; Panhandle Eastern Pipeline Company CP76-54; Texas Eastern Pipeline Company CP76-54

(9) Deny the following pro forma Section 7(c) application rendered moot by ITAA action Pacific Interstate Transmission Company CP75-249, CP75-251

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*/ Authority for this is section 5(a)(1) of PL94-586 which provides that the Commission "may refuse to act on any application, amendment, thereto, or other requests for action under the Natural Gas Act".

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Section 1.17 of the Rules of Practice and Procedure.

Dated at Washington, D. C., this 7th day of December, 1976.

Allan W. Anderson, Jr.

Allan W. Anderson, Jr.
Commission Staff Counsel

Washington, D. C.
December 7, 1976

SCOMM

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Comment — look at end comment — Plg.

JANUARY 1977

ANALYSIS OF PROPOSED ALASKAN NATURAL GAS TRANSPORTATION SYSTEMS

Compiled by the ORGANIZATION FOR THE MANAGEMENT OF ALASKA'S RESOURCES, INC. (OMAR), Box 516, Anchorage, Alaska 99510

Three applications have been filed for the right to bring Alaska's 30 trillion cubic feet of natural gas south to U. S. consumers. One is an all-land route across Alaska through Canada to the midwest proposed by a consortium called Arctic Gas. Part of the gas would be delivered to Canada. Another is a land and water route from Alaska to California and into existing pipelines across the United States proposed by El Paso Alaska. The projects were initiated in 1969 and 1970 respectively. A third plan originated in March 1976 by Northwest Pipeline. It also is an all-land route which crosses Canada to the U. S.

TRANS-ALASKA/LNG PROJECT PROPOSED BY EL PASO ALASKA COMPANY

INTERNATIONAL CONCERNS

None. U.S. Defense Department says Alaska-LNG route permits full U.S. control and does not require reliance on a foreign government for defense in war and security in peace. Because total pipe mileage is only a fraction of trans-Canada mileage, protection would be greatly simplified. A former Royal Canadian Mounted Police official says defense of the Canadian segments would be "next to impossible."

BALANCE-OF-PAYMENTS IMPACT

Favorable to U. S. No adverse balance. All materials to be supplied by U.S. firms.

ENVIRONMENTAL IMPACT

Miles of new pipe for transmission of 2.4 bcfd to U.S. 1,613

Line to follow 95% of Alyeska oil line (in or near a corridor that has been called "the most exhaustively studied in the world"). LNG carriers would sail from 2,500 square mile Prince William Sound through open waters to remote site on California coast. LNG is not classified a hazardous pollutant by either the Environmental Protection Agency or U.S. Coast Guard.

TRANS-CANADIAN PROJECT PROPOSED BY ARCTIC GAS CONSORTIUM

INTERNATIONAL CONCERNS

Major portion of line crosses a foreign country. Would be subject to control, management and regulation of a foreign government. Would also be legally required to pay Canadian provincial and federal government taxes. Faces opposition of Canadian nationalist groups, environmental organizations and Eskimo and Indian groups which claim ownership of the land the pipeline would traverse.

BALANCE-OF-PAYMENTS IMPACT

Unfavorable to U.S. Adverse balance of $4.5 billion in taxes, $4.8 billion in goods and services and $11 billion in transportation charges, for a total deficit of over $20 billion!

ENVIRONMENTAL IMPACT

Miles of new pipe for transmission of 2.25 bcfd to U.S. 4,500

Traverses width of 8,900,000-acre refuge (Arctic National Wildlife Range, the largest wildlife refuge in America) and adjacent planned range in Canada.

TRANS-CANADIAN PROJECT PROPOSED BY NORTHWEST PIPELINE (ALCAN ROUTE)

INTERNATIONAL CONCERNS

Major portion of line crosses a foreign country where it would be subject to control, management and regulation by a foreign government. Line in Canada would pay billions in taxes to Canadian federal and provincial governments. Route through northern Canada also faces Indian land claims to the territory pipeline would traverse. By linking up with provincial gas pipelines, Alcan route runs risk of becoming political football in growing rivalry between provinces and Canadian federal government.

BALANCE-OF-PAYMENTS IMPACT

Unfavorable to U. S. Adverse balance of $3.6 billion in taxes; other dollar amounts not available. (U.S. suffered highest ever balance-of-payments deficit November 1976 - $906 million!)

ENVIRONMENTAL IMPACT

Miles of new pipe for transmission of 2.4 bcfd to U.S. 5,400

Route follows 540 miles of Alyeska oil line, then generally along Alcan Highway into Yukon, overland in B.C. and Alberta where new sections of pipe would be built parallel to existing provincial pipelines.

Department of Interior estimates risk of delay in completion of Alaska-LNG project at HALF that of Arctic Gas project. With use of Alyeska's haul road and other construction facilities which required 1½ years to build, project has significant head start.	**Subject to numerous delays such as (1) settlement of native land claims, (2) Berger Commission investigation, (3) opposition to crossing Wildlife Range by 15 environmental groups and (4) construction of haul roads, camps and other preliminary facilities before work can begin on pipeline.**	**Subject to (1) and (2) of Arctic Gas project timing problems plus construction of preliminary facilities in Canada. Federal Power Commission and Canadian National Energy Board must consider applications. Other routes have been undergoing examination by FPC and NEB since 1975.**
Approvals and permits required only by U. S. government agencies. President sends route decision to Congress by Fall 1977; Congress ratifies by joint resolution in 60 days or matter returns to President for new decision. Judicial action possible only on constitutional grounds.	Approvals and permits required by U.S. and Canadian agencies. Must compete before Canada's National Energy Board against popular Maple Leaf Project of Foothills Pipe Lines and Polar Gas proposal for Arctic Islands gas. NEB decision faces Canadian Cabinet review, implementing legislation by Parliament and possible judicial action.	Approvals and permits required by U.S. and Canadian agencies. Must compete before National Energy Board against Arctic Gas, Foothills and Polar Gas (application expected to be filed this year for Arctic Islands gas). NEB decision faces Canadian Cabinet review, implementing legislation by Parliament and possible judicial action.
Native claims now settled in Alaska after five years of extensive negotiations in the U. S. Congress. Settlement included 44 million acres of land.	Natives claiming 1.8 million square miles, almost half of Canada. One key government report recommended a 10-to-15-year delay after settlement of land claims before any pipeline is built.	Faces unsettled native claims along pipeline route in Canada. Council of Yukon Indians wants majority control of company building line to protect native interests in addition to ownership of lands claimed.
Each construction segment (pipeline, LNG facilities and ships) can be conducted concurrently, thereby reducing adverse effect of strikes, material shortages, shipping delays, etc., on any construction phase.	Requires the construction of camps, haul roads and other preliminary facilities before construction of the pipeline may begin. Canada's historically higher strike rate could shut down entire project during any construction phase.	Requires 18 months additional geotechnical, environmental and engineering studies after certification before construction could begin, giving this project longest completion schedule. Canadian strike situation applies.
Trans-Alaska proposal is based on use of existing and new gravel roads and year-round construction.	Project includes use of unreliable snow/ice road technique and winter construction on northern segments. Experience in Alaska has shown this to be technically impossible, resulting in project delays and cost overruns.	Year-round construction possible on most segments of line. Use of existing gravel roads planned for part of Alaska construction.
TAX BENEFITS TO UNITED STATES	**TAX BENEFITS TO UNITED STATES**	**TAX BENEFITS TO UNITED STATES**
$12.8 billion to U. S. government entities over life of project.	$2.2 billion to U. S. government entities over life of project.	$4.7 billion to U. S. government entities over life of project.
EMPLOYMENT	**EMPLOYMENT**	**EMPLOYMENT**
Estimated total direct employment in U.S. at peak of construction: 22,500	Estimated total direct employment in U.S. at peak of construction: 10,000	Estimated total direct employment in U.S. at peak of construction: 15,000
Permanent work force in U. S. on project completion: 1,470	Permanent work force in U. S. on project completion: 400	Permanent work force in U. S. on project completion: 600
Total man-years of direct and induced employment in U. S. 749,000	Total man-years of direct and induced employment in U. S. 245,000	Total man-years of direct and induced employment in U. S. 350,000
CAPITAL COST	**CAPITAL COST**	**CAPITAL COST**
Total capital cost in 1975 dollars to bring 2.4 bcfd to U. S. markets	Total capital cost in 1975 dollars to bring 2.25 bcfd to U. S. markets	Total capital cost in 1975 dollars to bring 2.4 bcfd to U. S. markets
----------$6.5 billion----------	----------$8.6 billion----------	----------$6.3 billion----------

OMAR is dedicated to the orderly development of Alaska's natural resources for the benefit of the entire United States of America. For additional information, contact OMAR at Box 516, Anchorage, Alaska 99510.

Why the second choice is a loser

Anchorage Daily News 1-12-77

A.C. "Al" Swalling is chairman of the board of the Alaska Bank of Commerce and president of Swalling Construction.



By A.C. SWALLING

I appreciate being invited to express in this newspaper my views on a matter so vital to the economic health of Alaska, both near - term and for the future. I refer to the natural gas transportation system to bring North Slope natural gas to the South 48.

First, a bit of background. As chairman of the North Commission, established in 1967 by the Alaska Legislature, I was privileged to participate in the various studies carried on by that body. The members of the commission felt very strongly that the proposed oil line should be entirely under American control and so advocated.

THEY ALSO ADVANCED the concept that the natural gas pipeline should generally use the same corridor, terminating within Alaska at tidewater, with liquifaction facilities so sited that LNG could be "made available for transport by rail, truck, ship, or barge to remote villages and towns to bring total energy benefits of Alaska's resources within reach of all its citizens." Such a proposal would make possible the transportation of gas (surplus to Alaska's needs) to the Lower 48 by LNG carrier.

Some in the petroleum industry expressed opposition to a combination pipeline - LNG carrier system to transport North Slope natural gas to the southern markets. Arctic Gas is evidence of their opposition, but the commission persisted in its efforts to interest companies to analyze such a combination transport system.

Of all the companies approached only El Paso Natural Gas Co. evidenced interest. After many months of preliminary study, El Paso announced on Dec. 4, 1972, that they would file to develop and build such a system with a regasification facility on the West Coast and a tie in to the transcontinental pipelines, thereby making gas available to virtually any part of the Lower 48.

THE PROJECT was explained to Alaskans and overwhelmingly endorsed throughout the state. It was endorsed by the former and present governors, as well as the Eighth and Ninth Legislatures.

The filings of El Paso's Alaska project has been detailed and exhaustive. The statements, calculations, estimates, and computations of benefits to Alaska and the nation have withstood the cross examination by Arctic Gas and Alcan representatives as well as questions posed by the administrative law judge of the Federal Power Commission. Such is not the case of the Alcan's presentation whose interest in a competitive route did not surface until recently.

Too often lately we have heard certain media representatives and government officials suggest that because of the considerable momentum that Arctic Gas seems to have, Alaska may have to fall back and support the Alcan proposal as a "compromise" position in the natural gas pipeline controversy. Of course, this incredible idea presumes that the trans - Alaska route is doomed to failure, and Alaska must therefore settle for second best. Well, in my book, second best is a loser; and Alaska should not have to compromise on any issue involving its own interests or its natural resources. Furthermore, the project which will best benefit Alaska in this particular case also provides the greatest advantages to the nation as a whole.

THE TRANS-ALASKA project as sponsored by El Paso will provide many opportunities for Alaska that Alcan simply cannot meet. The comparable advantages and benefits are twice as great with the trans - Alaska route than with Alcan. For example, information available for each project shows that ad valorem and income taxes will be $2.8 billion for trans - Alaska versus just $1.3 billion for Alcan. The difference incidently would be enough to build the Susitna Dam or pay for the capital move. Direct employment during the construction of the project will be 22,000 for Alaska and 15,000 for Alcan. Long - term employment after construction will be 800 for Alaska and 100 for Alcan.

By far the greatest advantage of the all - Alaskan route relates to its terminating at an ice - free tidewater site near Cordova. If Alaska is ever to have a chance to promote the construction of a petrochemical industry, it will be with the El Paso project. The natural gas and the even more valuable natural gas liquids (LPG's) must be delivered to a year - round shipping port to allow marine transportation of the product. Furthermore, Alaska is naturally at such a severe economic geographical disadvantage, that a difference of just a few cents per million - BTU in the cost of pipelining the feedstocks to the plant site, could make or break our ability to compete in a world petrochemical market.

Some would neatly do away with this critical factor by suggesting that a lateral could be constructed from the Alcan pipeline to Prince William Sound. Let's look at this idea more closely. Assuming that both El Paso and Alcan will transport initial volumes from Prudhoe Bay of 2.4 billion cubic feet daily, the state's royalty share would amount to 12½ per cent, or 300 million cubic feet. El Paso's FPC application shows that its pipeline will be 810 miles long and have a yearly operating cost of $503 million. This means that it will cost 51 cents per million BTU to transport gas from the North Slope to Cordova.

THE FPC EXHIBITS for the Alcan pipeline indicate that it will be 720 miles long and have an annual operating cost of $530 million, which translates to 62 cents per million BTU to the Yukon Border. But we must back up to Delta Junction, which would be the point of departure of the new lateral going to Cordova. The transportation cost to Delta Junction via the Alcan line (544 miles) would be 40 cents per million BTU. Then, the new lateral must be built — by someone — to haul the state's 300 million cubic feet of royalty gas southward. It would be 265 miles long and 24 inches in diameter, and would cost approximately $234 million. With annual operating costs of $49 million, the transportation cost between Delta Junction and Cordova would be another 40 cents.

This, the difference between the El Paso cost of service (51 cents) and the Alcan - new lateral cost of service (80 cents) would be 29 cents per million BTU. Delivering 300 million cubic feet of royalty gas each day, the annual savings which would result from the El Paso line for the potential petrochemical customer near Cordova, would amount to $33.9 million. In the highly competitive world of the petrochemical industry, a saving of that magnitude would be a considerable incentive to locate in Alaska. We also hear the suggestion that a lateral could be built from the Alcan line to Haines. This arrangement would produce a transportation cost of $1.27 per million BTU — considerably less attractive than even the lateral to Cordova.

either one of these laterals from the Alcan pipeline. Despite Alcan's representations, we have no real indication that that company would build them. Petrochemical companies are not in the pipeline business, so we shouldn't expect them to build the laterals. It might be possible to expect a new, private company to build them, but we have seen no sign of this happening yet. And finally, I suppose the state could get into the pipeline business, although I would suggest that we could make better use of our tax monies — the Permanent Fund included.

BECAUSE THE EL PASO pipeline, taking advantage of technological advances, will operate at a higher pressure than Alcan (1670 psi vs 1250 psi), it will be a more efficient system and would provide cheaper transportation to any point along its route. If 50 million cubic feet per day were delivered to Fairbanks, I am told that the transport cost would be 33 cents per million BTU for Alcan and 28 cents per million BTU for El Paso, providing approximately $1 million in annual savings for the Fairbanks consumers with the all - Alaska pipeline. I understand that these figures do not include the cost of fuel, and if fuel costs were added, Alaskan natural gas customers would realize even greater savings with El Paso's project. Looking again at the FPC filings, we can see that within Alaska, Alcan requires 15 compressor stations consuming 80 million cubic feet of fuel each day, while El Paso needs just 10 stations consuming less than 45 million cubic feet of gas for fuel each day, thereby, effecting a very substantial saving of this valuable non - renewable resource.

The transportation advantage of the trans - Alaskan - LNG proposal extends beyond those communities along the pipeline itself. If for some reason communities in Southeast Alaska decide that they want North Slope natural gas, it could be delivered by barge in the form of LNG. Here once again, the economies of scale inherent in the El Paso project would result in a far lower transportation cost than Alcan could provide, by, in some cases, more than $2 per million BTU.

It can be fairly stated that the trans - Alaskan route can offer Alaska everything that the Alcan route could, and more. Conversely, the Alcan route can show no advantage over El Paso, economically or otherwise.

UP TO THIS POINT I have only reflected on the benefits to Alaskans under the all - Alaska route. Let us add to those the national interests to be served through the balance of foreign payments, the construction of 11 LNG carriers in United States shipyards, the procurement of 1,500,000 tons of domestic pipe and fittings, as well as the manning of the carriers with American seamen.

North Commission, that the only logical transport system for natural gas from the North Slope to market, is one that is totally under the American Flag.

Returning then to the original problem, we Alaskans simply cannot look upon Alcan as a "good second choice." It is in fact little better than Arctic Gas — which is no good at all for Alaska.

As the FPC staff position paper recently said, "Alcan is just a relocated Arctic Gas Project." Staff also strongly criticized Alcan's concept, costs and schedule as being unrealistic and undefensible. In other words, in my opinion, Alcan simply hasn't shown anyone that they know how to put together a major transportation project.

It should now be clear to all Alaskans that our real competition is Arctic Gas. And when we call Alcan a "good second choice," we are diluting our support for the trans - Alaska route. The end result will be that we'll get Arctic Gas approved — and we'll deserve it!

Fairbanks, Alaska
January 31, 1977

Representative Clark Gruening
Pouch V
Juneau, Alaska 99811

Dear Representative Gruening: Re: Proposed Gas Route Hearings

Mr. Michael E. DeMan of the Alaska Native Foundation has requested I bring materials received from Northwest Pipeline Corporation to your attention.

I have discussed the proposed Alcan route with Mr. Edward R. Hayes of the Northwest Pipeline Corporation at length both in conversations here in Fairbanks and on the phone. I have a record of my conversations with him as well as with others in his company and interested persons in the interior.

It is a matter of considerable importance that the natural gas from Alaska's North Slope be available to Alaskans for further processing into petrochemicals. The substance of the materials that I have reviewed leads to the prospects of establishing a permanent petrochemical industry in the interior of Alaska at the rate of a one-billion dollar plant a year for ten years following the construction of a gas pipeline. The establishment of a permanent petrochemical industry in Alaska's interior is not only worthy of consideration but I have concluded after considerable investigation that it is the most signifigant step in any industrialization which could be begun anywhere in Alaska. Ethylene, the basic feedstock of the petrochemical industry is in short supply, and we do have the ethylene available to us to begin an international-scale industry here. It is my considered opinion that if we allow our natural gas to leave the state without processing it into petrochemicals it will be a giant step backwards in the removal of colonial status for Alaska.

In reviewing the enclosed materials please understand that Northwest Pipeline Corporation has taken the position that while a world-scale petrochemical industry is feasible in interior Alaska, they are presenting this evidence for Alaskans to review in the hopes that we will see this as an opportunity and that we would want to do something about it. They are not interested in entering the petrochemical business.

I have other available information which I have drawn upon for a paper presented at the Alaska Science Conference last Summer and which I am pulling together for the University of Alaska-sponsored Town Meeting on Energy to be held here in Fairbanks in March. I would be glad to provide further testimony at your hearings if called upon.

Sincerely,

Jack O. Hakkila

Jack O. Hakkila

Enc.: Earthquake Probabilities at L. N. G. Sites: Frank Alberti and Associates

Alcan Pipeline Presentation: The Opportunity for Petrochemicals and Hydrogen Refining in Alaska: Speech by Edward R. Hayes

cc: Michael E. DeMan

FRANK ALBERTI & ASSOCIATES

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October 28, 1976

Alaska Earthquake Probabilities at Gravina Point near Cordova, Starichkaf Site near Homer Alaska, and The Vicinity of Fairbanks, Alaska.

This report is a follow-up on a previous report which we entitled "Earthquake Probabilities at L.N.G. Plant Sites - South Central Alaska" and utilizes the same basic source material of probabilities studies interpolated by recent work performed by W. G. Milne et al. W. G. Milne's work show the Gravina Point area to have a ten year return period for 10% g accelerations at the Gravina Point site.

Interpolations of Milne's charts shows twenty year return periods for the Kenai Peninsula sites and the Fairbanks area. The probabilities are based on history and tectonic arguments and it is noteworthy that there has been a longer history of recording earthquakes in the Cordova and Homer, Alaska areas than there has been at Fairbanks.

It is also noteworthy that considerable uplift and subsidence at Cordova and Homer areas respectively occured during the great earthquake of 1964. We have not encountered any records of vertical displacement at Fairbanks.

It is significant, we think, that the various investigators of the pipeline corridor agree insofar as establishing a lower design earthquake magnitude for Fairbanks (M=7.5) and (Valdez area) Gravena Point (M=8.5) as will be noted in the paper entitled "Ground Motion Values for Use in the Seismic Design of the Trans-Alaska Pipeline System" by Robert A. Page, David M. Boore, William B. Joyner, and Henry W. Coulter.

A considerable amount of damage occured in the 1964 earthquake to Petrochemical facilities in the Cook Inlet and the Prince William Sound areas. Major losses occured to the shore site facilities such as docks, tanks, plants, etc. and involved in many cases the earthquakes secondary effects of generating tidal waves. In this regard Fairbanks would not be affected.

Frank Alberti

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Earthquake Probabilities at L.N.G. Plant Sites - South Central Alaska

This is a resume of your requested study performed as you are aware by an engineer who has represented both insureds and insurers in the technical problems of earthquake insurability.

Alaska's earthquake loss history and high probability of frequent destructive seismic occurances make it very difficult to insure earthquake coverage at the best sites and the most desirable construction classes in south central Alaska. The highly protected risk insurers who handle the high values such as in the Petrochemical, Allied Gas and Oil facilities, and more especially LNG plants judge each risk on its individual merits.

El Paso's final choice of sites namely the Gravina Point site near Cordova, Alaska and the Starichkaf site on the Kenai Peninsula near Homer, Alaska are respectively in the first and second worst earthquake sites in any Zone 3 earthquake location in any of the fifty states. The probability charts developed by A.E. Stevens and W.G. Milne show the Gravina Point area to have a one hundred year return period for earthquakes with 100% g peak accelerations (M=8.5), a fifty year return period for 50% g accelerations (M=8.0), and a thirty year return period for 20% g accelerations (M=6.5). In communications with Mr. Milne we were able to follow his method to obtain a ten year return period for 10% g accelerations (M=5 to 5.5). In contrast to this, for example, Milne et al shows for your Plymouth, Washington LNG site a one in one thousand year probability of a 10% g earthquake.

Engineers consider that 10% g as the threshold accelerations that are damaging to ordinary structures on firm soil. It must be considered that LNG containers and their allied plant equipment are not ordinary structures i.e. the N.F.P.A. National Fire Protection Association Standards 59A in relating to LNG plants require a degree of care in earthquake engineering equal to that of nuclear plants. The specific proposed site at Gravina Point according to the FPC report has a foundation described as poorly drained. Although foundation engineering can help this, such foundations often suffer more high intensities (damage) from a given magnitude (acceleration) than do structures on natural firm soil. The FPC report also states that the vertical uplift in the '64 Good Friday earthquake was 4.5 feet and in the horizontal displacement was some 30 feet. This does not meet the stated earthquake criteria of the Federal Power Commission which requires that it not be located on or adjacent to an active fault.

From an insurers viewpoint, at least, the proximity to a fault is considered adjacent when it involves gross changes in land elevations and strong ground shaking even though it may not involve surface faulting.

The Kenia Peninsula site apparently has according to the FPC report better foundation possibilities and somewhat less earthquake risk potential; however, it also involves a serious geological hazard where we witnessed at Homer gross subsidence of 4.5' to 5.7' in 1964. It would appear to be no better than the worst earthquake probability and severity zone in the lower 48 states.

Underwriters are aware that early catastrophic failures of liquified natural gas tanks were solved by metalurgists so that a high degree of reliability exists under normal working conditions when the cryogenic liquid

is stored and processed at -272° F. Added to the many uncertainities is the state of the art of cryogenic and earthquake engineering relative to LNG containers and plant appurtances for resistance to great earthquakes of magnitude 8 or greater.

What we are saying is at the outset on the basis of what has been learned from the geologist, geophysist, and structural consultants reports that the general areas of the site require consideration of design earthquakes of the magnitude of 8 to 8.5 and further that these sites are in areas of distinct geological hazards. Underwriters would question in great depth the specifics of the geology of the sites and the ability of Cryogenic and earthquake engineers to persuasively show that LNG plant structures can be designed to safe limits for containing gas equivalents measuring in the billions of cubic feet involving liquid temperatures at -272° F that already have stretched technology to new limits. In other words the metalurgical problem as it relates to the stresses of great ground vibrations and ground displacements that exceed those found elsewhere in any of the other states appears to present a new problem to technology.

An insurers final review; however, would be based on not only the large area and site geology, the design earthquake magnitude, the distance from epicenter of earthquakes and fault lines, but also it would review the specific design input relative to ground structure interaction, allowable structural deformations, and the extent of deformation under simulated dynamic earthquake magnitude spectrums. Wind forces and direction because of gas dispersion or exposure is also an important factor.

Even if the FPC criteria regarding earthquakes were softened then at least three problem areas would be involved (A) The additional engineering and construction costs plus a feasibility consideration to accomplish completion of a facility that would comply with NFPA 59A particularly as it relates to seismic considerations. (B) The additional insurance costs throughout the life of the project providing the project, for the high values involved, would be insurable and (C) Last but not least the high human life exposure that could result from softening of the stated criteria resulting in basically improper siting of a major LNG plant and marine transfer facility.

At your request we interviewed the Industrial Risk Insurers relative to insurability of this type of risk in Alaska. The answer was quite discouraging to one seeking an earthquake insurance market in south central Alaska for plant locations where there are multimillion and even billion dollar concentrations of values. Currently the upper line limit is four million dollars for earthquake with a one million dollar deductable. Rates are significantly higher than in any of the other states. We are aware from other sources that a two and a half percent or two and a half dollar per hundred dollars of value rate is not uncommon for large industrial risks where there is an element of uncertainty relative to large earthquake forces or construction difficulties. There would; however, be a multiplier factor regardless of the rate for the higher hazard south central Alaska earthquake area. We are including with this study, references that were used in obtaining earthquake probabilities, geological information, and LNG construction requirements.

Frank Alberti

Frank Alberti, P.E.

"Locations that merited further consideration were subjected to additional studies to ascertain the extent to which each location complied with the requirements set forth in the criteria. These studies were concerned with a detailed evaluation of the physical conditions which exist in three major areas of each location: the area which would be utilized as the location of the plant, the area in which the marine terminal would be located and the bodies of water which would be utilized by the LNG carriers. A specific location was considered to be a viable site if it possessed characteristics equal or similar to those defined in the criteria, which are discussed in more detail in the subsequent sections." 1/

The staff is in agreement with the applicant that of the sites that were considered in Prince William Sound, the Gravina site is probably the most viable location on the basis of compliance with the technical requirements of the proposed project. The staff, however, disagrees with El Paso's premise that the Cape Starichkof site is not a viable alternative, since it, too, complies with the technical requirements of the project, and also has the advantage of exhibiting fewer environmental sensitivities and less potential for adverse environmental impacts than the Gravina site.

During the process of reviewing the information contained in the filings submitted by the applicant, the contract study prepared by the Oceanographic Institute of Washington, and numerous additional sources of information the staff has become aware of the potential adversities that could be encountered in the Cook Inlet area, most notably the potential for the disruption of shipping or docking maneuvers through the interaction of winds and masses of sea ice. The Cape Starichkof site apparently lies outside the area of disruption.

Based on the historical record, the Gravina - Prince William Sound area appears to exhibit a higher susceptibility to large magnitude seismic events than does the Cape Starichkof - Cook Inlet area. As is indicated in Figure 89, a greater number of earthquakes ranging in magnitudes from 7 to 8 have occurred in the vicinity of Prince William Sound, than in the Cook Inlet area. During the 1964 earthquake, Gravina Peninsula was subjected to 4.5 feet of vertical displacement upward, and 30 feet of horizontal displacement. The Cape Starichkof area, located within the area of subsidence that resulted from the earthquake, was subjected to no more than 1 foot of subsidence.

1/ Trans-Alaskan Gas Pipeline Project, Site Selection Report.

ALCAN PIPELINE PRESENTATION

THE OPPORTUNITY FOR PETROCHEMICALS AND HYDROGEN REFINING IN ALASKA

Speech by Edward R. Hayes

Northwest Pipeline Corporation

Fairbanks, Alaska, November 5, 1976

I am very pleased to have the opportunity to address this meeting of Professional Engineers of Alaska and to discuss prospects for establishing a major petrochemical industry in Alaska. To be more accurate, I should say to expand Alaska's petrochemical industry, for Alaska already has one of the world's largest ammonia-urea complexes at Kenai.

As you know, most organic chemicals these days are manufactured either from crude oil fractions, natural gas, or natural gas liquids, and can therefore properly be considered as petrochemicals. In this presentation, however, I shall be referring principally to the high volume chemicals and derivatives that dominate the chemical industry, because this is where the prime opportunity for Alaska exists.

In addition, I shall also discuss what I consider to be a great potential for establishing hydrogen refining complexes in Alaska to upgrade Prudhoe Bay crude oil before it is shipped to the lower 48.

There can be no question that the volumes of raw materials that will be available in Prudhoe Bay natural gas will be far more than adequate to support economically sized petrochemical plants in Alaska. Let us for a moment review the quantities of the principal petrochemical feedstocks that will be present in the raw gas at Prudhoe Bay.

(SLIDE: EXHIBIT A)

As shown in Exhibit A, the oil companies at Prudhoe Bay will produce a raw gas containing close to 230,000 barrels per day of natural gas liquids based on a transportable volume of natural gas of 2.0 billion cubic feet

per day. By raw gas, I am referring to the gas that will be separated from the crude oil, as it is produced.

As you realize, the crude oil and natural gas at Prudhoe Bay are intermixed in the same reservoir with some of the gas actually dissolved in the crude oil and the remainder forming a gas cap. The volumes of natural gas liquids which I have shown in Exhibit A are based on a crude oil production rate of 1,600,000 barrels per day which appears to be close to the rate which will be approved by the State of Alaska.

The raw gas must be processed to remove most of the moisture and acid gases (CO_2 and H_2S). In addition, much of the butanes and pentanes plus components have to be removed in order to avoid condensation (or dew point) problems in the natural gas pipeline. No one knows for certain yet just what the final design of the raw gas processing unit will be. The oil companies have supplied an approximate analysis of the sales gas that would be supplied to the gas transmission company. However, it is quite possible and perphaps even likely, that the oil companies will ultimately design their processing system to remove most of the butanes and pentanes from the raw gas and blend these fractions with the crude oil; and concurrently, recover most of the lighter ethane and propane fractions for inclusion in the natural gas pipeline supply. Our calculations suggest that butanes and pentanes will have a much higher potential value in the crude oil than in the natural gas pipeline, perhaps as much as $5 to $6 per barrel higher.

Using the estimated gas analysis provided by the producers, we arrive at the volumes of natural gas liquids shown in Exhibit B. As you will

(SLIDE: EXHIBIT B)

note, Alaska's royalty share of ethane alone is sufficient to support a 500 million pound per year ethylene plant, based on an 80% yield factor. If propane is included, Alaska by itself has almost enough royalty feedstock

for a billion pound per year olefin facility. This would be comparable in size to the largest worldwide facilities now under construction. It is quite possible, however, when a petrochemical project is developed in Alaska, that one or more of the oil companies who control the remaining LPG fractions at Prudhoe would be an active participant and would assign a share of its LPG to the venture.

LPG supplies to petrochemical plants in the lower 48 will continue to decline in rough proportion to the predictable decline in natural gas production. Spokesmen for the petrochemical industry now flatly state that no new olefin plants based on LPG fractions will be constructed. All of the new plants, including several that are now under construction, will have to employ naphthas or gas oils as the feedstock. Olefin plants using the heavier feedstocks cost at least 50% more to construct than if ethane or propane were the raw material. Another disadvantage for plants using naphtha or gas oil is that a very broad spectrum of products is produced, ranging from methane and ethylene all the way to heavy fuel oil. While the yield of ethylene from ethane is around 80%, it is only 25-30% for naphtha. Any company desiring to produce ethylene today would be most fortunate to have a secure, economical long term domestic supply of ethane and propane such as shou'd be available in Alaska in the near future.

Let us consider the range of petrochemical projects based on natural gas and natural gas liquids that could be established in Alaska. There are only two major petrochemical candidates that are manufactured from natural gas or methane: (1) ammonia and its derivatives, and (2) methanol and its derivatives. Both products are high volume commodities. By 1980, consumption of ammonia in the U.S. will reach 21,000,000 tons of which 75% will be consumed as fertilizer nitrogen and 25% will be used to produce industrial chemicals. Worldwide consumption by 1980 will be close to

100,000,000 tons.

Unfortunately, ammonia does not appear to be a very good prospect for Alaska for the foreseeable future. The major problem seems to be one of excessive production capacity combined with rather poor price prospects. As I have previously mentioned, Alaska already has the Union Oil facility at Kenai which is one of the largest ammonia-urea complexes in the world. It would not make much sense during a weak market to establish additional competition for an existing operation. Alaska's internal nitrogen fertilizer consumption is relatively small, around 1,200 tpy of equivalent ammonia. Looking well into the future, it is possible that the world-wide supply/demand picture may improve or that the demand for nitrogen fertilizer in Alaska will increase substantially. If so, ammonia could be considered as a "back-burner" possibility.

The situation for methanol is similar to ammonia. Without going into details at this time, I would also categorize methanol as a future possibility.

This brings us to the LPG fractions; ethane, propane and butane. I believe that the most experienced venture development specialists would identify the establishment of a major olefin producing complex as a prime commercial opportunity for Alaska. The principal olefins, ethylene and propylene, have become the major building blocks in manufacturing a wide range of synthetic resins and/or organic chemicals. Ethylene would be produced by steam cracking of ethane; and propylene by cracking propane. Natural gas would be used for fuel.

(SLIDE: EXHIBIT C)

Ethylene is the starting raw material for the two largest volume synthetic resins or plastics, as they are more commonly called, polyethylene and polyvinyl chloride. The latter is generally referred to as PVC. In

1976, approximately _____ tons of polyethylene and _____ tons of PVC were produced in the U.S. By 1980, these volumes are expected to reach _____ and _____ tpy, respectively. The worldwide growth rate for polyethylene is estimated at 10% annually. By 1986, 100 new high density polyethylene plants will be needed, along with an equal number of low density units.

The production of polyethylene in one or two satellite plants appears to be the best first choice for converting the ethylene into finished commercial products. One of the satellite plants could produce low density polyethylene which is used to produce pliable sheets and films and soft containers. The other satellite plant could convert ethylene into high density polyethylene which is extruded or molded into clear, hard bottles and shapes and is frequently used as an engineering type plastic. Initially, the production of PVC does not have quite as much allure because of the lack of an Alaskan source of chlorine. However, I certainly would not write PVC off as a future possibility.

In rough round numbers, a 500 million pound per year ethylene-polyethylene complex such as I have just described would require an investment of at least $500 million; $250 million for the ethylene plant and $250 million for the satellite conversion plants. Such a complex would provide directly 300 to 400 high quality jobs including a high percentage of technical people - possibly as many as a hundred. It is possible that a larger billion pound per year ethylene plant might prove to be economically feasible.

A second phase expansion program might logically involve a cracking plant to produce propylene from propane. Additional ethylene would be produced as a co-product. Satellite plants would include a polypropylene plant and possibly an ethylene oxide-ethylene glycol unit. Also, co-polymers and polyethylene and polypropylene could be produced, further broadening the product

line. These facilities would probably cost an additional $500 million in 1976 dollars.

To provide feedstock for the petrochemical complex, it would be necessary to construct large, sophisticated extraction plants to remove ethane and propane from the pipeline gas. As the result, propane would be readily available to the public, to industry and to agriculture in central Alaska and could be transported in the existing product pipeline to Haines. Universal availability of propane throughout Alaska would be helpful in improving living standards of the citizens.

Natural gas would be used as fuel in the ethane and propane cracking plants. We could conceivably be looking at an ultimate total investment of in the range of $2.0 billion and a product volume approaching one million tons of product per year. Total direct employment would be close to 1,000 of which about 200 could be from the engineering or chemistry professions.

These products do not sell by the ton. Rather they sell by the pound-currently close to 30 cents per pound for the products which I have described. The value added in Alaska will be substantial as shown in Exhibit D. The

(SLIDE: EXHIBIT D)

present value of ethane and propane from Prudhoe Bay is approximately 17 cents per gallon or about $79 per ton. Ethylene and propylene, the intermediate products, are worth about $240 per ton. Polyethylene and polypropylene, the finished products sell for $600 per ton and there is no reason that a portion of the polyethene and polypropylene could not be further upgraded in Alaska. For example, a polyethylene and polypropylene pipe manufacturing plant could be established that would serve Alaska and the Pacific Coast states; or a polyethylene calendering plant could be built to manufacture various grades of films and sheets.

If the Alcan Pipeline system is certificated, Alaska and its citizens will have the opportunity to develop the state's petrochemical potential.

There will no doubt be a reaction of skepticism from some interested parties who will respond that Alaska is too far from the markets to consider such an enterprise. I reply that if Alaska is not too far away to produce and transport its crude oil and natural gas then it is not too far removed to upgrade these products, and ship them to the markets in the lower 48.

The Province of Alberta was faced with a situation very similar to what you have here in Alaska. Most of its oil and natural gas were being transported out of the province. Just as with Alaska, there were several oil refineries, producing products for local needs, and several ammonia fertilizer plants. But, the really big petrochemical plants based on Alberta's raw materials were being constructed in Eastern Canada.

So the provincial government and Alberta Gas Trunk Line, Ltd., Alberta's largest gas transmission company, cooperated on an aggressive program to establish a major petrochemical industry within the province. Alberta has been successful in this effort. The province has built up a very large petrochemical network involving participation by several leading U.S. chemical concerns, as shown in Exhibit E. What Alberta has succeeded in

(SLIDE: EXHIBIT E)

doing, Alaska can likewise accomplish. I should also like to point out that Alberta Gas Trunk Line, Ltd. is one of the principals in the Alcan project. As you will note on the slide, the investment in these facilities exceeds one billion dollars. Alberta sets a figure of $1.3 billion.

The most promising location for the initial petrochemical installations in Alaska would be in the broad valley of the Tanana River between Fairbanks and Delta Junction. The lack of direct access to the sea is not a critical disadvantage, assuming that reasonable rates could be obtained from the Alaska railroads. A petrochemical industry would provide high volume, steady movement for the Alaska railroad which would be a big benefit to

this vital transportation artery. The cost of transportation to the coast will be a small percentage of the selling price. Obviously, cooperation between the Alaskan railroad and the venture developers will be very important. The Haines product pipeline could be used for transportation of liquid petrochemicals, and if necessary a new product pipeline could be constructed to the Anchorage area.

Earlier this month a representative of El Paso Alaska outlined the potential for creating a petrochemical complex in Alaska similar to the one which I have just described, before the Fifth Alaska Plastic Seminar in Anchorage.

I applaud the El Paso Alaska representative for encouraging citizens of Alaska to think in terms of establishing a prosperous petrochemical industry in their state. However, I disagree with El Paso's stated premise that Gravina Point is the logical location for the complex. A tidewater location normally offers a logistical advantage, but not in this case. The reason is the high earthquake risks that exist in the Gravina Point area. During the 1964 Alaskan earthquake, the land at Gravina Point experienced a vertical uplift of 4.5 feet and a horizontal displacement of 30 feet. A petrochemical facility of the type I have described, with its complex system of absorption towers and fractionation towers, could not be constructed to withstand a tremor as strong as that of the great earthquake of 1964. As a result, the odds of obtaining adequate insurance coverage would be slim. According to an investigation made on behalf of Northwest Pipeline's Insurance Department; the combined, pooled capability of the entire worldwide insurance industry will not issue insurance for any chemical or petroleum facilities above a level of $50 million per installation, at Gravina Point.

The incidence of earthquakes in the Fairbanks area is much less than for southern coastal areas. According to our consultant, the area around

Gravina Point has a ten year return period for earthquakes of 10% "G" acceleration as compared to a twenty year return for Fairbanks. Various investigators of the crude oil pipeline corridor established a lower design earthquake magnitude for Fairbanks, (M=7.5) versus (M=8.5) for Gravina Point. As you realize going from 7.5 on the Richter Scale to 8.5 means 10 times the magnitude of the seismic shock waves.

You can design a hotel to withstand an 8.5 scale earthquake, without collapsing, but there is no way to design and build a huge liquefaction plant or a giant petrochemical plant that could survive such a shock without tremendous damage and possibly catastrophic consequences. It does not appear possible to obtain adequate insurance coverage at Gravina Point and, without total insurance coverage, prospects of obtaining financing are poor. Exhibit F gives you a rough picture of the amplitude and incidence of earthquakes in Alaska.

(SLIDE: EXHIBIT F)

I am not suggesting that it will be easy to establish a petrochemical industry in Alaska. However, if the state and its concerned citizens are willing to expend the effort and cooperate with potential participants, I believe that successful, gratifying results can be achieved. Any one of the major oil producers at Prudhoe Bay would be first class operators. However, we must recognize that they would probably have to defer expansion of existing complexes in order to establish a new complex in Alaska. Other major oil companies as well as multi-national U.S., Japanese, and European chemical companies may be interested in joining an investor consortium just as Dow Chemical Diamond Shamrock have done in Alberta. The State of Alaska could also become an investor.

In addition to the prospects for establishing a petrochemical industry in central Alaska, the state has another equally strong and logical reason for insisting that the natural gas pipeline follows the route of the Alyeska

crude oil pipeline to Fairbanks and Delta Junction. That is to supply natural gas for use in producing hydrogen which will be needed in the 1980's to upgrade Prudhoe Bay crude oil in Alaskan hydrogen refineries.

Crude oil will become so expensive by 1981 that it will become impractical to burn reduced crude in electrical generating plants. Instead, the reduced crude will be upgraded by a process called catalytic hydrocracking. By this technique, virtually the entire range of crude oil fractions can be converted into high value gasoline, diesel fuel, jet fuel, heater oil and petrochemical feedstock.

Having the petrochemical facilities and the hydrogen refineries in close proximity has substantial synergistic affects. The hydrocracking of reduced crude produces large volumes of benzene and other valuable aromatic chemicals which could be recovered and shipped through an existing product pipeline to Haines or by tank car to Anchorage for transshipment to other petrochemical centers in California. Or, these chemicals could be further upgraded in Alaska into such products as styrene and polystyrene. With the addition of butane cracking facilities, a synthetic rubber industry could be established near Fairbanks, Haines or Anchorage. Concurrently, by production hydrogen from the olefin cracking units could be recovered and utilized in the hydrogen refineries.

Much of California's crude oil supply in the 1980's will come from Prudhoe Bay at a time when California's natural gas deliveries are diminishing. Very little or no natural gas will probably be available in California for producing hydrogen for hydrocracking. The replacement gas will be LNG shipped in from Indonesia, South Alaska and possibly Australia, and SNG from coal. All of these sources are very expensive, much too costly for hydrogen production. SNG from oil may run as high as $5 per million BTUs. Using naphtha at California refineries to produce hydrogen will also

be expensive and counterproductive. The oil companies will probably be much better off to have the crude oil upgraded in central Alaska where gas could be made available at reasonable cost.

In addition to converting low value reduced crude into high value products by hydrocracking, it might also prove desirable to upgrade the quality of the naphtha (gasoline) and gas oil (diesel fuel) fractions in Alaska by a process called hydrotreating or hydrofining. These processes to hydrocracking are similar except that the reaction conditions are less severe.

The installation of several hydrogen refineries could provide just as great a boost to the economy of central Alaska as petrochemicals. The new oil refinery now being constructed by the Earth Resources Corporation of Dallas, Texas at North Pole, Alaska represents an excellent initial refining step in central Alaska. The overall investment in hydrogen refining in central Alaska could easily exceed a billion dollars.

Environmentally, the petrochemical and hydrogen refining facilities which I have described are the pearls of industry. I would hesitate to use the term immaculate, but I can assure you that these plants are attractive and clean. Employment will be long-term and stable. This will appeal to native Alaskans. The capital investment per employee will be very high so no heavy burden would be placed on schools, hospitals, and other areas of the Fairbanks' infastructure. Further, there is plenty of territory along the pipeline corridor between Fairbanks and Delta Junction to spread out these installations.

Alaska will lose these great opportunities if Prudhoe Bay gas is routed through the MacKenzie Delta via the Arctic Gas route. By diverting Prudhoe Bay gas from Alaska, Arctic Gas is depriving the state of the benefits associated with new stable industrial growth.

The El Paso project faces many hazards in the southern coastal area as well as strong, determined opposition from environmentalists and landowners in Southern California. In my judgment, Alcan presents the State of Alaska with the most options for developing a long range plan for future economic development. Alcan is the system that gives Alaska the most control over its royalty gas while keeping the door open to the many marvelous opportunities provided by petrochemicals and hydrogen refining.

THANK YOU!

EXHIBIT A

PETROCHEMICAL RAW MATERIAL IN PRUDHOE BAY RAW GAS

(BASED ON 1,600,000 B/D OF CRUDE OIL - 2.0 BCF/D OF SALES GAS)

LPG CONTENT OF RAW GAS

	(BARRELS/DAY)		(TONS/YEAR)	
	TOTAL LPG	ALASKA SHARE	TOTAL LPG	ALASKA SHARE
ETHANE (C-2)	108,000	14,000	2,450,000	307,000
PROPANE (C-3)	60,000	8,000	1,942,000	243,000
BUTANE (C-4's)	34,000	4,000	1,100,000	138,000
PENTANES+ (C-5's)	28,000	3,000	1,245,000	156,000
TOTAL	230,000	29,000	6,737,000	844,000

EXHIBIT B

PETROCHEMICAL RAW MATERIALS IN PRUDHOE BAY SALES GAS

(BASED ON 1,600,000 B/D OF CRUDE OIL - 2.0 BCF/D OF SALES GAS)

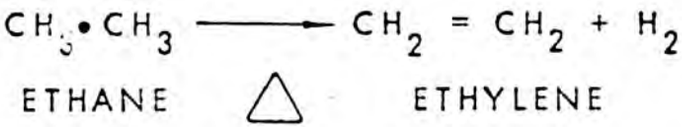
LPG CONTENT OF SALES GAS

	(BARRELS/DAY)		(TON/YEAR)	
	TOTAL LPG	ALASKA SHARE	TOTAL LPG	ALASKA SHARE
ETHANE (C-2's)	103,000	13,000	2,338,000	292,000
PROPANE (C-3's)	55,000	7,000	1,780,000	223,000
BUTANES (C-4's)	20,000	2,500	736,000	92,000
PENTANES+ (C-5's)	4,000	500	178,000	22,000
TOTAL	182,000	23,000	5,032,000	629,000

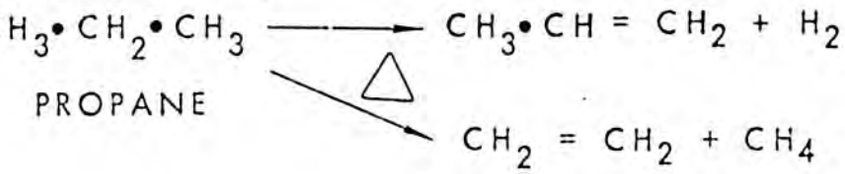
EXHIBIT C

PRODUCTION OF OLEFINS FROM LPG FRACTIONS

ETHANE TO ETHYLENE



PROPANE TO PROPYLENE



BUTANE TO BUTYLENE

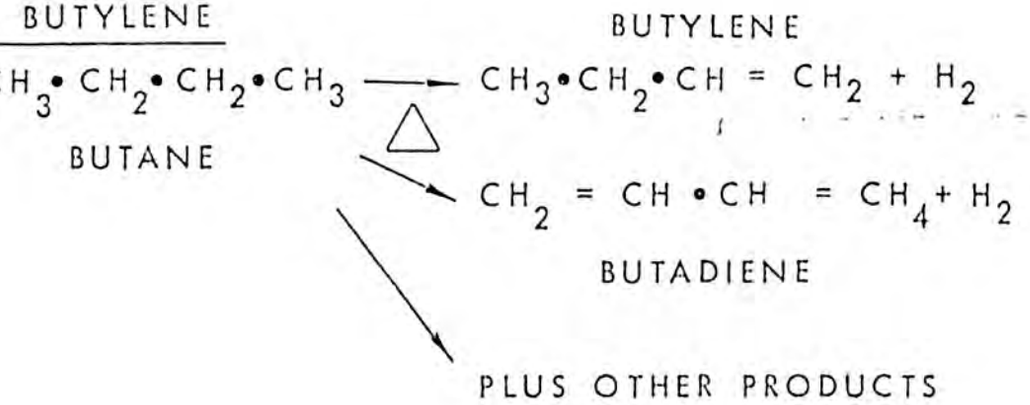


EXHIBIT D

ALASKA PETROCHEMICALS VALVE ADDED

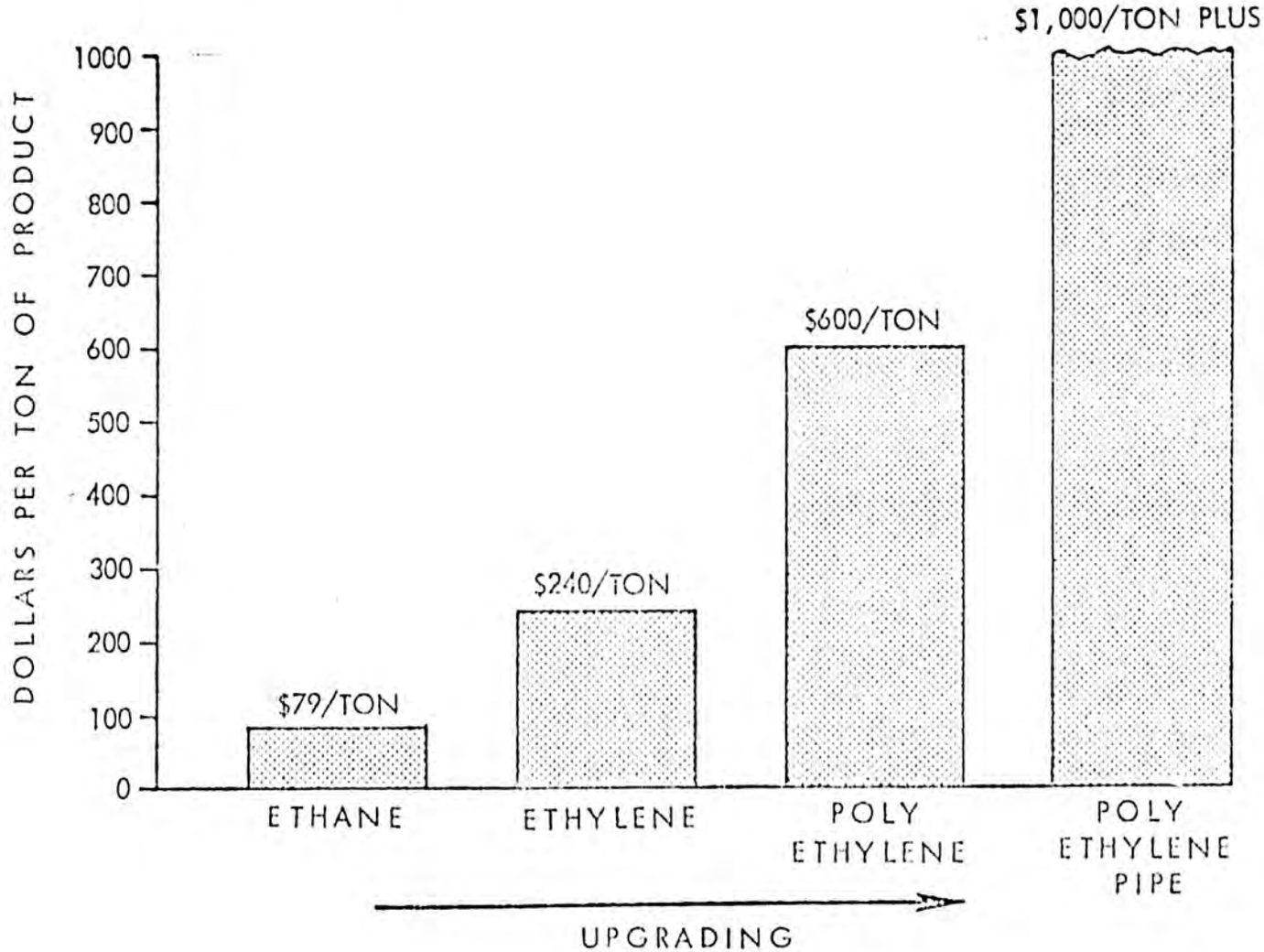


EXHIBIT E

ALBERTA PETROCHEMICAL RUNDOWN ON NEW PLANTS

NATURAL GAS BASED

3 WORLD SIZED AMMONIA PLANTS
2 WORLD SIZED UREA PLANTS
1 WORLD SIZED AMMONIUM NITRATE PLANT
3 WORLD SIZED METHANOL PLANTS
1 WORLD SIZED ACETIC ACID PLANT

NATURAL GAS LIQUIDS BASED

1 WORLD SIZED ETHYLENE PLANT
1 ETHYLENE OXIDE - ETHYLENE GLYCOL PLANT
1 VINYL CHLORIDE PLANT

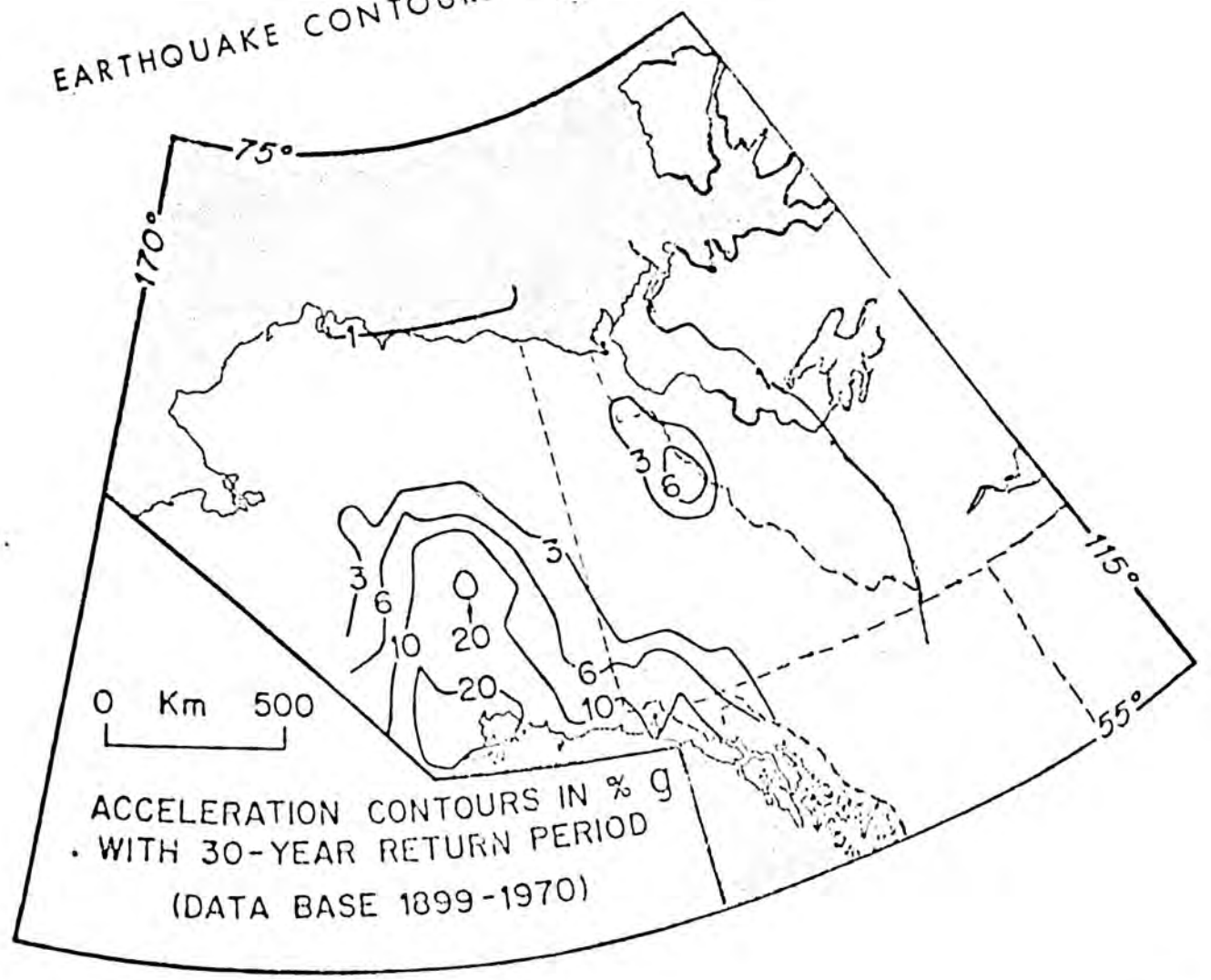
CONDENSATE BASED (PENTANES PLUS)

1 BENZENE - GASOLINE PLANT

VALVE - WELL OVER $1 BILLION

EXHIBIT F

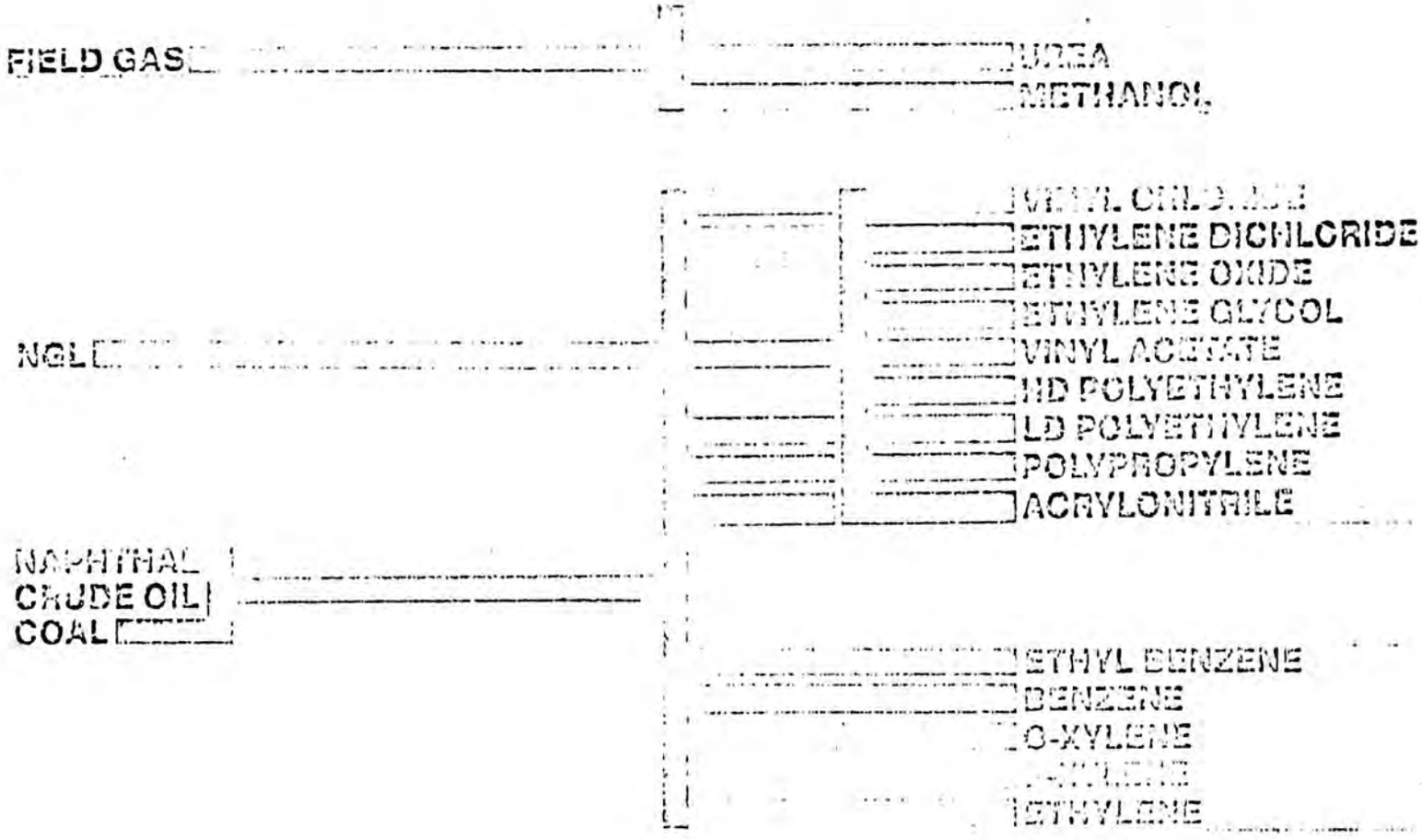
EARTHQUAKE CONTOURS FOR ALASKA



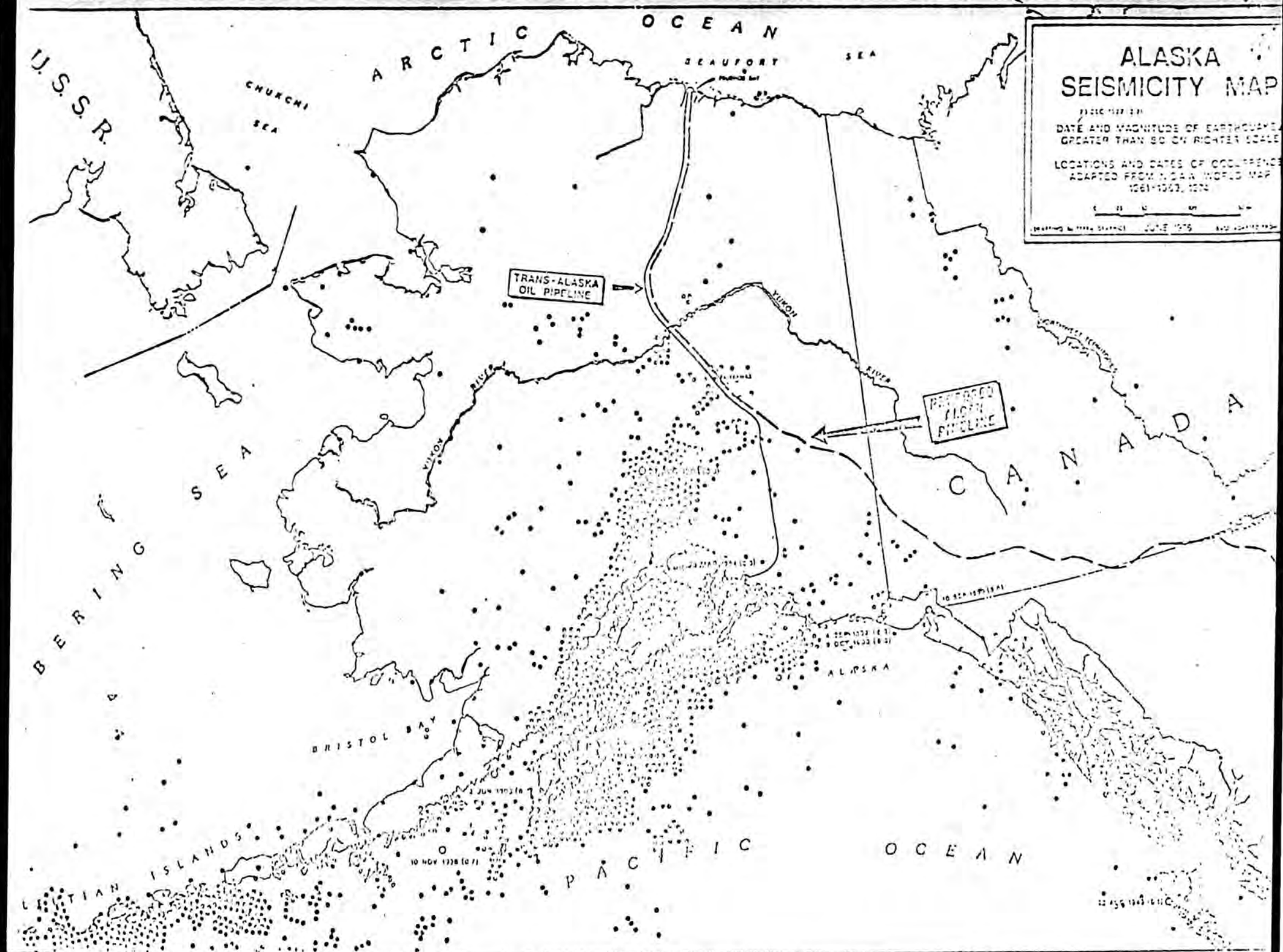
ACCELERATION CONTOURS IN % g
WITH 30-YEAR RETURN PERIOD

(DATA BASE 1899-1970)

CRUDE OIL AND NATURAL GAS ARE THE MOST IMPORTANT RAW MATERIALS IN THE MANUFACTURE OF BASIC ORGANIC CHEMICALS



APPENDIX 3


ALASKA
SEISMICITY MAP
DATE AND MAGNITUDE OF EARTHQUAKE
GREATER THAN 80 ON RICHTER SCALE
LOCATIONS AND DATES OF OCCURRENCE
ADAPTED FROM N.O.A.A. WORLD MAP
JUNE 1976
ARCTIC OCEAN
BEAUFORT SEA
CHUKCHI SEA
U.S.S.R.
TRANS-ALASKA OIL PIPELINE
YUKON RIVER
CANADA
BERING SEA
BRISTOL BAY
GULF OF ALASKA
PACIFIC OCEAN
ISLANDS

SCOMM

#21:28

Alcan

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

In the Matter of	)	
	)	Docket Nos. CP75-96, et al:
El Paso Alaska Company, et al:	)	

WRAP-UP BRIEF OF THE ALCAN PROJECT

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December 16, 1976

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

In the Matter of	)	
	)	Docket Nos. CP75-96, et al.
El Paso Alaska Company, et al.	)	

WRAP-UP BRIEF OF THE ALCAN[1/] PROJECT

With the passage of the Alaska Natural Gas Transportation Act of 1976 (Act), Pub. L. 94-586, 90 Stat. 2903 (October 22, 1976), Congress recognized that the selection of an Alaskan natural gas transmission system is one of the most important energy decisions facing this country during this century. Thus, instead of relying upon the traditional procedures embodied in the Natural Gas Act, 15 U.S.C. §§717, et seq., Congress established a special procedure which will permit the final decision to be made only after substantial input from all levels of government. The decisional process begins, of course, with the initial decision of the Presiding Judge.

Given the spirit of the Act, Alcan submits that, regardless of the proposal ultimately preferred by this agency, it is incumbent upon the Presiding Judge and the

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1/ For the purposes of this brief, Alcan Pipeline Company, Northwest Pipeline Corporation, Foothills Pipe Lines (Yukon), Ltd., Westcoast Transmission Limited, The Alberta Gas Trunk Line Limited and The Alberta Gas Trunk Line (Canada) will be collectively referred to as "Alcan."

Commission to weigh the evidence and provide an objective and balanced evaluation of the comparative merits and disadvantages of all three competing projects. Such an evaluation, in contrast with the biased presentation in Staff's position brief, will provide the groundwork for meaningful participation in the decisional process by other Federal agencies, the President and the Congress.

The vast record in this proceeding contains a plethora of detailed information on such issues as engineering, economics, environmental impact, tariffs, financing, and gas supply. This evidence has been adequately catalogued in prior briefs on specific subjects, and, therefore, will not be reiterated in this brief. Instead, this final submission by Alcan will address the broad issues which led to the formation of the Alcan Pipeline Project, and which, in our judgment, should control the selection of a system to transport desperately needed Alaskan gas to U.S. consumers for the forseeable future. These issues are:

1. Whether an overland system should be selected instead of a combined land-water system.
2. If an overland system is selected, which route should be chosen in light of environmental, economic, and Canadian considerations.

Pipeline design is important, of course, but this issue should not dictate the selection of a system. In the last analysis,

the design of the project selected will be optimized on the basis of specific information developed regarding deliverability from Alaska, market distribution, and technological feasibility.

I. Overland System vs. Combined Land-Sea System

Virtually all parties who have addressed this issue (except, of course, El Paso Alaska, the State of Alaska and two purchasers of Alaska royalty gas whose support is compelled by their gas purchase contracts) have concluded that a totally overland system is far superior to a combined land and water transportation system in terms of ease of construction, reliance on existing technology, reliability of cost estimates, safety, and reliability of service once operations commence. Alcan believes that, in light of the history of the natural gas transmission industry over the past 40 years or so, there can be no doubt that reliance upon proven pipeline technology in a project of this magnitude is far preferable to reliance on relatively new LNG technology. This is especially so when consideration is given to the fact that the El Paso proposal is beyond the current technological limits of even this relatively new industry.

Fear of Canadian interference is the primary reason for El Paso's "all-American" project. In Alcan's view, there is no foundation whatsoever for this fear. Once the Canadian government has approved a trans-Canada system,

Alaskan gas undoubtedly will be transported to the United States without interference by the Federal or provincial governments of Canada.

The key, however, is to secure Canadian approval of an overland route in the first place. To accomplish this, the Canadian government must be provided with an alternative which protects Canadian interests as well as United States interests. The Alcan Pipeline Project is such an alternative.

II. Selection of the Optimal and Realistic Overland Route

Alcan's Canadian co-sponsors have testified that, in their judgment, Canada will be willing to permit a transit pipeline to cross its territory, provided Canadian needs and interests are respected. In addition to meeting Canadian needs and interests, the overland route selected should maximize environmental advantages, logistical advantages, and economic advantages, including benefits to the State of Alaska.

A. Environmental and Economic Considerations

With the exception of a short segment between Fort Nelson, British Columbia and Zama, Alberta, the entire Alcan route follows existing transportation corridors. From an environmental standpoint, the use of these existing corridors will mean that the overwhelming majority of Alcan's construction will occur in areas which have already been

environmentally impacted. This approach stands in sharp contrast to the Arctic Gas Project which will require new intrusions into pristine wilderness areas.

The location of Alcan's proposed route along established corridors, in the vicinity of all-weather roads, also gives it clear logistical and economic advantages over Arctic Gas. It is simpler to place and move men and equipment along Alcan's route than along Arctic Gas' route. Invariably, then, there must be a higher degree of confidence in Alcan's proposed construction schedule than in Arctic Gas'. The economic advantages of Alcan's proposed construction schedule and its greater reliability in adhering to that schedule are discussed in the briefs on economic matters filed by Alcan. Indeed, the advantages of Alcan's route and its maximum use of existing technology will enable it to complete its system and bring Prudhoe Bay gas to the lower 48 states some two years sooner than either of the other applicants. Even the Commission Staff has acknowledged that Alcan could bring Prudhoe Bay gas to the lower 48 states a year earlier than the other applicants.

Maintenance is also an important consideration. The availability of all-weather work roads and other facilities along existing transportation corridors means that Alcan will be able to engage in year-round maintenance and repair operations with very little, if any, environmental

and economic impact. In contrast, Arctic Gas' ability to conduct maintenance and repair operations on its North Slope and Cross-Delta segment, without significant environmental and economic impact, is severely limited.

Not the least of the economic benefits of the Alcan Project are those to the State of Alaska. Although Alaska has expressed its preference for the El Paso Project, which completely traverses the state, it has characterized Alcan as a sound second choice in its position brief. The reasons are evident. By going southward to a point beyond Fairbanks before turning southeastward toward the Alaska-Yukon border, the Alcan system will enable Alaska to transport its royalty gas from Prudhoe Bay to the heartland of Alaska. The benefits which the Alcan Project would bring to Alaska are summarized in Alcan's briefs on socio-economic issues.

Apart from the foregoing environmental and economic issues concerning the routing of an Alaska gas transportation system, another major routing question in this proceeding is: Should the Arctic National Wildlife Range (and of course the similar North Slope land immediately adjacent to the Range in Canada) be sacrificed in order to bring Alaska gas to the lower 48 states? In Alcan's view, this issue overshadows the numerous other environmental matters which have been addressed in the course of this hearing. Every major environmental

organization in the United States has expressed adamant opposition to efforts to construct a pipeline across the Wildlife Range. This is not to say that these other issues are not important, but in distilling key issues, the impact on the Range clearly emerges as dominant. If the only choice open to the decision makers were to authorize a pipeline across the Range, as proposed by Arctic Gas, or not bring North Slope gas to the lower 48 states, a difficult question would indeed be posed in light of this country's urgent need for additional natural gas supplies, on the one hand, and its strong commitment to preserve environmental, wildlife, wilderness and recreational values, on the other hand. Fortunately, that stark decision need not be made, since there is another reasonable alternative overland proposal available: the Alcan Project. Again, if the entire picture is viewed dispassionately, there is simply no need to ruin the Arctic National Wildlife Range in order to bring Prudhoe Bay gas to the lower 48 states.

Even if this nation should eventually decide to seek hydrocarbon reserves which might potentially underlie the Range, the construction now of a gas pipeline through the Range will in no way benefit that development. If significant hydrocarbon deposits are discovered underlying the Range, they are likely to be oil reserves with solution and associated gas, similar to the deposits in Prudhoe Bay. Thus, in any event, a new oil line would necessarily connect

the hypothetical discoveries with the existing oil/gas separation and conditioning facilities at Prudhoe Bay to permit the oil to be transported south in the Alyeska oil pipeline. Therefore, any argument that the proposed Arctic Gas routing would advantageously connect such potential reserves with transportation facilities ignores the realities of the situation. 2/

B. Utilization of Existing Systems

One of the great strengths of the Alcan system design is its maximum utilization of existing systems in Canada. Just as the Commission Staff discovers economic and other benefits from maximizing the use of existing facilities in the lower 48 states, so too does Alcan find such benefits from maximizing the use of existing facilities in Canada. The environmental benefits are obvious, and the economic benefits are also evident when one compares the cost of building entirely new facilities with the cost of partial looping of an existing line, combined with joint utilization of various facilities and personnel.

Of particular significance in this case is the undisputed fact that AGTL and Westcoast, which will not only expand

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2/ To utilize Arctic Gas' routing for transportation of the gas from such reserves, either new oil/gas separation and conditioning facilities must be constructed in the Range or such gas will somehow have to be transported to Prudhoe Bay.

their own existing facilities to accommodate the Alcan project, but, along with Foothills, will build the new line segments in Canada, know more about constructing and operating pipelines in the far north than any other pipeline operators in North America. They have actually done it, and not merely theorized about it in laboratories and offices. Consequently, an overland project utilizing these unique talents is most likely to yield major benefits to U.S. shippers and consumers.

C. Canadian Considerations

Since Canada must approve any transit pipeline which would transport Alaska gas across its territory, Canadian needs and interests must be considered in the decisional process looking toward the selection of a totally overland route. When Arctic Gas filed its application in 1974, its sponsors believed that their project would ideally accommodate the needs and interests of both the United States and Canada. However, subsequent events have made it increasingly clear that Canada may not need or want a pipeline running through the MacKenzie Valley to connect MacKenzie Delta reserves in a time frame which will reasonably accommodate the need and desire of the United States to bring badly needed Prudhoe Bay gas to the lower 48 states. The record in this proceeding now shows that, in the recent past, natural gas consumption in Canada is growing at a considerably lower rate than previously anticipated, while gas supplies

from traditional sources, particularly in Alberta, have been increasing. Thus, Canada's need for Delta volumes now appears much less urgent in the near term than it did when the Arctic Gas application was filed.

More importantly, however, it now appears, on the basis of extensive hearings conducted by the Berger Inquiry, that extremely difficult socio-economic and political problems exist in the MacKenzie Valley, in the form of native land claims and the desire of the native peoples to secure adequate political rights. Indeed, the staff of the Berger Inquiry has tentatively recommended that no pipeline be built through the MacKenzie Valley until 10 to 15 years after the native claims in that area have been resolved. While Canadian action on the Berger staff recommendation cannot be predicted, it would be foolhardy for the United States to select an Alaska natural gas transportation system that is clearly vulnerable to long delays and massive cost overruns on account of problems known to exist and which cannot be resolved by decision makers in this country. These thorny problems are endemic to the Arctic Gas proposal, but not the Alcan proposal. As Alcan's Canadian sponsors have testified, the Alcan project provides a means of assuring the U.S. of overland access to its Alaskan reserves at the earliest possible date, while leaving Canada the flexibility to connect the Delta reserves at such time as required by her national interest.

Some parties -- most conspicuously, the Commission

Staff -- have maintained that the Alcan Project and the Maple Leaf Project, which is designed to bring MacKenzie Delta gas to Canadian markets, must be treated as a single project for purposes of environmental and economic comparison with the Arctic Gas Project.[3/] Of the many allegations made by Alcan's opponents, this is perhaps the most absurd. The record in this case clearly demonstrates that the Alcan and Maple Leaf projects, while complementary, are entirely separate and distinct. Unlike Arctic Gas, the Alcan project's timing and cost are not de pendent upon the construction[4/] of a pipeline to connect Mackenzie Delta reserves.

Arctic surmises, without any support in the record, that approval of its proposal will have a beneficial impact on the level of Canadian gas exports to the United States. This

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3/ Strangely, the Staff does not deem it proper to combine the Maple Leaf Project with the El Paso Alaska Project for comparative purposes. The illogic of Staff's position is striking. Alcan and El Paso both deal only with Alaska gas, and either project could be authorized regardless of actions taken with respect to Mackenzie Delta gas.

4/ Alcan has responded at greater length to the Staff's arguments in its Reply Brief to Positions of Other Parties, filed December 16, 1976. As noted in other briefs filed by the Alcan Project, Alcan can very easily eliminate the proposed exchange arrangement involving Delta gas and, through the addition of minor compression facilities, transport the entire amount of Prudhoe Bay gas directly to the AGTL System in Alberta. (See Alcan's initial brief on economic matters, pp. 16-17; Tr. 39,157.) Alcan is ready and willing to commit to do so, thereby removing even the remote suggestion that there may be a connection between the Alcan Project and the Maple Leaf Project.

specious contention is discussed in Alcan's reply brief on Canadian issues, as well as its reply brief to the position briefs of other parties. In light of the foregoing discussion, it is evident that Mackenzie reserves will be developed only when Canada finds it in its best interest to do so. When that time arrives, the Maple Leaf project stands ready to bring such reserves to appropriate markets in an expeditious manner.

In sum, Alcan affords the only logical choice of an overland route from Prudhoe Bay to the lower 48 states, since it, unlike Arctic Gas, affords recognition to Canadian interests. Not only does Alcan offer Canada the opportunity to accommodate its neighbor by approving a transit pipeline through Canadian territory, but it permits Canada to do so without losing its flexibility with respect to the development of Mackenzie Delta reserves. Moreover, only Alcan recognizes Canada's interest in having its existing pipeline facilities (AGTL and Westcoast) utilized in conjuction with a transit pipeline.

III. Technological Matters

As noted, Alcan believes that the most crucial judgments which the Commission, the President and Congress must make are (1) which is the preferable transportation mode, and (2) which overland route should be selected. On the basis of the facts and circumstances as they exist today and will con-

tinue to exist in the foreseeable future, the Alcan route is the only reasonable choice available to the decision makers.

Very serious issues on system design have been raised in this proceeding. While these issues are secondary and should not control the selection of a route, they must be resolved ultimately. Alcan believes that the Commission, in preparing its recommendation to the President, can lay the foundation for ultimate resolution of the design issues. This part of the brief will consider some key technological questions and suggest how the Alcan project will meet them.

At the outset, Alcan believes that the final engineering design and construction techniques that should necessarily be utilized on whichever project is selected cannot be determined in an adversary proceeding such as this one. Modifications and refinements are to be expected throughout construction, particularly in a project where new technology and techniques are required. Likewise, permit stipulations by government agencies having jurisdiction will greatly influence final design, prior to and during construction. This has been amply demonstrated during the Alyeska project. Certain designs in that project still have not been approved by jurisdictional agencies, yet the job is nearly complete. Even the concept of a totally chilled, buried gas pipeline, which has been central to each of the three proposals, may be modified as detailed design proceeds. It has been shown in these

proceedings that not all potential geotechnical problems have been solved to date, even after massive investment of time and money. In short, design issues cannot be of pivotal decisional significance in this proceeding.

The key issue in the area of pipeline design is the size of the line which will best accommodate the gas supply likely to be available from Alaska. When the Arctic Gas Project was initially presented in 1974, its sponsors were faced with the problem of designing a line which would not merely be optimally sized to meet the requirements for transportation of Alaska gas, but which would also accommodate the volumes expected to be available from the Mackenzie Delta. Throughout the hearings, Arctic Gas has steadfastly maintained that it expects 2.25 Bcf/d from Prudhoe Bay and, after a few years of buildup, 2.25 Bcf/d from the Mackenzie Delta. Accordingly, its pipeline is designed for a maximum of 4.5 Bcf/d. As discussed at length in Alcan's initial and reply briefs on gas supply issues, it now appears that the maximum volume likely to be available from Prudhoe Bay is 2.0 Bcf/d, and, indeed, the State of Alaska, which will control the amount of gas which will be made available through its approval of the field operating plan, has indicated that no more than 2.0 Bcf/d is the likely volume which will be made available for transportation to the lower 48 states. If Mackenzie Delta volumes are developed as projected by Arctic

Gas (to the level of 2.25 Bcf/d), the Arctic Gas system will have an expansibility capability without looping of 12.5%. Any expansion of the Arctic Gas system to accommodate additional Alaska gas beyond 2.25 Bcf/d will require looping of Arctic Gas' main line through Canada from Tununuk Junction south. Of course, if Mackenzie Delta volumes do not reach the 2.25 Bcf/d level, Arctic Gas will have additional flexibility to expand its Alaska gas deliveries, should additional supplies from Alaska ever become available, beyond 2.25 Bcf/d without looping. At the very least, however, this would require additional compressor stations on the Prudhoe Bay lateral, thereby assuring further destruction of the Arctic National Wildlife Range and its unique wildlife, wilderness, and recreational values.

The Alcan Project, on the other hand, is optimally sized to handle the volumes which are likely to be available from Alaska throughout the life of the project.[5/] Thus, at its design volumes of 2.4 Bcf/d, the Alcan system has expansion capability, without the addition of any facilities, of 20% above the anticipated maximum daily volume of 2.0 Bcf. And Alcan has demonstrated that its system can be expanded

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5/ This subject is discussed at length in Alcan's initial and reply briefs on gas supply issues. See also Rebuttal Brief on Environmental Matters of the Alcan Project, pp. 6-8, which was filed on December 9, 1976.

without looping to an average daily volume of 2.9 Bcf (3.1 Bcf on a peak day) -- an expansion capability of 45 percent above the expected maximum of 2.0 Bcf/d. Of course, the Alcan system, like the Arctic Gas system, can be further expanded through incremental looping or a combination of looping and compression.[6/]

Alcan acknowledges that its use of a 42" line at 1250 psig operating pressure and its use of lower pressure existing pipelines will result in greater fuel consumption than would the use of a 48" express line operating at 1680 psig. Alcan is certainly sensitive to this issue in this time of energy shortage. However, there is a real trade-off involved in resolving the fuel consumption issue, namely, fuel economy versus system reliability. Alcan believes that the greater the degree of new, untried technology involved in a proposal of this magnitude, the less reliable will be the estimated construction costs, scheduling projections and service after operations commence.

One important question is whether this project, which must be constructed in one of the most hostile environments in the world, is the proper occasion to experiment with

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6/ The sponsors of the Alcan Project are ready, willing, and able to expand the system to accommodate additional Alaska volumes which may become available. See, e.g., Blair, Tr. 41,787, 41,797; Phillips, Tr. 42,158-59.

technology not yet tried and tested in actual pipeline operations. Both of the overland applicants, Alcan and Arctic Gas, must inevitably propose some new technology, namely construction of a chilled gas pipeline in permafrost areas. Indeed, both applicants propose higher pressure pipelines than are currently in operation anywhere else in North America. But here the similarity ends. In terms of pipeline pressure, Alcan would go to 1250 psig, 25% beyond the highest pressure line now in operation in North America, while Arctic Gas would leap 68% beyond current technology to 1680 psig. In addition, Arctic Gas has opted for 48-inch pipe, again larger than any gas pipeline in operation in North America. Should billions of dollars be gambled upon Arctic Gas' ability to make a successful giant leap forward in pipeline technology, or should the more modest, but nonetheless real, technological advances proposed by Alcan be accepted? Alcan submits that the same logic which should lead the decision makers to prefer a totally overland system to a combined land and water transportation system should lead them to prefer a system which, although technologically innovative in certain respects, is sufficiently close to existing technology to assure construction on schedule and within estimated costs, and which will prove to be a safe and reliable service over the life of the project. This is especially so in view of the fact that United States gas consumers and taxpayers may be called upon to pay for the system "in all events."

Following the selection of a route, the governments of Canada and the United States will be required to reach an agreement, perhaps after further investigation, on a pipeline design which will protect the interests of both countries. Alcan's sponsors are willing to abide by such a decision and build the system that is determined to be appropriate under the circumstances, provided that it meets applicable safety codes.

V. Conclusion

As noted above, there can be no doubt that, in scope, size, and level of uncertainty regarding key issues remaining after the close of the record,[7/] this is no ordinary certificate case to be resolved by the Commission under its standard decisional criterion. Under these circumstances, Alcan submits that the Presiding Administrative Law Judge and the Commission will best serve the President and Congress by not proposing a typical certificate of public convenience and necessity, but rather by providing a decision which identifies the U.S. and Canadian interests involved in the selection of an applicant.

7/ For example, there are still no executed contracts for the sale of Prudhoe Bay gas to shippers; there is no definitive evidence concerning the handling of the construction and cost of the huge gas processing facility which must be constructed at Prudhoe Bay; and there is as yet no fixed wellhead price for the Prudhoe Bay gas.

In this connection, the Presiding Judge and the Commission can provide a service to the President and Congress which the Staff proved unwilling to perform. Staff insists on approval of the Arctic Gas project without an even-handed balancing of the alternatives. This obvious attempt to push Canada to the project which Staff has non-objectively selected is not what Congress requested. Further, this approach could cause substantial delay in the event that Canada should reject a proposal for which the U.S. has provided no alternative.

Alcan urges the Commission (and the Presiding Judge in his initial decision) to focus upon the key decisional factors discussed in this brief. Although the typical issues raised in comparative certificate proceedings, such as comparative cost of service, must be addressed, such issues should be given secondary weight in the decisional process.

Alcan respectfully submits that, in view of the foregoing, the record itself, and numerous other briefs filed by Alcan in this proceeding, the Presiding Administrative Law Judge and the Commission should recommend selection of

the Alcan Project, after going through the review and ranking process recommended herein.

Respecfully submitted,

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December 16, 1976

Alcan Has New Plan

ANCHORAGE (AP) — American and Canadian sponsors of the Alcan Pipeline Project for transport of Prudhoe Bay natural gas say an alternative express pipeline system will be filed with Canada's National Energy Board by the end of this month.

John G. McMillian, chairman of sponsor Northwest Pipeline Corp. and its subsidiary Alcan Pipeline Co., says the alternative proposal calls for construction of a 48-inch-diameter pipeline.

The firm's earlier proposal was based on use of 42-inch pipe. It was sharply criticized by Administrative Law Judge Nahum Litt, the Federal Power Commission hearings judge, as being inadequate.

Litt endorsed an alternate proposal offered by Arctic Gas for a route through the Arctic National Wildlife Refuge and south through Canada.

He called a route proposed by El Paso Natural Gas Co. a "viable option." That route would parallel the trans-Alaska oil pipeline to Gravina Point, where gas liquification plants would prepare it for tanker shipment south.

The FPC record is currently closed, and the panel is preparing to make its recommendation to the President by May 1. The President will then select a line. Congress is to make a final decision on the route by the end of this year.

Alcan's Alaska representative, Morris Thompson., said today a decision on the alternative route as it relates to the FPC has not yet been made.

McMillian says Alcan's larger pipe can carry about 3.4 billion cubic feet of gas per day through Alaska and western Canada for delivery near Kingsgate, B.C., and Munchy, Sask., both near the U.S.-Canadian border.

McMillian says the express line option "will provide for greater expansion flexibility than Alcan's initial proposal, if it is determined that such expansibility will best suit the long-term needs of the U.S.

"This larger system proposed for our route in very similar to the so-called 'Fairbanks Alternative' proposal that was recommended by staffs at the Federal Power Commission and the Department of Interior," he said.

"Since we believe that the selection of the route is the key decision, we are prepared to alter our proposed facilities in any responsible manner that will meet U.S. objectives and also be acceptable to Canada."

The pipeline would still parallel the trans-Alaska oil pipeline to a point south of Fairbanks, and then swing east to follow the route of the Alaska Highway. However, the route would then shift to divide at Caroline, Alta. Originally, a branch was to head south through British Columbia to Washington state for West Coast deliveries.

Under the revised proposal, a 42-inch pipeline would carry about 70 per cent of the gas to Munchy and into the proposed Northern Border Pipeline for redelivery to the U.S. Midwest and East. The remaining 30 per cent would be transported through 36-inch pipeline along existing corridors to Kingsgate for redelivery to western U.S. markets.

THE ALCAN PIPELINE PROJECT

A REALISTIC SOLUTION TO THE TRANSPORTATION OF ALASKAN GAS



Facts about Alcan

The Alcan Pipeline Project is one of three systems currently being considered by the Federal Power Commission for the transportation of Alaskan gas reserves to markets in the lower U.S.



The Alcan Pipeline Route will parallel the Alyeska oil pipeline for 539 miles to Delta Junction, at which point it will proceed along the Haines utility corridor and the Alcan (Alaska) Highway to Fort Nelson, British Columbia and Zama Lake, Alberta. Existing Canadian pipelines will carry the Alaskan gas for redelivery to U.S. transmission companies at three points along the U.S./Canadian border.

New Pipeline: 1,806 new pipeline miles — 731 in Alaska and 1,073 in Canada.

Diameter: 1,499 miles of 42-inch pipe and 307 miles of 36-inch pipe.

Capacity: 2.4 billion cubic feet per day (expandable to 3.1 billion) within three years of operation. Initial capacity of 1.2 billion cubic feet per day.

Cost Estimate: In 1975 dollars, the Alaskan portion of the Alcan Project will cost $2.3 billion, and the Canadian portion will cost $2.4 billion. Alcan's total costs, including additional facilities in the lower 48 states, are $6.3 billion.

Comparative Costs are $10.4 billion for Arctic Gas and $6.6 billion for El Paso.

Canadian Associates: Alberta Gas Trunk Line Company Limited and its subsidiary, Alberta Gas Trunk Line (Canada) Limited; Westcoast Transmission Company Limited; and Foothills Pipe Lines Ltd.

Alcan's Advantages:

- Lowest total investment for transporting Prudhoe Bay gas.
- Lowest delivery costs.
- Earliest delivery date.
- Provides stable economic growth base for the Alaskan interior.
- Least environmental impact.
- Year-round access to all facilities.
- Can be built independent of Canadian decision to develop its frontier gas reserves.

What is the Alcan Pipeline Project?

The Alcan Pipeline Project is the proposal of the Alcan Pipeline Company, a wholly-owned subsidiary of Northwest Pipeline Corporation, headquartered in Salt Lake City, Utah. Northwest Pipeline owns and operates a 4,400-mile pipeline system extending from the San Juan Basin in New Mexico and Colorado to the Canadian border, serving natural gas customers in seven western states. The company supplies all of the natural gas consumed in Idaho, Oregon and Washington and part of the gas used in Nevada, Wyoming, Utah and Colorado. Northwest Pipeline has assets of more than $500 million.

On July 9, 1976, the Alcan Pipeline Company filed a request with the Federal Power Commission seeking authorization to construct a 731-mile pipeline in Alaska, utilizing the Fairbanks Corridor / Alcan Highway Route. This pipeline will be part of a proposed new pipeline system to transport natural gas from the Prudhoe Bay on Alaska's North Slope to markets in the lower 48 states.

The planned pipeline would follow established utility and highway corridors in Alaska and Canada and would utilize existing Canadian pipeline systems to deliver the gas to the United States border. This conforms to the Mineral Leasing Act which calls for joint use of rights-of-way to prevent unnecessary scarring of public lands.

Four Canadian Companies — Westcoast Transmission Company Limited; The Alberta Gas Trunk Line Company Limited and its subsidiary, Alberta Gas Trunk Line (Canada) Limited; and Foothills Pipe Lines Ltd. — have entered into an agreement with Alcan and Northwest Pipeline to transport the Prudhoe Bay gas through Canada to the U.S. border and have filed the necessary applications for Canadian regulatory approvals.

Alcan Pipeline's project will be designed to transport all of the Prudhoe Bay gas, up to approximately 2.4 billion cubic feet per day, through a 42-inch diameter pipeline. The pipeline will follow the Alyeska oil pipeline for ap-


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COLUMBIA

proximately 539 miles to Delta Junction, south of Fairbanks, where it would then parallel the Alcan (Alaska) Highway to the Yukon border.

At the Alaskan/Yukon border gas would be delivered to a new pipeline to be constructed by a Canadian company, Foothills Pipe Lines Ltd., which would continue the transportation of gas through a 42-inch pipeline along the Alcan Highway to the Yukon-British Columbia border and then by Westcoast Transmission Company Limited to Fort Nelson, British Columbia.

At Fort Nelson, a portion of the gas would be diverted into the expanded existing system of Westcoast for ultimate delivery to the United States at an interconnecting point on the border near Sumas, Washington, where the gas will be received by the Northwest Pipeline system for delivery to western markets.



Northwest Pipeline Corporation owns and operates a 4,400 mile pipeline system serving natural gas customers in seven western states.



The Alcan Project will provide for direct pipeline delivery of Alaskan gas to markets in the lower 48 states.

The remainder of the gas would be transported from Fort Nelson to Zama Lake, Alberta through a new pipeline for delivery at Zama Lake to Alberta Gas Trunk Line Company Limited. Alberta Gas Trunk Line would then transport the gas through its expanded existing system for delivery to Empress, Alberta, and to Coleman, Alberta where the existing Alberta Natural Gas Company line would carry the gas to Kingsgate, British Columbia for delivery to the Pacific Gas Transmission system, which would transport the gas to California.

From Empress, Alberta, Foothills would construct a new pipeline to Monchy, Saskatchewan and from there, gas destined for the Midwest and Eastern regions of the United States could be delivered through the Northern Border Pipeline, presently pending before the FPC.

What are the Alternative Proposals?

The El Paso Natural Gas Co. proposes to construct a trans-Alaska pipeline that would roughly follow the Alyeska oil pipeline. Under El Paso's proposal, gas would be liquefied in Alaska and transported as LNG to southern California where the gas would be delivered from the West Coast to the rest of the U.S. by a displacement mechanism which has not yet been defined.

The proposal of the Arctic Gas Group is an all-land route that would begin in Prudhoe Bay, cut straight across the virgin wilderness areas including the Arctic National Wildlife Range, to Canada's Mackenzie Delta, then south to the U.S.-Canadian border, where proposed companion lines would carry the gas to the eastern and western U.S.



EL PASO LNG ROUTE



TRANS-CANADA ROUTE OF ARCTIC GAS

Economic Advantages of Alcan

The total cost of the Alcan Project, including facilities for transporting the gas within the lower 48 states, is $6.3 billion in 1975 dollars. This compares with $10.4 billion for the Arctic Gas proposal and $6.6 billion for the El Paso proposal.

The lowest total cost is a major advantage. The Alcan Project will almost certainly be easier to finance. Capital, like natural gas, is a resource that is limited but very necessary.

This lower total cost makes Alcan transportation costs lower. Figures filed with the Federal Power Commission show that Alcan will be able to transport Alaskan gas to the U.S. at a lower cost than either of the competing projects. We estimate the transportation cost of our service to markets in the lower U.S. to be $1.35 per million BTU, compared to $1.59 per million BTU for Arctic Gas, 24-cents higher than Alcan. El Paso's transportation costs, on a comparable basis, are expected to be $1.69 per million BTU, 34-cents higher than Alcan.

There are many reasons for Alcan's lower total cost and lower transportation cost figures. One is that Alcan is following existing highway and utility corridors all the way. Additionally, use of the existing oil pipeline construction work pad, communications system, airfields and all-weather roads will allow work to begin immediately with a minimum of preliminary construction.

Transporting equipment and supplies to the construction site is a major logistical problem. Without existing roads, the problem is multiplied many times.

New Construction Pad

Arctic Gas proposes construction of snow roads and would have to bring much equipment in by air. Under the Arctic Gas plan, pipeline construction would take place from snow roads during the short winter construction periods.

However the northern reaches of Canada and the area along Alaska's North Slope are semi-arid regions, with precipitation measuring

only about 10 inches per year and occurring mostly in summer.

Therefore, annual snowfall would be insufficient for the construction of snow roads and the manufacture of artificial snow would be required. However, Arctic Gas has no prototype machine to produce the snow necessary for the roads.

Even if it were possible, most experts doubt that the snow roads would prevent damage to the highly sensitive arctic soil. They also doubt that there's enough water to make the snow to construct the roads and even if the water can be found, utilizing it in this fashion would almost certainly damage fish populations irrevocably. Use of ocean water is clearly impossible because the high salt content would create permanent damage to the arctic soil and wildlife. In short, Arctic Gas is relying on a totally unproven concept.

El Paso's prime route generally follows the Alyeska oil line but would require construction of a new work pad. El Paso has filed an alternative route which would utilize 79 per cent of the Alyeska work pad, but still proposes its prime route which would lead to much duplicated work and increased environmental impact.

When the Alcan route departs from the

Cost of the Alcan Pipeline Project is $4.1 billion less than that of Arctic Gas and $360 million below El Paso's project.





Alcan delivery cost per million BTU, an all-important cost to the consumer, is the lowest.

route of the oil line near Delta Junction and continues southeast following the Haines pipeline corridor and the Alcan Highway, the highway itself will provide access to all construction areas and will enable Northwest to get supplies and equipment to the work site more quickly and with less expense.

We believe that utilizing facilities presently available is an important way to keep costs down.

Another area in which we adhere to this philosophy is in the utilization of existing Canadian pipelines. Our Alcan route would tie in to Westcoast Transmission Company facilities at Ft. Nelson, British Columbia and to Alberta Gas Trunk Line facilities near Zama Lake, Alberta. These Canadian lines have excess capacity at present and can be "looped" to handle more of the Alaskan gas as it comes on stream.

Unlike Arctic Gas, we see little reason for an entirely new pipeline in areas where existing pipelines can do the job. This is another reason why Northwest can deliver the gas two years sooner than Arctic Gas or El Paso.

Time Means Money

Those two years mean money. If men and equipment are on the job two years longer, it simply stands to reason that costs will be substantially higher, not only because of the amount of time but because of inflated unit costs of labor and equipment.

Constructing the Alcan route as quickly as possible is another way we plan to hold costs down.

Our Canadian associates in the Alcan Project have North America's greatest experience in gas pipeline construction through permafrost. This experience will enable them to hold costs down and complete construction on schedule.

We also chose the 42-inch pipeline because it is the most economical method of transporting a daily volume of from 2.0 to 2.5 billion cubic feet of gas, as projected by Prudhoe Bay producers. Total recoverable reserves in the field are estimated at 26 trillion cubic feet, but Prudhoe Bay is essentially an oil field — not a gas field — and gas production above certain levels may cause an irreplaceable loss of oil in the gas cap. The State of Alaska has the responsibility of deciding how much oil and gas will be produced from the field, and one of the considerations is to adopt a plan which prevents undue loss of oil. For this reason it will be some time before the Prudhoe Bay field produces large volumes of gas. Our system is the only one with flexibility to handle small gas production rates and build up to the volumes which are realistically expected to be produced from the Prudhoe Bay field.

Half for Canada

Arctic Gas is proposing a 48-inch pipeline to carry up to 4.5 billion cubic feet daily. One-half of this capacity is dedicated to Canadian use for transportation of Mackenzie Delta reserves, destined exclusively for Canadian markets. Therefore, Arctic Gas is transporting only 2.25 billion cubic feet daily for U.S. markets. This compares with 2.4 billion cubic feet per day for the Alcan Project. We estimate that the Alcan line is adequate to carry all of the gas production which may be realistically expected from the Prudhoe Bay oil field.

Although Northwest's proposal does not need Canadian gas to operate profitably, it should be pointed out that the Alcan Project is compatible with Canadian plans to develop Mackenzie Delta gas at a later date.

It is definitely in the U.S. national interest to develop Alaskan North Slope reserves quickly and to transport them to energy-hungry U.S. markets. But is it in Canadian interests to develop Mackenzie Delta reserves immediately? This is a question that only Canada can answer.

Some facts are known. The Arctic Gas proposal would force development of Mackenzie Delta gas in the early 1980's. However because of increasing prices and a corresponding reduction in demand — in conjunction with increasing supplies in British Columbia and Alberta — it may not be in Canada's national interest to develop the Mackenzie Delta reserves at this time.

Northwest's proposal gives Canada the option of developing these reserves at a time when they will be most needed to meet the country's long-term requirements. The Canadians have made quite a point of wanting to reserve Canadian gas for domestic use and it is highly unlikely that additional imports from Canada to the U.S. are forthcoming. The Alcan Project can be approved to deliver Prudhoe Bay gas independent of Canada's policy for developing frontier gas.

Environmental Advantages of the Alcan Plan

The pipeline route chosen by Alcan and Northwest has been widely acclaimed as environmentally superior to the other two alternatives. The Federal Power Commission environmental staff and the Department of Interior both favor the Alcan Highway route. This route also has won the support of the Sierra Club, Friends of the Earth, National Audubon Society, Wilderness Society and others, and some of their comments have been included in this brochure.

The reasons for their objections to the Arctic Gas proposal are primarily that it would gouge a pipeline corridor directly across the coastal plain of the Arctic National Wildlife Range, the only large, pristine arctic wilderness area and the largest of our national wildlife refuges.

Environmental and safety objections have prompted their opposition to the El Paso proposal. El Paso is proposing a complex syste..

Caribou calving grounds in the Arctic National Wildlife Range.





Alcan would affect no undisturbed wilderness areas.

of gas liquefaction, transportation and regasification in environmentally sensitive areas on a scale never before attempted and not yet proven.

Which brings up another point. These ingredients: new technology, sensitive environments and a large scale relative to previous projects are the major ingredients for mammoth-sized cost overruns. Dr. Arlon Tussing, former chief economist of the Senate Interior Committee and a professor at the University of Alaska, has said that he would not be surprised to see the cost of either the El Paso or Arctic Gas projects exceed $20 billion.

The Alcan Project, however, has all of the ingredients for realistic costs and the lowest probability for cost overruns. Alcan proposes conventional technology — a 42-inch diameter line at normal pipeline pressures and only traverses environments where construction experience exists.

Environmentalists prefer route of the Alcan Pipeline Project

"(The Wilderness Society) is most pleased to see the filing by Northwest Pipeline Company — at the Federal Power Commission — to construct a transportation system along the existing TAPS Corridor and the Alcan Highway to connect with existing distribution systems in Canada. This route appears to us to be the most environmentally sound."

—Brec Cooke, The Wilderness Society

"The Fairbanks-Alcan corridor appears to be the most environmentally acceptable alternative because it uses a developed transportation corridor which will not degrade the wilderness character of the Arctic National Wildlife Range and obviates the inherent long-term risks of an All-Alaska, LNG system."

—Pamela Rich, Friends of the Earth

"A less elaborate system (than that proposed by either Arctic Gas or El Paso Alaska Company) would certainly benefit the consumer, and a proposal which utilizes existing corridors would have far fewer adverse environmental effects, lower operating and maintenance costs, and less chance of cost overruns than either of those proposed."

—Barbara Heller, Environmental Policy Center

". . . there is increasing evidence that the Alcan Highway routing may be the most environmentally preferable of all the alternatives now before us."

—Brock Evans, The Sierra Club



Sheenjek River Valley of the Arctic National Wildlife Range.



"We believe that the Fairbanks highway alternative deserves further analysis and review so that it can be compared with the other two proposed routes. If your (the Senate Commerce Committee's) purpose is to assure more direct delivery of natural gas to the Midwest or Northeast, the Fairbanks route would do it."

—Cynthia E. Wilson, The National Audubon Society

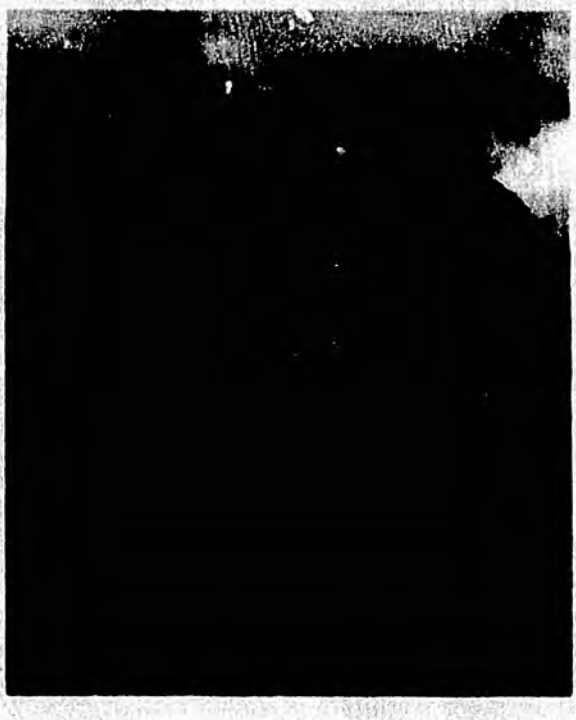
". . . the Center favors construction of the gas pipeline in a utility corridor that is already in use with the provision that the pipeline should utilize to the maximum extent facilities that are already built, including highways, construction pad, access roads, material sites, camps, etc."

—Peter Scholes, Alaska Center For The Environment

"The staff concludes that . . . the Fairbanks Alternative . . . is the most environmentally acceptable system to transport Prudhoe Bay gas to the lower 48 states."

—Environmental Staff, The Federal Power Commission







"The Fairbanks Route, because it follows the Alyeska Oil Pipeline and other transportation routes through Alaska and Canada, would avoid some of the impacts associated with the Applicant's (Arctic Gas') proposal, the Offshore, Coastal, Interior, and Cross Delta Routes."

—The Department of Interior

"The Fairbanks-Alcan route may be the least environmentally damaging . . . while, at the same time, be economically comparable to the two other basic proposals."

—Thomas L. Kimball, National Wildlife Federation



Alcan will utilize the Alyeska work pad.

Other Objections Cited

There have been other objections to the El Paso proposal. El Paso has proposed an LNG liquefaction plant site in an active earthquake zone at Prince William Sound in Alaska. In contrast the Alcan route follows a relatively placid zone north of the most active earthquake areas.

No less eminent a scientist than Dr. Edward Teller of the University of California called for a re-examination of the LNG safety issue. LNG tankers of the size proposed by El Paso have never before been built.

El Paso has proposed an LNG terminal at Point Conception, California, but faces considerable opposition. The Friends of The Earth organization recently reaffirmed its opposition to El Paso's proposed LNG plant sitings at either the undisturbed beach area of Point Conception or the alternative Los Angeles Harbor, which already is overly congested.

Also in order to site its LNG regasification plant at Point Conception, El Paso must receive approval from a number of California state regulatory agencies.

Uses Less Gas

Few doubt that Alcan will use less gas for transportation than El Paso. Not only does El Paso use gas for transportation but also for liquefaction operations. The pipeline system is also more reliable. Bad weather and rough seas could easily delay shipping, and under the El Paso plan the gas would stop moving.

The pipeline would continue carrying gas in all kinds of weather, and has the added advantage, should a mishap halt service temporarily, of having gas flow restored quickly.

In summary, Northwest's Alcan Project avoids the Arctic National Wildlife Range, disrupts no other wilderness areas, avoids earthquake zones, is more reliable than an LNG system, and would deliver the natural gas where it's needed and when it's needed.



Alcan follows Alyeska oil line for 539 miles from Prudhoe Bay to Delta Junction south of Fairbanks.



Alcan Pipeline will follow the Alcan Highway from Delta Junction to the Yukon/British Columbia border.

Canadian Issue

Supporters of El Paso have occasionally made exaggerated and sometimes outrageous claims about Canadian interests, institutions and intentions. They would have everyone believe that Alaskan gas will not be secure once it is in transmission systems owned by Canadian companies, that Canada will unfairly tax or otherwise impede the flow of Prudhoe Bay gas to the lower 48.

However, the U.S. and Canada recently initialed a treaty which protects the flow of Alaskan gas in transit through Canada and provides that any provincial taxes and duties must be nondiscriminatory. The movement and the rate of return allowed for transporting the gas will be regulated by Canada's National Energy Board (equivalent to our FPC), not by the provinces. The NEB has exclusive jurisdiction over the pipeline of our Canadian partners.

Both Alberta and British Columbia have ad valorem taxes, as do the individual states in America, and British Columbia has a fuel tax. Like taxes in the U.S., these taxes would be applicable to the Alcan Project, but only as they are applicable to Canadian gas facilities. In both Alberta and British Columbia, Alaskan gas will be co-mingled with Canadian gas and, as a practical matter, the provinces cannot tax Alaskan gas without taxing the transportation of Canadian gas.

The proposed gas flow is merely a part of the huge economic trade that passes daily between the U.S. and Canada. For example, the oil flow from western to eastern Canada, some 510,000 barrels of crude per day, goes through pipelines in the United States. At Portland, Maine, Canada imports 437,000 barrels of crude oil per day, which are transported to Montreal through the United States. All of these 947,000 barrels of oil are under the control of our federal government. Canada also transports approximately 40 percent of its natural gas supplies, or 815 million cubic feet daily, through transmission lines across U.S. corridors. All of this gas is under U.S. government control.

We at Northwest Pipeline believe it's totally unrealistic to talk of Canada discriminating against U.S. gas flowing through its provinces.

Gas for Alaska

The Alcan Pipeline Project would provide a sound and stable energy base for an expanding Alaskan economy. It is the only plan which provides a high degree of flexibility and is not locked into huge front-end investments.

Since Alcan's capital costs are lower, Alcan management can respond more quickly and positively to Alaska's future industrial requirements. Alcan provides many options for the development and delivery of Alaskan gas. One option is a spur line down the industrial corridor through Anchorage into the Cook Inlet area. Or if gas were discovered along the southern coastal area along the Gulf of Alaska, a spur could be run back to the Alcan line for redelivery of the gas to markets elsewhere in Alaska or to the lower 48 states. The Alcan system also has the flexibility to accommodate new gas discoveries in central Alaska.

As noted, the Alcan Pipeline will follow the old Haines pipeline as far as Haines Junction. If Alaska so desires, the existing spur from Haines Junction to the Haines/Skagway area could be put into service. The Haines line has the potential for transporting about 50 million cubic feet of gas per day. If Alaska decides to develop small industries in this area, Alcan will be able to supply the energy required.

These are only a few examples. There are dozens of other possibilities that could contribute to the long-term growth and stability of Alaska, including development of the petrochemical industry in Alaska and development of Alaska's vast mineral resources. The steps Alaska should take to develop new industry are for Alaska to decide. However industrial, mineral and agricultural development will surely follow gas availability, and in the long-term, this will provide the jobs and the economic base for orderly and continuing growth in Alaska.

Conclusion

If American Energy Independence is to become a reality, we must carefully consider the selection of a route and system for bringing North Slope gas to markets in the lower 48 states.

Northwest's Alcan Pipeline Project is the responsible, practical choice. The Alcan plan is in the best interests of the United States because it will bring the Prudhoe Bay gas reserves on stream two years earlier than the proposals of the Arctic Gas or El Paso, and our project will cost billions of dollars less than either of the two alternatives.

We also recognize the need to protect the state of Alaska from haphazard development, and we have designed our Alcan Pipeline in such a way that it will reliably supply the U.S. with vitally needed gas and not invade lands that are not already developed.

In Canada, we will follow the Alcan Highway through the Yukon and British Columbia and, therefore, will not invade Canada's wilderness areas. Because the Alcan Pipeline will not require additional volumes of Canadian gas to operate economically, our plan also will permit the orderly development of the frontier gas reserves at a time of Canada's choosing.

Northwest's Alcan Pipeline Project is superior in several ways: it saves time, money and the environment, and provides for the earliest delivery of Alaskan gas to U.S. markets.

We're convinced Alcan is the best plan — for Alaska, for the nation and for future generations throughout America.





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TESTIMONY-ALCAN PIPELINE COMPANY

PRESENTED BY MORRIS THOMPSON, VICE PRESIDENT

Yesterday, Federal Power Commission Administrative Law Judge Nahum Litt handed down his decision. We have seen an eleven page FPC news release on this decision. Several issues were raised concerning the Alcan pipeline route. Judge Litt asserted that Alcan's design is neither efficient nor economic since its proposed pipeline is undersized; that Alcan's three-year phased-in construction schedule is not credible; and that Alcan's proposed summer construction cannot be accomplished without unacceptable environmental impact.

The Administrative Law Judge's decision is but one step in the certification of the route to deliver Prudhoe Bay natural gas. Northwest Pipeline Corporation and its wholly-owned subsidiary, Alcan Pipeline Company, believing their proposed route to be a viable alternative, entered the FPC proceeding in July of 1976. We feel Judge Litt did not thoroughly review all of our evidence and new material. We feel that we have adequately addressed the issue of the size of our proposed line in filings before the NEB where we agree to look at varying pipeline sizes and pressures. We would only point out that currently there are no gas pipelines in the United States or Canada which operate at a pressure in excess of 1,000 psi. We propose a line which operates at 1250 psi, feeling that this is the next logical and practical advance in pipeline construction. El Paso proposes a line which operates at 1440 psi and Arctic one which operates at 1680 psi.

We believe our construction schedule is reasonable; however, in light of the Judges findings this will be reviewed. As to the proposed summer construction schedule, we feel with the experience of Alyeska Pipeline Service Company and the State and Federal surveilance there will be no environmental degradation.

We would like to raise and discuss the issues we feel the legislature should consider on the proposed royalty gas sales. Using the minimum/maximum values set forth in the Jensen Associates

Report prepared for the legislature, the value of this resource ranges from 660 million dollars to in excess of 6.6 billion dollars. The contracts presently before the Legislature sell Alaska's Royalty Gas to three companies in exchange for an unspecified amount of political support for the El Paso Pipeline System.

The realities of the situation are as follows: The Commission Staff of the FPC has recommended the Arctic Gas Pipeline route -- an all land route. The FPC Administrative Law Judge just yesterday recommended the Arctic Gas route. The people of the State of California and the Public Utilities Commission of the State of California in their brief filed with the Federal Power Commission have come out in favor of the Arctic Gas Proposal -- an all-land route. The Sierra Club, the Wilderness Society, the National Audobon Society, and the Alaska Conservation Society in their brief filed with the Federal Power Commission have come out in favor of the Alcan route. It is absolutely clear that the final decision is going to be an all-land pipeline. A significant problem facing the Arctic proposal is the Native Claims issue. The resolution of the Native Claims problems in the Alcan project is less difficult.

Turning to the contracts, they commit the State's royalty gas to three buyers. As a general rule in the gas industry, an owner of natural gas will not make a commitment to sell its gas until the price is known; the point of delivery, costs of delivery and conditions of delivery are known; and in any event, when you are a minority owner, as is the State in this instance, at the latest possible date in order to maximize your contract income by being able to capitalize on the terms given others, and minimize your losses due to changes in the political and regulatory environs. The State has committed its gas without knowing the price, associated cost or point of delivery, nor what the other sellers will achieve. The price is critical. If the price is too low, the producers will not sell their gas, but will re-inject it to gain additional oil recovery. In view of the above we feel it would not be prudent for the State of Alaska to sell its gas at this time.

Approval of the contracts will substantially reduce royalty revenues to the State because the transportation system the State has selected to support costs more to build; the markets of Tenneco and Southern Natural Gas are more remote than that of Northwest Pipeline Corporation which increases transportation costs; and there is a substantial possibility of deregulation which will create substantially different marketing opportunities than we face today. If the average cost of transportation to the "lower 48" markets is 24¢ less expensive with Alcan than with El Paso, as found by Judge Litt, then 24¢ more per mcf could be received at the wellhead or almost $800 million for the State's royalty share. Therefore, the net economic benefit for the Alcan project to the people of the State of Alaska must be greater than that of the El Paso project.

Article 12 of the "General Terms and Conditions" of the Contracts attempts to provide that any more favorable terms negotiated in the producer sale contracts will be included in the State's contract, but, it is narrowly limited to sections 3, 5, and 6 of the "General Terms and Conditions" which in and of themselves are narrow and limited to matters relating to measurement practices and billing procedures. This provision should be extended to the entire contract insofar as practical.

An additional problem with the contracts is the fact there is no set plan or performance criteria from which to measure the support provided by the purchasers for the El Paso project. The addition to the contracts of a defined plan, a budget and performance criteria will insure compliance with the State's major objective for the sale. Further, to insure all out support, the contracts should be automatically terminated if El Paso is not certificated or if the State switches its support to another route.

It can be expected that the FPC will attempt to charge Alaska for any "carrying charges" associated with excess capacity in the Prudhoe gas transportation system which is occasioned by the withdrawal of the royalty gas. The FPC is simply not going to let the "lower 48" consumer pay for capacity required to serve the varying

needs of the State. The State is not protected from bearing these charges under the proposed contracts. The contract should be amended so the State has this protection.

The proposed contracts are not necessarily deficient in what they provide, but rather in what they fail to provide.

The contract does "mortgage future discoveries that can be transported through the "pipeline" by giving the Buyers a right of first refusal to buy future discoveries up to one and a half times the amount of Prudhoe royalty gas that the State has taken under the reservation features of the contract. Northwest's preliminary offer included no such "mortgaging" provision.

Under paragraph 3.7(a) of the Contract, Alaska grants the Buyers the right to buy additional surplus gas"... at the highest price available to Seller for such gas from any other interstate bona fide purchaser". With the Buyers having a right of first refusal, it will be extremely difficult to get serious bids from other buyers because they recognize that they will simply be setting a price which the Buyers will match. Other, more beneficial terms which may be forthcoming from other purchasers, such as advance payments, are not even considered in this right of first refusal.

At the time the State takes a portion of its reserved gas, it is obligated to purchase from the Buyers a proportionate percentage of the field facilities, that is, the gathering, compression, treating and dehydration facilities which the Buyers have paid for to handle the State's gas. We believe it would have been far better for the State, as an option, for the Buyers to retain ownership of these facilities and only charge the State a cost-of-service for their use. The State would thus avoid a capital expenditure in utilizing its gas.

The limitation on processing in paragraph 9.1 of the Contract to a residue gas quality of 1000 BTU per cubic foot may effectively limit the State's ability to extract a significant portion of the liquids, particularly if any volume of inerts such as CO_2 and/or

nitrogen remain in the stream. In the "Lower 48", it is common to accept gas having a heating value of 950 BTU per cubic foot.

In an effort to gain "political support" for a pipeline system the State has failed in its charge to fully survey the market opportunities. The following issues should be considered:

1) What are the possibilities of direct sales to high priority, industrial "end users"?

2) Can the State obtain advance payments from markets unregulated by the FPC? Depending upon the regulations of a particular state, a pipeline or distributor may have an opportunity to include advance payments in its rate base, and it is not at all probable that the FPC will preclude transportation of such gas because of the advance payment feature. Certain payments of this type are currently being offered by interstate pipelines and their unregulated customers.

3) What are the possibilities that gas will be deregulated in the near future? It is fine to say that your contract protects you in the regulated environment, but we are on the threshold of deregulation, and the possibilities are many and varied.

4) What has been done to insure that the gas will be delivered by the pipeline system on a basis consistent with the widely ranging daily needs of small distribution systems and limited industrial markets?

5) What provisions could have been negotiated with the Buyers and/or transporters to provide gas liquids extraction, storage and distribution networks?

Representative Gruening in his opening remarks set forth two critical issues: what will the state give up and what will it gain in return. We feel the State will give up its opportunity to gain maximum benefits from the future sale of its royalty gas and will gain an unspecified amount of political clout.

We thank you for the opportunity to testify on this very important issue.

ALCAN PIPELINE COMPANY

MORRIS THOMPSON
VICE PRESIDENT

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December 29, 1976

The Honorable John L. Rader
Alaska State Senate
Box 2068
Anchorage, Alaska 99501

Dear Senator Rader:

Perhaps one of the most critical issues to be faced by the Alaska Legislature during the upcoming session deals with the State's sale of its royalty gas and the ultimate certification of a route to transport Prudhoe Bay gas from Alaska to markets in the lower 48. As you are aware, the Federal Power Commission has recently completed hearings on the three competing proposals, and a decision is expected from FPC Judge Litt around the middle of January.

To assist you in your preparation for this complex decision, I am forwarding several reports pertaining to the construction of the gas pipeline. The enclosed reports are: (1) the Federal Power Commission staff recommendation; (2) a brief filed by the Sierra Club, the Wilderness Society, the National Audubon Society, and the Alaska Conservation Society; and (3) a brief filed by the California Public Utilities Commission.

As you know, Northwest Energy Company has recently opened an office in Anchorage to be in a position to explain our project, answer any questions, and represent our company in Alaska. We stand ready to work with you and the people of Alaska to the ultimate conclusion of this complex issue.

Sincerely,

Morris Thompson

Morris Thompson

MT/odw
Enclosure

Foster natural gas Report

No. 1096 . . . for week ended March 17, 1977

CONTENTS

HIGHLIGHTS	Page
FPC Directs Texaco and Pipeline Subsidiary to Show Cause Why Transportation of "Uncommitted Gas" from Two Offshore Fields to Texaco's Port Arthur Refinery Should Not Cease Pending Certificate Authorization	1
Senate Government Affairs Committee Continues Hearings on Administration's Proposal to Establish New Department of Energy	2
Administration Witnesses Support Senator Jackson's OCS Bill, Subject to Certain Modifications	11
General Accounting Office Criticizes Interior Department's Procedures for Selecting and Evaluating OCS Tracts Prior to Leasing	14
Secretary of Interior Imposes Exploration and Production Deadlines as Condition to Further Extension of Nonproducing Offshore Lease; Creates Special Committee to Review Means to Bring Other Nonproducing Leases into Production	17
Interior Department Reports 4.8 Percent Increase in Total U.S. Energy Use in 1976	18
FPC Approves Transportation of Offshore Gas Reserved by Producers for High Priority Process and Feedstock Uses	19
Alcan Files 48-Inch Alternative Alaskan Gas Transportation Proposal; FPC Accepts Alternative Filing for Consideration and Provides for Submission of Supplemental Information on All Pending Projects by March 22	24
FEA Seeks Comments on Pricing and Entitlements Treatment of Alaskan North Slope Crude Oil; Suggests Transportation Costs May Require Wellhead Price of $8 per Barrel or Less for North Slope Oil To Be Competitive	28
FEA Again Reduces "Upper Tier" Ceiling Prices for Domestic Crude Oil	31
FPC Authorizes Short-Term Import of Canadian LNG at Cost of $4.45 per Mcf Delivered to New Jersey	34
Texas Eastern Withdraws Transportation Application Related to Emergency Supply of Canadian Propane Purchased by Industrial User at Delivered Cost of $7.92 per Mcf in Pennsylvania	35
Review of Week's Developments Under Emergency Gas Act	36
FPC Commissioner Watt Discusses Changes in Natural Gas Regulation Brought on by Failure to Establish National Energy Policy	37
FPC Law Judge Recommends Special Relief Rate of $1.60 for Offshore Louisiana Sales Plus Federal Income Tax Increment Subject to Retrospective Determination	38
FPC Sets Prehearing Conference on POGO Request for Special Relief Rates of $2.37 and $2.05 per Mcf for Offshore Louisiana Sales to United and Southern	40
Further Applications Filed to Implement El Paso's Second Proposed Project to Import Algerian LNG	41
FPC Sets Technical Conference for March 25 to Discuss Problems Involved in Reporting of Rate Schedule Data Via Form 108	47
CURRENT F. P. CERTIFICATE APPLICATIONS	App. p1

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(which declined to restrict the use of intrastate gas from other sources as boiler fuel) is "reasonable, appropriate on these facts, and consistent with past practice."

One further transaction considered by FPC Judge Southworth in his initial decision involved an application by Ammonia Enterprises Pipeline, Inc. (CP75-268) -- a newly formed and wholly-owned subsidiary of Continental Oil Co. -- to construct and/or acquire approximately 61 miles of line, at an estimated cost of $18 million, in order to transport gas owned by Continental from West Cameron Block 66 to Continental's West Gillis, Louisiana gas processing plant and, after processing, to deliver residue gas to an ammonia plant of Olin Mathieson Chemical Corp. in Lake Charles, Louisiana. Ammonia Enterprises proposed to transport approximately 25,000 Mcf/d, representing 100% of Continental's interest in the West Cameron Block 66 reserves, and to charge Continental 26¢/Mcf for transportation service, including a proposed return of 11.25%. The Law Judge recommended dismissal of the application because of the lack of any provision for sale of a portion of the gas in the interstate market. Ammonia Enterprises subsequently requested withdrawal of its application.

Alcan Files 48-Inch Alternative Alaskan Gas Transportation Proposal; FPC Accepts Alternative Filing for Consideration and Provides for Submission of Supplemental Information on All Pending Projects by March 22

On 3/8/77 Alcan Pipeline Co. filed an alternative 48-inch Alaskan gas transportation proposal for FPC consideration under the Alaska Natural Gas Transportation Act of 1976 (RM77-6). The 48-inch proposal -- which involves an express line from the North Slope to the Lower 48 States with no commingling of Alaskan and Canadian gas -- is an alternative to Alcan's original 42-inch project in the El Paso Alaska (CP75-96 et al.), which entailed transportation of Alaskan gas in Canada partly through new facilities and partly through existing systems of Westcoast Transmission Co. Ltd. and Alberta Gas Trunk Line Co. Ltd. Pursuant to procedures prescribed in the Alaska Transportation Act, the Commission suspended the El Paso Alaska proceeding upon issuance of Judge Nahum Litt's initial decision on 2/1/77. 1/

Concurrently, Alcan filed a motion requesting the Commission to receive and consider the 48-inch alternative proposal prior to preparation of its report and recommendation to the President on selection of an Alaskan gas transportation

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1/ The Alaska Gas Transportation Act of 1976, among other things, directed the FPC to "suspend" all proceedings relating to the transportation of Alaskan gas pending on the date of enactment "as soon as the Commission determines to be practicable after such date," to review all applications to transport Alaskan gas pending on the enactment date, and to submit a report to the President by 5/1/77 on the selection of a natural gas transportation route from Alaska's North Slope to the Lower 48 States. Such report shall recommend either a particular transportation system or no decision at this time. Any recommendation for an all-land pipeline transportation system, or a transportation system involving water transportation, must "include provision for new facilities to the extent necessary to assure direct pipeline delivery of Alaskan natural gas contemporaneously to points both east and west of the Rocky Mountains in the lower continental United States."

In addition, the FPC was authorized to provide, by rule, for the "presentation of data, views, and arguments" pursuant to such procedures as the Commission determines to be appropriate, with such rule to apply "notwithstanding any provision of law that would otherwise have applied to the presentation of data, views, and arguments." (See REPORT NO. 1076, pp9-11.)

system, due 5/1/77. Alcan contended that the Alaska Natural Gas Transportation Act directed the Commission to consider not only applications under review at the time of enactment, but also any amendments and reasonable alternatives thereto. Alcan also referred to a Senate Committee report on the Alaskan gas bill which stated the Committee's intent that the Commission "'undertake detailed consideration of the El Paso, Arctic Gas, Northwest Pipeline and Methanol proposals, together with any reasonable variations and combinations, without reference to sponsors or lack thereof.'" A similar intent, Alcan said, was expressed in a House Committee report which made clear that the Commission was to have full procedural flexibility to consider all reasonable alternatives prior to submitting a recommendation to the President. Therefore, Alcan declared, the Alaska Gas Transporation Act clearly abolished any procedural obstacles which might otherwise have prevented consideration of the 48-inch alternative -- which is clearly a "reasonable alternative" to previous proposals.

A few days earlier, on 3/2/77, Alcan also petitioned the FPC to schedule five days of oral proceedings (at the end of March) to allow the three applicants proposing competing Alaskan gas transportation projects and other major parties an opportunity to present data, views and arguments. Alcan stated that many new facts and developments have surfaced since the close of the record in the El Paso Alaska case -- including a redesign of certain features of the Arctic Gas project recently outlined in a filing to the NEB, and Alcan's proposed 48-inch express alternative -- and that this new information should be considered by the Commission. Alcan suggested that each applicant be allowed one full day to explain its proposal (including the significance of any new developments), that other major parties be allowed a day to present their views, and that a fifth day be devoted to rebuttal.

In response to the above filings, the FPC on 3/11/77 issued Order No. 558-C (RM77-6) amending prior procedural orders -- which provided for the appointment of delegates to receive data and communications from other federal agencies and from persons and groups in the private sector, except the three applicants in the El Paso Alaska case -- to enable the Commission and its delegates to receive and consider supplemental information from the applicants. The FPC specifically accepted Alcan's alternative proposal filed on 3/8/77 for consideration, and invited the applicants and other parties in the El Paso Alaska case to submit in writing any supplemental information relating to their respective proposals by 3/22/77. Statements in response to this supplemental information may be filed by 3/30/77. 1/ The Commission emphasized that it is concerned only with new information or data which were developed or became available after the close of the hearing record in the El Paso Alaska case on 11/12/76. Information or arguments repetitious to those contained in the record or briefs already filed with the Commission will not be considered.

The Commission further stated that, because of the shortness of time, it will be necessary to use some technical staff members who participated in the El Paso Alaska proceeding to perform technical and environmental analyses of the supplemental information. Any reports prepared by such Staff members will be placed in the public files at the time of presentation to the Commission. Also, in evaluating these reports, the Commission "will be cognizant of any positions previously taken by such persons."

1/ Arctic Gas subsequently advised that it would respond to Alcan's new filing to the extent possible by 3/30/77. However, Arctic Gas asserted, written responses will afford insufficient opportunity for clarification. Arctic Gas therefore suggested that an on-the-record conference, with Judge Litt presiding, be set for 3/24/77 to explore Alcan's 48-inch alternative.

Alcan's original 42-inch proposal in the El Paso Alaska case was sharply criticized by Judge Litt in his initial decision of 2/1/77. The Law Judge concluded that Arctic Gas was superior in nearly every respect to the El Paso Alaska proposal, that El Paso Alaska nevertheless had a "viable plan" which could be approved if Arctic Gas were unable to accept a certificate, but that the Alcan project did not have even a "possibility" of authorization. Judge Litt particularly criticized the inclusion of Westcoast Transmission Ltd. in the Alcan project because of the arbitrary assignment of volumes for transportation through the Westcoast system and higher costs of transportation which would result for U.S. consumers. Specifically, he said, the proposed 30%-70% split of volumes in Canada -- i.e., delivery of approximately 30% of the Prudhoe Bay gas to Westcoast at Fort Nelson, British Columbia for redelivery by Westcoast through expanded facilities to Sumas, and delivery of the remaining 70% to existing facilities of Alberta Gas Trunk Line at Zama Lake, Alberta for ultimate delivery largely to Northern Border at Monchy, Saskatchewan and possibly in part to Kingsgate, British Columbia -- was apparently adopted, in the first instance, to secure Westcoast's participation in the Alcan project by assuring that the Westcoast line below Fort Nelson, British Columbia "would be allocated a sufficient volume of gas to fill existing excess capacity, thereby warranting construction of additional loop facilities which would inure to the ultimate benefit of Canadian customers." Also, he noted the cost of deliveries by Westcoast to Sumas would exceed the cost of deliveries to Kingsgate. The Law Judge further declared that the tariffs of both Westcoast and AGTL disclosed an "overt Canadian bias" and contained cost allocation provisions "totally unacceptable" to U.S. consumers.

In addition, Judge Litt concluded that two critical elements of Alcan's proposal -- construction in a three-year period (with completion in 1981) and financing in a separate time frame from the Maple Leaf project (sponsored by the same Canadian companies which are participants in Alcan) — were totally unsupported. Completion of the Alcan project by 1981 simply "cannot occur," he stated, and the financing arrangements proposed for Alcan and Maple Leaf require "intricate timing" which lacks any evidentiary support. Accordingly, "as presently proposed, even with Alcan's willingness to build anything anyone wants (as long as it does not oust Westcoast and AGTL from their Maple Leaf project), there is not enough left of its original proposal to serve as a basis for granting its application." (See REPORT NO. 1090, pp9-11 and App. pp1-23.)

Extensive exceptions were filed by Alcan and other parties to Judge Litt's initial decision on 3/1/77. Among other things, Alcan requested that the initial decision be disregarded by the Commission because of its "pervasive bias" against Alcan. (See REPORT NO. 1095, App. pp1-26.)

Alcan 48-Inch Alternative Proposal

Alcan expressed the view that its original 42-inch project (with an average day design capacity of 2.4 Bcf/d) was optimally sized to transport initial and ultimate volumes expected to be available in northern Alaska (2.0 Bcf/d), and afforded ample expansibility (to 2.9 Bcf/d) with the addition of compression facilities. However, Alcan decided to submit a 48-inch express line alternative in view of suggestions by various parties -- including the NEB, the FPC Staff and others -- that such design might be preferable. While entailing increased capital costs, Alcan said, a 48-inch express line provides "identifiable advantages" in terms of fuel savings, expansibility and lower transportation cost of service. Equally important, these advantages are achieved without loss of the substantial benefits inherent in a Fairbanks Corridor route.

Unlike Alcan's 42-inch project, the 48-inch alternative would involve no commingling of Canadian gas, although segments in Canada would be owned and operated by Foothills Pipe Lines (in the Yukon and Saskatchewan), Westcoast (in British Columbia) and AGTL (in Alberta). The route of the proposed alternative would be the same as the original project in Alaska and the Yukon, but would deviate in British Columbia and Alberta. Specifically, the alternative route would extend 833 miles from Watson Lake on the Yukon-British Columbia border to James River, Alberta -- somewhat south of the 42-inch route via Fort Nelson, British Columbia and Zama Lake, Alberta -- where the line would divide, with one leg to extend to Kingsgate, British Columbia and the other to Monchy, Saskatchewan via Empress, Alberta. With the volumes destined for each Lower 48 market region presently unknown, Alcan assumed delivery of 659 MMcf/d to Kingsgate as shown in Pacific Gas Transmission's pending application and the remaining 1,569 MMcf/d to Monchy, resulting in a 29%-71% split.

Alcan assumes commencement of deliveries at a level of 1.6 Bcf/d on 10/1/81, building up over a 15-month period to 2.4 Bcf/d by 1/1/83 and thereafter. With the addition of compression, Alcan said, the alternative system could be expanded to 3.2 Bcf/d on an average day basis (or 3.4 Bcf/d on a peak day basis).

Alcan estimated the total capital cost of the 48-inch alternative, including facilities required in the Lower 48 States, at $6.7 billion in 1975 dollars and $9.6 billion escalated through the year of construction. While these figures are somewhat higher than the estimated costs of the 42-inch project ($6.3 billion and $8.7 billion, respectively), Alcan said, the 48-inch alternative would require only 6.4% of input volumes for fuel compared to 13.2% in the case of the 42-inch proposal. Moreover, this reduced fuel consumption would more than offset higher annual costs due to greater capital costs, thereby resulting in a lower average unit cost of service. Specifically, the average cost of service of the 42-inch proposal over the 1983-1987 period is estimated at $1.61/Mcf in 1975 dollars ($2.20 in escalated dollars), whereas the estimated average cost of service of the 48-inch alternative over the same period is $1.43/Mcf (or $2.05 in escalated dollars).

Further, Alcan declared, the 48-inch alternative can deliver gas to Lower 48 markets at a lower unit transportation cost than either Arctic Gas or El Paso. For example, in 1984-1987 (the first four years of full operation for all three projects), the escalated transportation cost for the 48-inch alternative will be 19¢/MMBtu less than Arctic Gas and $1.02/MMBtu less than El Paso.

Beyond the unit cost and fuel consumption advantages over the Arctic Gas and El Paso Alaska proposals, Alcan stressed that the 48-inch alternative -- like its 42-inch project -- had several additional advantages, including (1) the ability to commence deliveries two years earlier than either of the other applicants; (2) less susceptibility to construction delays and cost overruns; (3) less operation and maintenance risk due to yearround surface access to the route on all-weather roads; and (4) environmental avoidance of unique wilderness areas such as the Arctic National Wildlife Range and Chugach National Forest.

The Mackenzie Valley Pipeline

HUGH McCULLUM

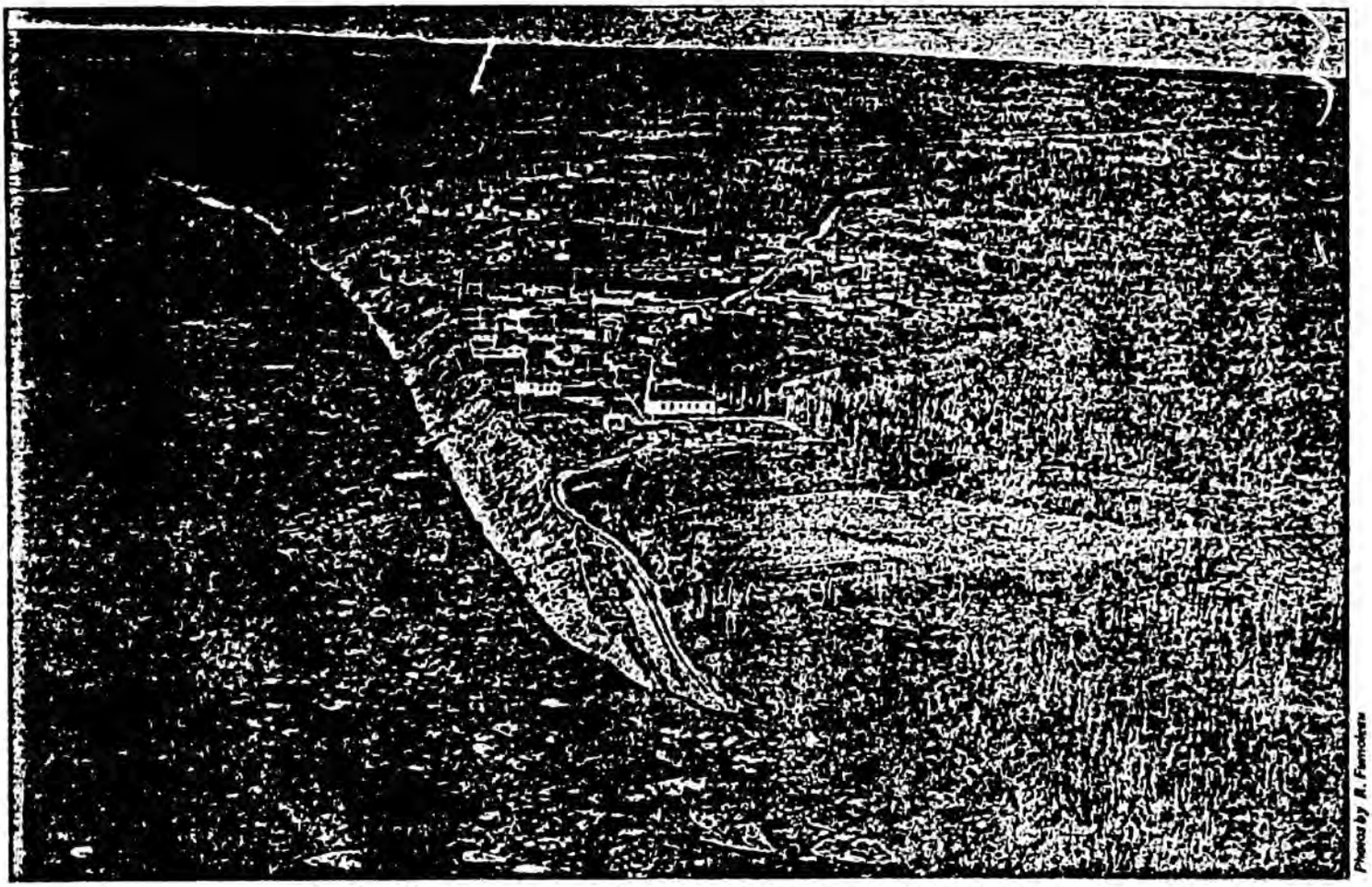

Photo by R. Fumoleau

Fort Good Hope on the Mackenzie River, about twenty miles south of the Arctic Circle.

The hearings droned on in the plush Explorer Hotel as they had off and on for sixteen months. The pipeline people were telling the royal commissioner what a great thing it would be for the Native people of Canada's last frontier if a huge natural-gas pipeline were built down the 2,800 miles of the Mackenzie Valley—career opportunities, a chance to get off welfare and into the wage economy, a chance to participate in the "development" of Canada's North.

Outside, in the rocky city of Yellowknife (population 9,000), situated on the north shore of Great Slave Lake in Canada's vast Northwest Territories, the ambulances started to scream. A mile away from the gleaming white hotel and the carefully muted and very polite hearings, down in the part of town where the middle-class white bureaucrats don't live, an eighty-four-year-old Indian, his two grandchildren and a young Native girl lay dying from gunshot wounds. A young white man from southern Canada was subsequently charged with their murders.

To some it was just another outburst of insensate violence, perhaps associated with booze or the frustrations that so often mar life in the North. To connect it with the largest industrial development project to date in Canada's history was emotional nonsense, proponents of the pipeline would argue. But a couple of days later, before going to bury his slain parishioners, a French Roman Catholic priest who has spent more than twenty years of his life with the Native people of the Northwest Territories, stood before the commissioner, Mr. Justice Thomas Rodney Berger of the Supreme Court of British Columbia, and dedicated his testimony to the victims:

> They were not shot by a killer; they were the victims of the so-called development that has taken place in the North for the last thirty or forty years, which created miserable and unjust conditions for the poor people of this district.

Hugh McCullum is a Canadian journalist based in Toronto.

Mr. Justice Berger has been accustomed to such unusual testimony during his tenure as the sole commissioner of the Mackenzie Valley Pipeline Inquiry, a "royal commission" set up by the Canadian government to determine the terms and conditions that should be attached to the construction of a natural-gas pipeline through Canada's enormous, thinly populated and fragile sub-Arctic. The royal commission is an institution unique to the British parliamentary system. Designed to investigate and make recommendations to Parliament and the government on specific issues, royal commissions are independent, investigative bodies with the power to recommend action, but without the power to enforce their recommendations. They have quasi-judicial powers, such as the right to hear evidence under oath and to subpoena witnesses. They can have one or more commissioners and are given sufficient funds to employ staff, travel and hold enough hearings to complete the work assigned to them under the terms set down for them by the government. The Mackenzie Valley Pipeline Inquiry has but one commissioner—Mr. Justice Berger. It cannot decide whether a pipeline should be built; nor is the government bound to accept its recommendations. But the process of the inquiry, rather than the final recommendations—important as they will be—is the key to the commission's importance. By allowing a broad spectrum of opinion to express itself, including that of industry, environmentalists and Native peoples, it has opened up the issues of Canada's northern development and Native claims in a way no other forum could have done.

The 17,000 Indians and Metis (people of mixed ancestry), 3,000 Inuit (Eskimos) and 9,000 whites who are scattered along the proposed route for the Mackenzie Valley pipeline present a social situation unique in North America, for nowhere else on the continent are Native peoples in the majority. The proposed pipeline has become a source of considerable tension between the Natives, almost all of whom oppose the project, and the whites, who are among its most ardent supporters. The whites see it as yet one more chance to open up and develop the frontier. The Natives see it as the end of their cultures. As they have told Berger over and over: "Our land is our life, our mother; if you destroy that, you destroy us."

The project is immense by any standards. Even the pipeline companies, who sometimes compare it to "a thread across a football field" ("More like a slash across the Mona Lisa," one ecologist scoffed), boast that it is



A Dogrib Indian girl from the village of Dettah.

the largest project ever undertaken by private enterprise anywhere in the world. Of course, more than just a gas pipeline is being considered. Berger's inquiry, for example, is charged with considering possible development of a mighty transportation corridor that could include railroads, highways and power lines within the next decade or so.

Canadian Arctic Gas Pipeline Ltd., a consortium of major oil, gas and utility corporations in the U.S. and Canada (The number of participating corporations fluctuates dramatically. Originally there were about twenty-seven, but the number has dropped as low as twelve and is currently thought to be about fifteen), wishes to build a forty-eight-inch, 2,600-mile pipeline to carry natural gas across the Alaska North Slope and the Mackenzie Delta to markets in Canada and the southern United States. The original cost of the Arctic Gas Line has been estimated at $8.3 billion; undoubtedly inflation has increased this forecast to more than $10 billion. The pipeline would have a capacity of 4.5 billion cubic feet of gas a day, enough to heat 45,000 homes for an entire year. The line would originate at Prudhoe Bay in Alaska, head east across the North Slope and Arctic National Wildlife Range, and cross the extreme northern Yukon to the Mackenzie River Delta on the shore of the Arctic Ocean. Here, it would pick up Canadian gas and continue south along the river, crossing finally into Alberta, where delivery lines would transport gas to markets in Canada and the U.S.

A second consortium, Foothills Pipe Lines Ltd., a largely Canadian group, wishes to build a "Maple Leaf" line to bring Mackenzie Delta gas to Canadian markets via a smaller forty-two-inch line costing, they estimate, some $4.5 billion, but after inflation, probably closer to $5 billion.

Both lines would be buried and carry chilled gas. Both lines would be constructed during winter months only over a three-year period. Each line is currently the object of intense scrutiny in Canada by the National Energy Board, a federal regulatory agency that will decide if there is current need for and sufficient supply of the gas and will finally recommend to the Trudeau government if, and to whom, a certificate of public convenience and necessity should be granted. Its hearings, already the subject of legal actions and contradictory testimony as to supplies and demands, are not expected to conclude before March 1977, even though Arctic Gas had hoped for a decision last year.

To understand the impact of the Mackenzie Valley natural-gas pipeline on the environment, two phases of the inquiry were set aside to examine the physical and living impacts. Arctic Gas spent almost $40 million on environmental studies that have been severely criticized by the Canadian Arctic Resources Committee (CARC) and the Northern Assessment Group, the two major environmental interveners in the inquiry. Among the unanswered questions was the effect of the pipeline on animal migration patterns, how noise would affect bird migration and how the more than 300 river crossings would affect the fish and other marine life. Gravel scooped from streams for construction purposes is expected to have a serious effect on

spawning grounds. The effects of possible blowouts and ruptures on the permafrost and tundra are still unknown.

Arctic Gas experts have been forced repeatedly to admit they lack complete environmental data and that there will indeed be some environmental impact. But they assure everyone that the impact "would be minimized" and that they will know more about the potential problems by the time the pipeline is started.

CARC remains highly skeptical:

> Those concerned for the environment and for the people of the North will receive cold comfort from the realization that the Canadian Arctic Pipeline Ltd. consultants did the best they could to develop appropriate methods within the constraints of economics and in the face of an unprecedented task. Nor can they receive solace from the assurance that the bugs will be solved by the time of the final design.

The environmental impact of the project is enormous. A summary of the potential impacts is frightening. An outline of the impacts prepared by the autonomous Environmental Protection Board indicates the following potential damage, unless stringent conditions are placed on the applicants by the findings of the Berger inquiry—conditions which, of course, would have to be imposed ultimately by the federal cabinet:

- North of the sixtieth parallel, the project will scar the land with its right-of-way 120 feet wide and 1,350 miles long. It will bring to previously undisturbed areas the noise and activity of 6,000 workers and 3,000 pieces of major equipment. Roads and access bases will make the land more accessible, and less and less land will remain in its natural state.
- Enormous impact can be expected on bird populations through aircraft, construction activities, human presence, pollution, habitation destruction and hunting. Swans, geese and ducks face the most serious disruption and, of course, the effect of possible gas leaks is still unknown.
- Caribou, marine mammal and sheep populations could be seriously depleted by excessive noise, hunting and harassment by construction crews, as well as by possible changes in migratory patterns.
- Fish numbers could be reduced through excess fishing, introduction of toxic materials into the water, destruction of spawning beds, and generally easier access to lakes and streams.

The board, whose report is deliberately low key, also lists a score of other dangers ranging from removal of archaeological sites to rather minimal effects of the project on air and water. According to the board, the effects could be minimized if time and money were spent by the applicants to build the pipeline with environmental safeguards and if the Canadian government were prepared to strengthen its regulation and enforcement mechanisms. The board expressed little hope that either of these eventualities might occur.

The main thrust of its report is the almost total lack of adequate environmental technology to protect the fragile ecology of the North and the lack of experience or precedent in building such a project through Arctic and sub-Arctic terrain.

The El Paso Gas Company of Houston, Texas, presented yet another plan to the United States Federal Power Commission in 1974, whereby Prudhoe Bay gas would be piped south to Valdez along the same route as the Alaskan oil pipeline. There it would be liquefied and loaded into specially built tankers, and shipped to ports on the West Coast. El Paso claimed that the proposed line would deviate no more than a mile from the oil line and that the same environmental factors would apply. Arctic Gas disputed this, claiming that many mountain passes enroute were too narrow to accommodate more than one pipeline. The company said that El Paso Gas would have to reroute more than a hundred miles, thereby requiring additional studies and delays, which would in turn increase the cost of the project. Environmentalists tended to prefer the El Paso route because it would avoid the Arctic National Wildlife Range and utilize an existing corridor, but at the same time they foresaw problems with the construction of additional facilities at Gravina Point near Valdez and new ones in California, where the gas would be shipped.

Then, in May 1976, at the eleventh hour and as debate continued over the first two routes, another consortium

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Dogrib Indians ice fishing on Great Slave Lake, source of the Mackenzie River.



A woman of the Hare tribe tans a moose hide near Fort Good Hope.

formally applied to Canada's National Energy Board and the U.S. Federal Power Commission for a third route, one that environmentalists had been advocating for some time. A U.S. company—Northwest Pipeline—and three Canadian companies--Westcoast Transmission, Alberta Gas Trunk, and Foothills Pipelines—proposed to build a gas pipeline utilizing the existing oil corridor south to Fairbanks, then following the Alaska Highway through the Yukon to Fort Nelson, British Columbia, and Zama Lake, Alberta. Here the gas would enter existing Canadian transmission facilities and flow directly to markets in the American Midwest. For Canada, this proposal would postpone the unwelcome decision whether, when, how and by whom a Mackenzie pipeline should be built. It would also avoid most of the environmental and social problems associated with the Arctic Gas proposal. Finally, initial capital cost would be $5-6 billion, about half the cost of the Mackenzie Valley route. Both the government of B.C. and the territorial government of the Yukon enthusiastically endorsed the Alaska Highway proposal, but the Council for Yukon Indians, in its final statement to the Berger inquiry in November 1976, said it wanted no pipeline in the southern Yukon until native land claims were settled and implemented.



Scheduled to report early this year, Berger's commission is the most ambitious public inquiry ever conducted in Canada. For sixteen months now, and 40,000 pages of transcripts later, the man everyone in the North knows simply as "the Judge," has heard testimony on the impact this pipeline will have on the people and the environment of the Mackenzie Valley, an area of some 450,000 square miles stretching from the Beaufort Sea in the north to the sixtieth parallel in the south.

A precise man, Tom Berger conducted the inquiry into the pipeline's engineering, environmental and social problems with strict rules of procedure, often getting tough with the high-priced legal talent and costly consultants who flew in and out of Yellowknife for a daily fee plus expenses. But even the most objective observer could not fail to notice the difference between the formal and the community hearings. To many of the Native people scattered through the vastness of bush and streams, lakes and tundra, Judge Berger had become a kind of folk hero. To the young people, who stood around a little defiantly, waiting, and the old people, who had never seen so many strangers before, the Judge had something the people of the North recognize—integrity. They saw him as honest, decent and fair, and above all he listened. Even when, in the countless, drafty community halls and schools the hearings went on until 2 a.m., and the visiting press groaned and yawned as yet another witness shuffled forward—even then he sat and listened intently. He has used

Continued on page 29

Mackenzie Valley Pipeline

Continued from page 7

freighter canoes, float planes, ancient DC-3s and helicopters to conduct hearings in twenty-eight Arctic settlements, almost all of which, except Yellowknife, have Native majorities. He has listened with awesome patience and politeness to endless hours of testimony in English, Slavey, Dogrib, Loucheux, Hare, Chippeweyan and Inukitut, the language of the Eskimo.

The testimony of the experts over the last several months has elicited serious questions about the pipeline construction from the engineering as well as environmental and sociological points of view. Conflicting testimony has left undetermined the possibility that in sensitive permafrost zones, the pipeline may buckle and damage the environment. Both applicants for the Mackenzie line want to bring in 6,000 construction workers with enormous machines, equipment and staging areas to lay the pipeline. Environmental witnesses, drawing on the experience of the Alyeska oil pipeline crossing similar terrain in Alaska, have raised serious questions that construction companies, trying to meet completion deadlines, would shatter the delicate ecological balance. A number of other technical experts have questioned the safety and proposed size and composition of the pipeline.

Overshadowing the battery of technological evidence, however, has been the complex question of Native land claims, an issue entangled with an incredibly insensitive and archaic bureaucracy in Ottawa designed to administer the lives of Canada's Natives. Simply put, the Natives of the North want their land claims settled before one spadeful of earth is moved, and they do not want them settled by selling off their rights for cash. They want some form of self-determination, development of renewable resources, protection of the environment, their own economic involvement with Northern development and, above all, control of the land they have occupied "since time immemorial."

And so, the Native people have tried to organize themselves and have claimed all 450,000 miles of the Mackenzie Valley as theirs. They are saying that the real question for Canadians to decide is whether Canadian justice can accommodate them. Can they survive as the first people of this country with special rights, or must they be assimilated and forever cease to exist as a cultural entity? For Native people know, clearly and unequivocably, that in order for them to be themselves, the land and the animals and the birds and the fish must continue to be part of their lives.

If white people come with bulldozers, seismic lines, helicopters, and pipes, then lakes will be blasted and fish and animals most certainly killed. People and machinery will scare away the caribou and the fox. Traditional rutting, nesting and calving areas will be disrupted. If the land is threatened, then so are the Native cultures.

In testimony last April during the socio-economic phase of the Berger inquiry the Natives painstakingly laid out evidence that was a shocking indictment of past injustices in the North by paternalistic federal and territorial governments. They presented an overview of the colonial patterns of resource development and a blueprint for an Indian-controlled future that they claim is constitutional, practical and essential to their very survival. At the center of their struggle is the Dene Declaration, a proclamation that states that the Indian peoples have the right to self-determination within Canada and to a measure of control over their own lives. (*Dene* is an Indian word meaning "people" and common to the Mackenzie.)

Reaction of white northerners

Spurred on by the former Minister of Indian Affairs and Northern Development, Judd Buchanan, who described the document as "gobbledygook" that could have been written by a tenth-grade student, many of the white northern population reacted by leveling accusations of "creeping socialism" and "insurrection" against the Dene, branding them separatists or worse. (Warren Allmand, the new minister, has not committed himself about the pipeline and says he will place a great deal of weight on the Berger Commission report.) Other white northerners, although sensitive to the Natives' claims to the land, feared that if a pipeline were not built they would lose a once-in-a-lifetime chance for better jobs and a healthier economy. And if the Natives were given control over the land, they asked, what would happen to whites? Would they be pushed aside?

The Indian and Metis people themselves did not escape the tremendous pressure exerted upon their lives and communities by the proponents of the Mackenzie Valley pipeline. A small group of Native people, predominantly Metis, who had until recently supported the Dene Declaration and were working in unison to develop a joint land claim, broke away, claiming a separate identity and a desire to develop their own land-claims proposal. A pipeline, they say, is closely linked to their economic future.

Impasse continues

The impasse shows little sign of moderating. In an atmosphere of division and suspicion on the part of Native groups and hostility and confrontation by whites, the government could exert pressure on the Native people to settle their land claims quickly, issue a license to build the pipeline, and start the construction whenever it wished. The result of such an action would be politically explosive. Some Natives have promised quite calmly to lay down their lives for the land. Opposition to the pipeline from southern supporters of Native rights, such as the churches, environmentalists and other public-interest groups, would be enormous. The National Energy Board is already hearing evidence that a pipeline with a life expectancy of twenty years at best, and more likely ten, is only postponing the inevitable day when alternative energy sources and far stricter conservation measures must be taken.

During its southern hearings, the Berger inquiry heard hundreds of citizen-produced briefs supporting the idea of stopping the pipeline altogether or delaying it until further examination of the issues could be undertaken. A church-supported idea for a suggested ten-year moratorium rapidly caught the imagination of Canadians wherever Berger went. In essence, the moratorium would do four things: settle land claims justly for the Native peoples; develop environmental technology and experience in the North so that questions of ecological safety could be guaranteed; allow Native peoples to develop their own economic development programs using renewable rather than nonrenewable resources and to engage in public development of energy policies in Canada based on conservation rather than consumption.

Industry and government quickly

moved to quell support for the proposed moratorium by claiming it to be unrealistic, and by threatening southern Canadians and Americans with "freezing to death in the dark" because of acute energy shortages. Indeed, serious pressures from American consumers in the Midwest have put the issues of environmental protection and Native rights in Canada in the position of being dealt with hastily, inadequately and as secondary to the economic needs of the U.S. But even considering the shortages of natural gas that have plagued the American Midwest and East during this, the coldest of recorded winters, a Mackenzie pipeline is not the only, or even the best, solution. The recently proposed Alaska Highway route would deliver gas to the same region more cheaply and without the attendant social and economic disruption.

The Arctic Gas proposal, one senior Ottawa energy official admitted, is primarily to bring U.S. gas from Alaska across Canada to American markets; any "piggybacking" is window-dressing, for the reserves of gas in Canada are insufficient at this time to warrant a pipeline. Nor are Canadians desperately short of gas. Reserves from conventional fields in the south could probably meet Canadian needs for the next thirty years if deliverability and conservation regulations were improved.

Increasingly nationalistic, many Canadians are sensitive to any further American involvement (already more than seventy-five percent) in their economy. There is fear that the decisions for the Arctic Gas pipeline are to be made in Washington, rather than Ottawa, because of the enormous political persuasion of the giant multinational oil companies, which control most major Canadian producers. Ottawa seems to lack the will to resist. Prime Minister Trudeau went on record two years ago as favoring the Arctic Gas proposal and may think the pipeline is a foregone conclusion.

Berger's decision

Government officials have attempted to undermine Berger's inquiry by saying it is too long (almost two years before completion) or too expensive (an estimated $3 million). He gets a little testy with that: "If I'm going to conduct this inquiry, I'm going to do it right. It takes time, but if Canada can't take time to make an informed decision about what is going to happen to our last wilderness and its people in the northland, then what has Canada got time for?"

What Berger will recommend is still a matter for speculation. Many think he will call for a halt until land claims are settled. It seems clear he will require stringent conditions to assure environmental protection. Some people hope for a full moratorium. What the government will do with his report is anyone's guess. Undoubtedly Berger's high profile will make it difficult to ignore his recommendations. But regardless of reports, conditions, high-level international politics, energy shortages or national feelings, the people of the Mackenzie and their land remain inseparable. The question for them is clear and it is repeated over and over. It is a question of survival.

Chief Frank T'Selie of Fort Good Hope told Judge Berger and the presidents of Arctic Gas and Foothills how he saw it:

> There is a life-and-death struggle going on between us, between you and me. Somehow in your carpeted boardrooms you are plotting to take away from me the very center of my existence. You are stealing my soul. By scheming to torture my land, you are torturing me. By plotting to invade my land, you are invading me. If you ever dig this trench through my land you are cutting through me.
>
> You are the twentieth-century General Custers. You have come to destroy the Dene nation. You are coming with your troops to slaughter us and to steal land that is rightfully ours.
>
> You are coming to destroy a people who have a history of 30,000 years. Why? For twenty years of gas? Are you really that insane?
>
> Our Dene nation is like this great river. It has been flowing before any of us can remember. We take our strength and our wisdom and our ways from the flow and direction that has been established by ancestors we never knew. We will live out our lives as we must and we will die in peace because we will know that our people and this river will flow on after us.
>
> We know that our grandchildren will look after this land and protect it and that 500 years from now someone with skin my color and moccasins on his feet will climb up these ramparts and rest and look out at the river and feel that he too has a place in this universe, and he will thank the same spirits that I thank, that his ancestors have looked after his land well and he will be proud to be a Dene.
>
> It is for this unborn child, Mr. Berger, that my nation will stop this pipeline, it is so that this unborn child can know the freedom of this land that I am willing to lay down my life.

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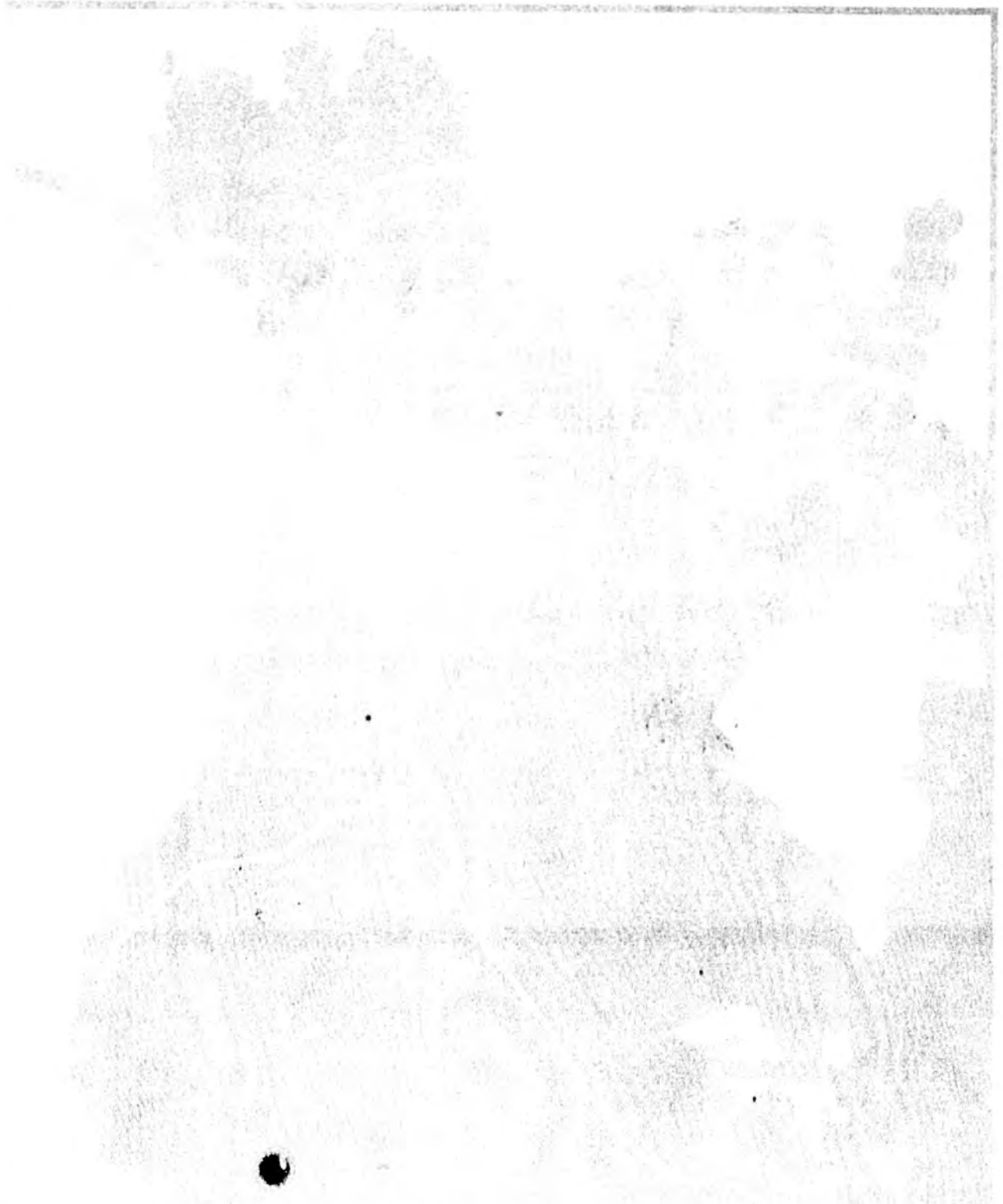
Decision and Report to Congress on the Alaska Natural Gas Transportation System



Executive Office of the President
Energy Policy and Planning

September 1977

TO THE CONGRESS OF THE UNITED STATES:

Natural gas has become the Nation's scarcest and most desired fuel. It is in our interest to bring the reserves in Alaska to market at the lowest possible price. Consequently, I am today sending the Congress my decision and report on an Alaska Natural Gas Transportation System.

The selection of the Alcan project was made after an exhaustive review required by the **Alaska Natural Gas Transportation Act of 1976** determined that the Alcan Pipeline System will deliver more natural gas at less cost to a greater number of Americans than any other proposed transportation system.

The Alcan proposal, taken together with the recently signed Agreement on Principles with Canada, demonstrates that our two countries working together can transport more energy more efficiently than either of us could transport alone.

Unnecessary delay would greatly increase the total cost of the pipeline system. I urge the Congress to act expeditiously to approve this important project.

Jimmy Carter

THE WHITE HOUSE,
September 22, 1977

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TABLE OF CONTENTS

	Page
OVERVIEW	i
DECISION ON AN ALASKA NATURAL GAS TRANSPORTATION SYSTEM	1
Preface - Statutory Requirements for a Decision on an Alaska Natural Gas Transportation System	2
Section 1 - Designation of the Person to Construct and Operate (Applicant)	4
Section 2 - Description of the Nature and Route of the Approved System	6
Alcan pipeline route in Alaska	6
Alcan pipeline route through Canada	7
Alcan pipeline route in the continguous United States	10
Section 3 - Identification of Facilities Included Within "Construction and Initial Operation"	12
General project description	12
Alcan compressor stations and refrigeration facilities in Alaska	17
Other Alcan pipeline facilities in Alaska	18
Lower 48 facilities	19
Western Leg	20
Eastern Leg	21
Section 4 - Identification of Provisions of Law That Have Been Subsumed Into This Decision and Require Waiver	23
Section 5 - Terms and Conditions and Enforcement	26
Terms and Conditions	27
Enforcement	40
Section 6 - Pricing of Alaska Gas	44
Section 7 - Agreement on Principles Applicable to a Northern Natural Gas Pipeline	47

Page

REPORT ACCOMPANYING A DECISION ON AN ALASKA NATURAL GAS TRANSPORTATION SYSTEM..... 84

Preface..... 85

Chapter I - Desirability of an Alaska Gas Project.. 87

Natural gas supply..... 87
United States..... 87
Canada..... 92
Economic considerations..... 93
Conclusion..... 98

Chapter II - Financial Analysis..... 100

Conclusions..... 100
Analysis..... 101
Alcan financial plan..... 104
Capital requirements and sources of funds 106
Capital markets..... 108
Cost overrun financing..... 114
Project participants and beneficiaries... 115
Transfer of financial risks..... 119
Variable rate of return..... 122
Cost to the consumer..... 124
Financeability..... 125
Finding regarding financing..... 127

Chapter III - Environmental and Socioeconomic Considerations..... 128

The environmental advantages of Alcan..... 128
Presidential finding-Environmental impact statements..... 131
Socioeconomic impact..... 133
Conclusion..... 134

Chapter IV - Economic Considerations..... 136

Potential for cost overruns and time delay.... 136

Comparisons with Alyeska..... 138
Cost overrun estimates under expected conditions..... 149

Page

Cost of service..... 158

Alcan and El Paso: Cost of service comparison..... 160
Alcan cost of service pursuant to the Agreement on Principles..... 163

Net national economic benefit..... 174

Chapter V - Safety, Reliability and Expansibility.. 181

Safety of design and operation..... 183

Potential for Service Interruption-Reliability..... 191

Efficiency of design and capability of expansion..... 193

Chapter VI - Organization of Federal Government Involvement After System Selection.... 197

Introduction..... 197

The organization of Federal involvement with the Alcan project..... 201

Implementation of organizational plan..... 204

Coordination with the States..... 205

Chapter VII - Impact on Competition in the Natural Gas Industry..... 208

Gas transmission and distribution industry.... 209
Gas producers..... 210

Chapter VIII - National Security..... 213

Chapter IX - Western Leg..... 217

The authorization of facilities..... 217

The Western share of Alaska gas..... 219
Increased and accelerated Canadian exports..... 221

Estimated excess capacity in existing systems..... 222

Existing facilities of the Western States..... 222

Direct delivery 223

Displacement..... 224

Size and volume of a Western Leg..... 231

Conclusion..... 232

Chapter X - Relationship of the Decision to the Recommendation of the Federal Power Commission..... 235

Chapter XI - Agreement with Canada..... 238

Issues..... 238

Taxes and impact assistance..... 239
Native claims..... 241
"Canadian content" regulations..... 242
Employment..... 243

Analysis of the agreement with Canada..... 245

Chapter XII - Summary of Comments Received..... 266

Comments on specific projects..... 267

Arctic gas..... 267
El Paso..... 268
Alcan..... 269

Comments on specific FPC recommendations..... 270

Formula wellhead pricing..... 270
Minimum throughput requirements..... 270
Widespread distribution of gas..... 270
Western leg..... 271

OVERVIEW

In the winter of 1967-68 a wildcat rig drilling Prudhoe Bay State Well No. 1. struck a formation that, when later delineated, proved to be the largest petroleum reserve on the North American continent. The Prudhoe Bay field contains over 20 trillion cubic feet of saleable natural gas and more than 9 billion barrels of recoverable oil. **This gas represents approximately 10 percent of the known gas reserves in the United States.**

In 1969, the State of Alaska held a lease sale and received almost $1 billion in lease bonuses. Shortly thereafter, the three major leaseholders in the Prudhoe Bay Oil Pool announced their intention to build an oil pipeline through Alaska from Prudhoe Bay to a site on the Gulf of Alaska. After an initial flurry of activity, the Trans-Alaskan Pipe Line System (TAPS) became entangled in legal disputes until November of 1973, when the Congress and President approved the plan and provided for expedited procedures. Construction was started immediately thereafter and the first flow of oil through the pipeline commenced on June 20, 1977.

Another set of studies began in 1969 which eventually resulted in applications to the Federal Power Commission (FPC) in the U.S. and the National Energy Board (NEB) in

Canada for a certificate to construct a pipeline to move Alaskan and Mackenzie Delta gas to United States and Canadian markets, respectively, by Arctic Gas (Alaskan Arctic Gas Pipeline Company and Canadian Arctic Gas Pipeline Limited) in March 1974.

In September 1974, El Paso Alaska Company filed an application to transport Prudhoe Bay gas by a pipeline adjacent to TAPS to the Gulf of Alaska, liquify it, and ship it to California by LNG tanker. There the LNG would be regasified and provided to its purchasers either directly or by displacement through existing pipeline facilities.

Under the Trans-Alaska Pipeline Act Congress had authorized and requested the President to determine the willingness of the Government of Canada to authorize a natural gas pipeline for Alaska gas across Canada and whether intergovernmental agreements would be needed to achieve that end. After discussions, the Government of Canada indicated they were prepared to consider an agreement of general applicability as opposed to an agreement on a specific pipeline. Negotiations on a Transit Pipeline Treaty were undertaken, and a treaty was finally signed on January 28, 1977, and entered into force on September 19, 1977. It will govern all existing and future transit pipelines in the two countries for thirty-five years.

On April 7, 1975, a proceeding before FPC Administrative Law Judge Nahum Litt was initiated and over 45,000 pages of testimony and more than 1000 supporting exhibits were compiled before it was concluded. Similar hearings were held by the NEB in Canada.

On July 9, 1976, Alcan Pipeline Company and Northwest Pipeline Company (Alcan) filed the third application with the FPC for a certificate to transport Alaskan gas. The Alcan plan, as modified in March 1977, calls for a pipeline following existing utility corridors from Prudhoe Bay through Canada to the U.S. markets.

Recognizing the shortages of natural gas, the large reserves of natural gas in Alaska, the benefits resulting from the expeditious construction of a transportation system for that gas, and the potentials for delay inherent in the normal regulatory approach to a project of this magnitude, on October 22, 1976, Congress passed the **Alaska Natural Gas Transportation Act of 1976** (ANGTA). Designed to draw upon all relevant governmental, public and private expertise in reaching a Presidential and Congressional decision on construction of the best possible Alaska natural gas transportation system, if any, the statute established a unique process for reaching an expedited decision.

This Decision and Report on an Alaska Natural Gas Transportation System meets the statutory decision-making requirements of the Alaska Natural Gas Transportation Act and represents the culmination of the Executive Branch function in the process established by the Bill.

The Act's Statement of Purpose clearly sets out the Congressional objectives:

> "Sec. 3. The purpose of this Act is to provide the means for making a sound decision as to the selection of a transportation system for delivery of Alaska natural gas to the contiguous States for construction and initial operation by providing for the participation of the President and the Congress in the selection process, and, if such a system is approved under this Act, to expedite its construction and initial operation by (1) limiting the jurisdiction of the courts to review the actions of Federal officers or agencies taken pursuant to the direction and authority of this Act, and (2) permitting the limitation of administrative procedures and effecting the limitation of judicial procedures related to such actions. To accomplish this purpose it is the intent of the Congress to exercise its Constitutional powers to the

fullest extent in the authorizations and directions herein made, and particularly with respect to the limitation of judicial review of actions of Federal officers or agencies taken pursuant thereto."

Shortly after the passage of ANGTA, Judge Litt concluded the FPC hearing and on February 1, 1977 issued the Initial Decision favoring the Arctic proposal. According to the provisions in the Act, on May 2, 1977, the FPC made its Recommendation to the President in which it recommended an overland route through Canada but divided 2-2 on the choice between Alcan and Arctic Gas.

As required in the Act, comments on the Recommendation of the FPC were made to the President on July 1, 1977, by ten interagency task forces and a wide spectrum of non-Federal government officials and other interested persons. While generally supportive of the FPC Recommendation, they raised important questions regarding virtually every major element of the Recommendation.

On July 4, 1977, Canada's NEB made its decision regarding an overland pipeline system through Canada. It found the Arctic Gas proposal "environmentally unacceptable" and stated it was prepared to certify Alcan conditioned upon several modifications of the Alcan system recommended

by the FPC. Within a few weeks, an interagency group of U.S. negotiators began meeting with Canadian officials to explore the boundaries of the Canadian option to enable the President to make an informed decision under the Act.

On September 1, the President announced a deferral in transmitting the decision to the Congress to complete negotiations with the Canadians. After intensive negotiations, President Carter and Prime Minister Trudeau announced in Washington on September 8, that both countries had reached an agreement in principle on a joint project for the transportation of Alaskan and Canadian gas. The President and Prime Minister noted the superiority of a joint project to any unilateral undertaking by either government. In addition to announcing an intention to sign a formal Agreement on Principles concerning the project, both governments pledged to seek approval from their respective legislatures of expedited provisions for project construction and operation.

With the signing of the Agreement on Principles applicable to a Northern Natural Gas Pipeline in Ottawa on September 20, 1977, the President transmitted the **Decision** favoring the Alcan project to the Congress for its approval. The Congress has sixty legislative days within which to act upon a joint resolution of approval.

The Agreement on Principles, as incorporated in the Decision of the President, provides the framework for a clearly specified, economically efficient, and environmentally superior means of transporting both U.S. and Canadian gas to markets through a joint pipeline system. Approval of the Decision, which incorporates the Agreement on Principles, will provide the same type of commitment by the United States to this undertaking as will result from passage of the implementing legislation which Prime Minister Trudeau has announced will be submitted to Parliament in October.

This Decision is supported by a strong record and recommendation from the FPC, substantial comments from all parties of interest and a clear and cogent agreement with the Canadian government that provides significant benefits for both countries.

* * * * *

The proposed Alcan system will deliver Alaska gas at the lowest cost-of-service to U.S. consumers -- probably below the cost of imported oil and substantially below the costs of other fuel alternatives. The average price of distillate from imported oil over the life of the project

is expected to be in excess of $3 per million btu's (mmbtu) in constant 1975 dollars. The average delivered price of Alaska gas for the same period will be substantially less even with a significant allowance for cost overruns. The Alcan system will deliver Alaskan gas at the lowest cost to U.S. consumers, but will do so directly to both the Midwest and West Coast markets. Furthermore, the Alcan system will increase the ability of Canada to develop its own frontier gas reserves, particularly in the Mackenzie Delta, through connection of the proposed Dempster Highway lateral pipeline with the Alcan mainline from Alaska. If Mackenzie Delta gas is brought to Canadian markets, U.S. consumers might also benefit from the enhanced availability of Canadian supplies.

Under almost all criteria, the Alcan system is clearly superior to the proposal by the El Paso Alaska Company to liquefy Alaska gas and ship it to the West Coast. Over a 20-year period, the Alcan system would deliver Alaska gas to U.S. consumers at a significantly lower average cost-of-service than El Paso. In 1975 constant dollars the 20-year average cost of service for Alcan is estimated to be $1.04 per mmbtu, and $1.21 per mmbtu for El Paso. The difference represents ultimate savings of $6 billion

American consumers over the life of the Alcan project. Alcan also can move the same volume of gas with a higher fuel efficiency, and will have much lower annual operating costs than the El Paso LNG system.

Alcan also has a markedly greater Net National Economic Benefit (NNEB) than El Paso. The calculation of the NNEB compares the present value of real resource expenditures for a project with the present value of future benefits. Alcan has an estimated NNEB of $5.77 billion, more than $1.1 billion higher than the estimated NNEB of El Paso.

In addition to these economic advantages, Alcan has significant technical and resource advantages over El Paso. These include:

- the superiority of pipeline transportation over LNG transportation for the safest and most reliable delivery of gas, and for expansibility of capacity to deliver increased volumes from reserves other than the Prudhoe Bay Pool;
- the substantial advantage of pipeline facilities over LNG facilities in having a useful life of over 40 years;

- the need to anticipate future shipment of natural gas from the Gulf of Alaska which may require LNG deliveries to the West Coast, thus preserving LNG delivery potential on the West Coast.

Furthermore, virtually all Federal agencies and private parties that compared the two projects determined that the Alcan system is environmentally superior to El Paso.

The Agreement with Canada on the Alcan system assures the cost-of-service advantages of the Alcan proposal. The Agreement provides that the Alcan pipeline will follow the original Alcan Highway route, without the route diversion required by the NEB. This provision alone saves the U.S. consumer up to $600 million in initial construction costs, plus interest, or the 6 cents in cost of service that would have been added by the route diversion. In return, the U.S. agreed to pay a portion of the cost for an extension of the Dempster Lateral from Dawson to Whitehorse in the Yukon -- if and when the lateral is built. This limited extension, or "spur," would connect the Dempster line with the main Alcan system. A higher capacity, more efficient system will be installed south of Whitehorse, with costs shared on a volumetric basis, to carry U.S. and Canadian volumes.

Significantly, under the Agreement, the U.S. share of costs for the "spur" from Dawson to Whitehorse is tied to the percent of actual cost overruns on the construction of the Alcan main line in Canada. This element of the Agreement creates a formidable incentive for Canada to minimize cost overruns on the construction of the Alcan line in Canada. In addition, the Agreement protects the Alcan pipeline from unfair or discriminatory taxes that might threaten the cost of service advantages of Alcan for U.S. consumers. The provisions in the Agreement provide a ceiling on the imposition of Yukon taxes, and supercede the previous GAO recommendation for a $200 million impact assistance payment from U.S. consumers to the Yukon. Any advance payment of tax by the pipeline will be treated as a loan to the government, to be paid back with interest from future tax revenues, but in no event will the loan affect the cost of service to U.S. consumers. The fixed level of overall tax is only a modest increase above the level of tax included in the original estimates for Alcan's cost of service, and has been fixed with reference to the tax regime applicable in Alaska.

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In this Agreement, the United States and Canada both improved their positions from the original NEB decision, and achieved a reduction in the cost of service price of both Alaskan gas and Canadian gas from the Mackenzie Delta. The modified Alcan system will also:

- assist Canada to continue supplying gas exports under existing contracts by providing it with access to substantial Mackenzie Delta reserves;
- provide the opportunity to obtain additional gas at an earlier date by early construction of portions of the southern Canadian and lower 48 sections of Alcan, with delivery of gas from Alberta (where there is temporary excess supply) in advance of the delivery of Alaska gas;
- encourage exploration for new reserves and stimulate expansion of the gas industry in Canada, which might ultimately benefit U.S. consumers through the enhanced potential of Canadian supplies.

Furthermore, this joint U.S.-Canadian undertaking could result in significant cooperation with Canada on a variety of other energy issues, such as oil exchanges, pipelines and strategic reserves.

The Alcan project will be one of the largest -- if not the largest -- privately financed international business ventures of all time. The minimal risk of non-completion will be borne by the private financial markets. **There will be no Federal debt guarantees, and consumers will not be required to bear any portion of the risks of non-completion.**

The Federal Government, however, will have an expanded and significant role in monitoring and overseeing the construction of the project. By enforcement of the terms and conditions proposed herein and to be later specified, the **Federal Inspector** for the construction of the project will **coordinate Federal involvement with the project, minimizing cost overruns, preventing management abuses, and facilitating the timely completion of construction.** The U.S.-Canadian Agreement provides additional incentives to minimize cost overruns on construction in Canada. The Decision, including the Agreement, seeks to ensure that U.S. consumers will have the enormous benefit of new Alaskan gas supplies at a price significantly below that of alternative energy sources.

A superior project has now been selected as a result of a thorough decision making process involving all the resources of the Federal Government and a spirited competition between private alternatives. The nation sorely needs new sources of economically competitive natural gas. Now is clearly the time to approve the decision to undertake the final planning and construction of this cost-efficient system for bringing critical supplies of Alaska natural gas to U.S. markets.

DECISION ON AN ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PREFACE - STATUTORY REQUIREMENTS FOR A DECISION ON AN ALASKA NATURAL GAS TRANSPORTATION SYSTEM

Section 7(a)(4) of the Alaska Natural Gas Transportation Act of 1976 (ANGTA) states:

> If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he shall in such decision-
>
> (A) describe the nature and route of the system designated for approval;
>
> (B) designate a person to construct and operate such a system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system;
>
> (C) identify those facilities, the construction of which, and those operations, the conduct of which, shall be encompassed within the term "construction and initial operation" for purposes of defining the scope of the directions contained in Section 9 of this Act, taking into consideration any recommendation of the Commission with respect thereto; and
>
> (D) identify those provisions of law, relating to any determination of a Federal officer or agency as to whether a certificate, permit, right-of-way, lease, or other authorization shall be issued or be granted, which provisions he finds (i) involve determinations which are subsumed in his decision and (ii) require waiver pursuant to Section 8(g) in order to permit the expeditious construction and initial operation of the transportation system.

As part of these determinations, an Agreement on Principles concluded with the Government of Canada prescribes various terms and conditions applicable to the construction and operation of the pipeline. The Agreement on Principles is attached hereto as Section 7 of this Decision and made an integral part of the Decision by this reference.

With the incorporation of the aforesaid Agreement, and the finding that it is in the national interest to expeditiously undertake to construct an Alaska Natural Gas Transportation System, the system designation and related statutory determinations are as follows:

SECTION 1 - DESIGNATION OF PERSON TO CONSTRUCT AND OPERATE THE SYSTEM

The Alcan Pipeline Company, now a wholly owned subsidiary of Northwest Pipeline Corporation[1/], or its successor, is hereby designated to construct and operate the portion of the system within the State of Alaska.

The Northern Border Pipeline Company, a partnership consisting of subsidiaries or affiliates of Columbia Gas Transmission Corporation, Michigan-Wisconsin Pipeline Company, Natural Gas Pipeline Company of America, Northern Natural Gas Company, Panhandle Eastern Pipe Line Company, and Texas Eastern Transmission Corporation, or its successor, is hereby designated to construct and operate the portion of the system from the United States-Canada border near Monchy, Saskatchewan, to a point near Dwight, Illinois.

The Alcan Pipeline Company, or its successor, and the Northern Border Pipeline, or its successor, shall be publicly held corporations or general or limited partnerships, open to ownership participation by all persons

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1/ Northwest Pipeline owns and operates a 4,300-mile pipeline system for transporting gas in the states of Colorado, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming. Northwest Pipeline is a wholly-owned subsidiary of Northwest Energy Company, a holding company whose principal asset is all the outstanding common stock of Northwest Pipeline.

without discrimination, except producers of Alaskan natural gas.

The Pacific Gas Transmission Company is hereby designated to construct and operate the portion of the system from the United States/Canada border near Kingsgate, British Columbia, to the border between the States of California and Oregon.

The Pacific Gas and Electric Company is hereby designated to construct and operate the portion of the system from the border between the States of California and Oregon through the State of California.

SECTION 2 - DESCRIPTION OF THE NATURE AND ROUTE OF THE APPROVED SYSTEM

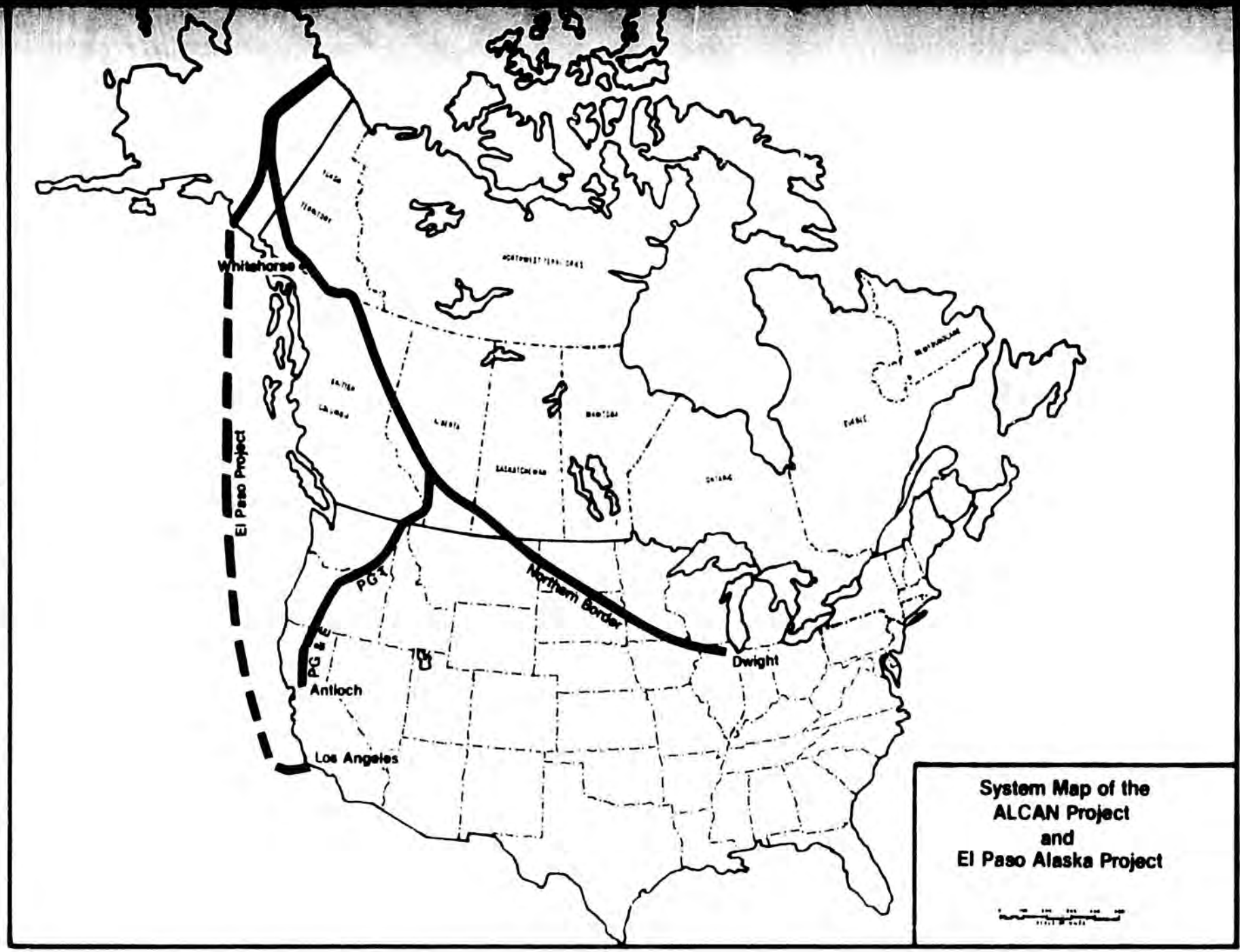
The Alcan system is an overland pipeline system to transport natural gas from the Prudhoe Bay area of Northern Alaska through Alaska and Canada into the Midwest and Western sections of the contiguous United States. See Exhibit 1.

The expected volume of gas to be available initially from the Prudhoe Bay field is **2.0 to 2.5 billion cubic feet per day (bcfd).** The system described herein is designed to handle this throughput volume. The capacity of the system could be increased in the future to accommodate additional volume throughput by construction of additional facilities.

Alcan Pipeline Route in Alaska

The proposed Alcan pipeline will commence at the discharge side of the gas plant facilities in the Prudhoe Bay field. The pipeline will parallel the Alyeska oil pipeline southward from the North Slope of Alaska, cross the Brooks Range through the Atigun Pass, and continue on to Delta Junction.

At Delta Junction, the Alcan Pipeline will diverge from the Alyeska oil pipeline and follow the Alaska Highway and the Haines oil products pipeline right-of-way, passing near the towns of Tanacross, Tok, and Northway Junction


Whitehorse
El Paso Project
PG&E
Northern Border
Dwight
Antioch
Los Angeles
System Map of the
ALCAN Project
and
El Paso Alaska Project

in Alaska. The right-of-way of the Haines oil products pipeline is at present approximately fifty feet wide and is closely parallel to the Alaska Highway. The Alcan pipeline will then connect with the proposed new facilities of Foothills Pipe Lines (South Yukon) Ltd. at the Alaska/Yukon Territory border.

From Prudhoe Bay to Delta Junction, Alcan expects to construct its line approximately eighty feet from the Alyeska oil pipeline. As proposed by Alcan, construction will be carried out by extending the existing Alyeska work pads. However, Alyeska advised Alcan that its "preliminary general guidelines" indicate that the Alyeska and Alcan lines must be separated by 100 to 200 feet where blasting to build the pipeline trench would occur (approximately 350 miles of pipeline length). Additional studies will determine the minimum distance between the Alyeska oil pipeline and the Alcan line that is necessary to permit safe construction and operation.

Alcan Pipeline Route Through Canada

The Canadian portion of the Alcan Project will commence at the Alaska/Yukon border in the vicinity of the towns of Border City, Alaska and Boundary, Yukon.

From the Alaska/Yukon border, the Foothills Pipe Lines (South Yukon) Ltd. pipeline will proceed south until it

reaches the White River (milepost 44), where it will take a more eastward course across the Yukon Territory. The pipeline will cross the Territory generally parallel to the Alaska Highway. Along most of the pipeline route through the Yukon, the separation between the pipeline route and highway route will be approximately one mile. There will be several points, however, where the pipeline route will divert substantially from the route of the Alaska Highway. These departures from the Alaska Highway route will permit the pipeline to continue on a more direct course than if it were to follow the Alaska Highway.

At approximately milepost 246, the pipeline will be routed north of Whitehorse and cross the Yukon River near the intersection of the Alaska and Klondike Highways. Near this intersection, approximately 9 miles northwest of Whitehorse, the pipeline will be constructed to permit a later connection with the proposed Dempster Line from the Mackenzie Delta, if and when the Dempster Line is constructed.

After it crosses the Yukon River north of Whitehorse, the pipeline will turn southeast and again travel parallel to the Alaska Highway, entering British Columbia at approximately milepost 397 and reentering the Yukon Territory at approximately milepost 435. The pipeline will continue

to follow the Alaska Highway eastward through the Yukon Territory and again cross the border into British Columbia, approximately twelve miles southwest of Watson Lake, Yukon. At this point, the Foothills Pipe Lines (South Yukon) Ltd. pipeline will terminate, and the Foothills Pipe Line (North B.C.) Ltd. interconnecting pipeline will commence.

After it passes the British Columbia border, the pipeline will proceed generally southeast across the northeastern part of the Province to the British Columbia/ Alberta border, crossing the existing Westcoast Transmission Company Ltd. main line some 35 miles south of Fort Nelson. At Boundary Lake on the British Columbia-Alberta border, the pipeline would connect with the Foothills Pipe Lines (Alta.) Ltd. pipeline. In Alberta, the Foothills Pipe Lines (Alta.) Ltd. pipeline will proceed generally southeast from Boundary Lake to Gold Creek Junction. After Gold Creek Junction, the pipeline will follow the existing Alberta Gas Trunkline Co., Ltd. (AGTL) pipeline right-of-way to James River Station.

From James River Station, the western leg of the pipeline will proceed separately to the south, approximately following the existing AGTL right-of-way to the Alberta/ British Columbia border near Coleman, Alberta. It will then connect with the Foothills Pipelines (South B.C.)

Ltd. pipeline, continue to the southwest across British Columbia, and finally connect with the Pacific Gas Transmission (PGT) pipeline at the United States/Canada border near Kingsgate, British Columbia. The pipeline route through southern British Columbia will generally parallel the existing pipeline route of Alberta Natural Gas Company Ltd.

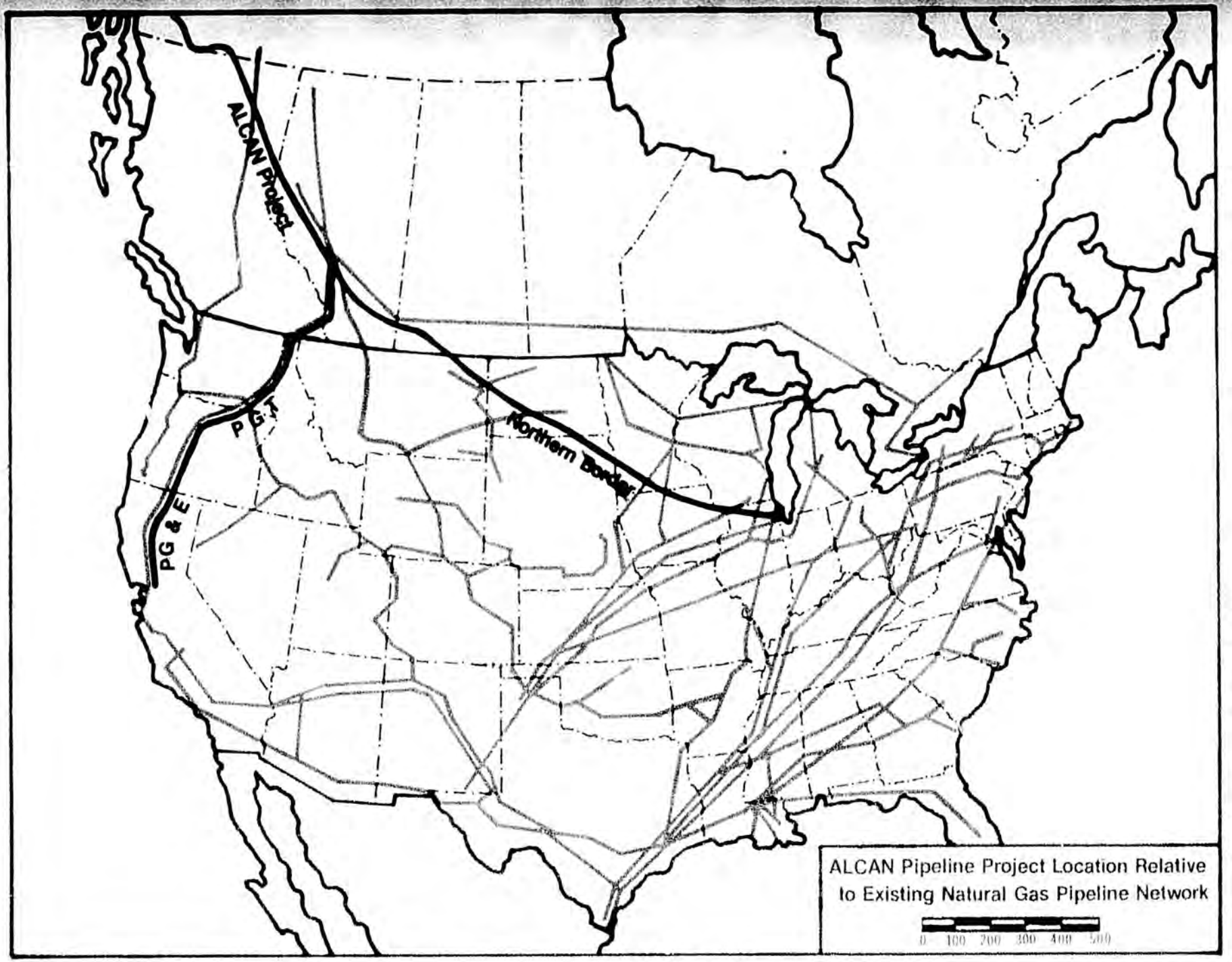
For the eastern leg from the James River Station, the pipeline will proceed generally to the southeast until it reaches the Alberta/Saskatchewan border near Empress, Alberta. The eastern leg will then connect with the Foothills Pipe Lines (Sask.) Ltd. pipeline. The pipeline will then continue to the southeast across Saskatchewan and join with the Northern Border Pipeline system at the United States/Canada border near Monchy, Saskatchewan.

Alcan Pipeline Route in the Contiguous United States

On the western leg, the Alaska gas will be transferred at the United States-Canada border near Kingsgate, British Columbia, to the PGT system. The PGT system will transport the gas through northern Idaho, southeast Washington, and central Oregon. At the Oregon/California border, the gas will be transferred to enter the Pacific Gas and Electric Company (PG&E) system and will then be transported throughout California.

On the eastern leg the Alaska gas will be transferred at the Saskatchewan/Montana border from the Canadian-owned portion of the Alcan system to the Northern Border Pipeline system. The Northern Border Pipeline system will then transport the gas across the northeast corner of Montana, the southwest section of North Dakota, the northeast section of South Dakota, the southwest corner of Minnesota, and the northeast section of Iowa, and finally bring the gas just south of Chicago to Dwight, Illinois.

Exhibit 2 on the following page illustrates the respective routes of the eastern and western legs of the Alcan system and their relationship to the existing gas pipeline network in the United States.


ALCAN Project
PGT
Northern Border
PG&E
ALCAN Pipeline Project Location Relative
to Existing Natural Gas Pipeline Network
0 100 200 300 400 500

SECTION 3 - IDENTIFICATION OF FACILITIES INCLUDED WITHIN "CONSTRUCTION AND INITIAL OPERATION"

General Project Description

This section identifies the facilities for the Alcan project which will be entitled to the expedited authorization process prescribed in Section 9 of ANGTA. The facilities which are to be covered are those in the U.S. which are adequate for a throughput of up to 2.4 bcfd and are included in the revised Alcan filing submitted to the Federal Power Commission (FPC) in March 8, 1977. If any modifications to those facilities are required by the Agreement on Principles between the U.S. and Canada, those modified facilities will also be entitled to the expedited authorization process in Section 9.

Uncertainties remain as to the future level of gas exports from Canada's historical gas supply sources. The actual division of Alaska gas among the various regions of the contiguous United States awaits conclusion of gas sales contracts. Routing and design work should be sufficiently complete to allow final certification in late 1978 or early 1979. The final design and location of the facilities, however, will be within the general description set forth.

The gas transportation system will utilize a 48-inch diameter pipeline from Prudhoe Bay to James River, Alberta.

From James River, gas destined for the midwestern and eastern states will be transported through a 42-inch diameter pipeline to Monchy, Saskatchewan, and gas destined for the western states will be transported through a 36-inch pipeline to Kingsgate, British Columbia. PGT and PG&E will complete looping[2/] as necessary of their existing pipeline systems from the Idaho-British Columbia border to Antioch, California (near San Francisco) with a 36-inch diameter pipeline.

All of the pipeline in Alaska and the first forty-one miles of pipeline in the Yukon lie in the continuous and discontinuous permafrost region.[3/] This section will be operated in a chilled state (i.e., below 32°F.) to prevent degradation of the permafrost regime. Gas chilling

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2/ "Looping" is construction of a pipeline parallel to and interconnected with an existing pipeline. Looping may extend to part or all of an existing line.

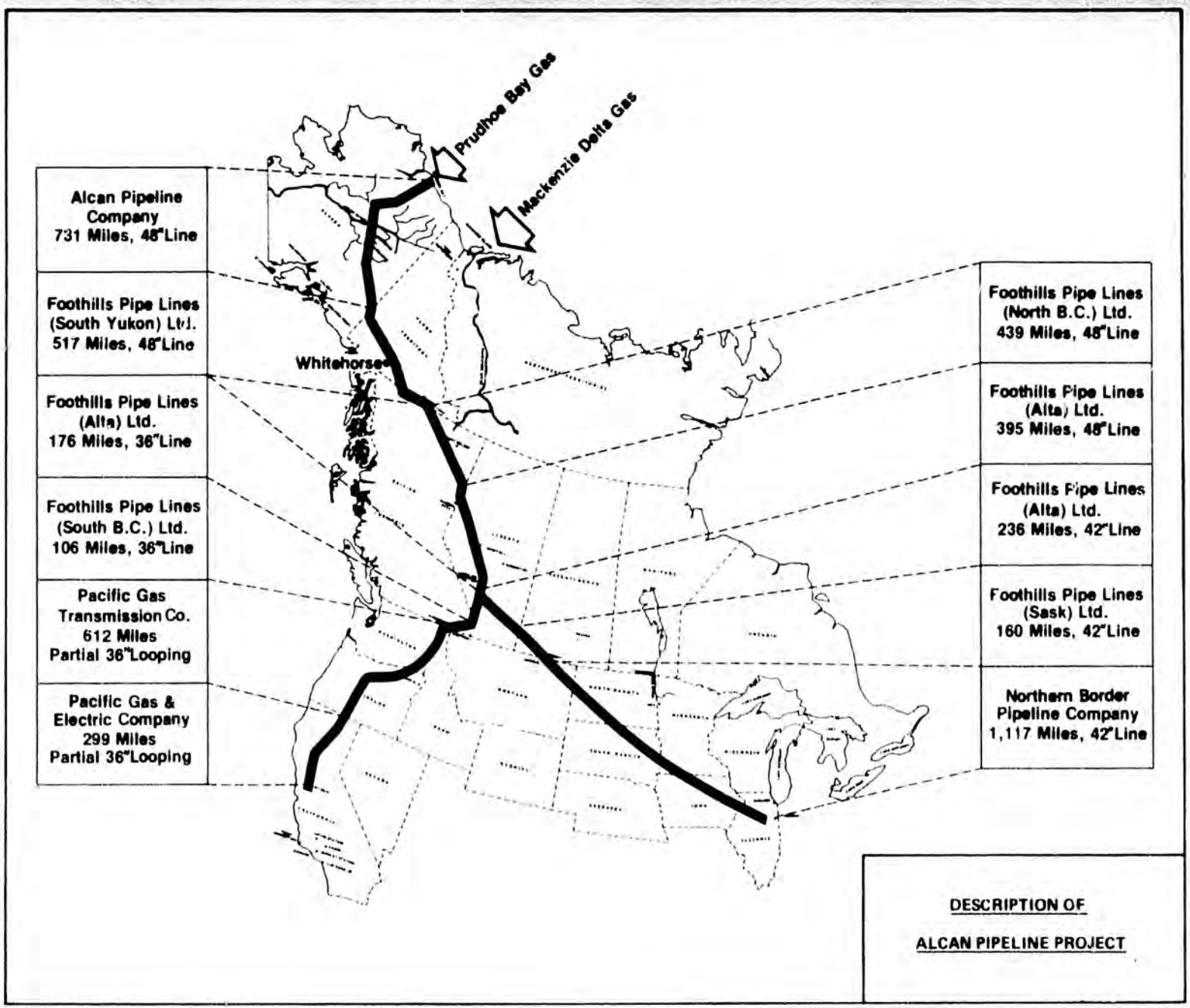
3/ By definition, permafrost consists of soil, rock, or other earth material, the temperature of which remains at or below 32°F. (0°C) continuously for two or more years. Its distribution is not uniform. Factors controlling the distribution of permafrost include the glacial and climatic history of the area, thermal properties of the earth material, ambient temperature, insulation properties of overburden, and amount of exposure to sun (e.g., shading caused by orientation of topographic features). The permafrost would be continuous along approximately the first 240 miles of the pipeline (to near the South Fork of the Koyohuk River). Along the remaining pipeline route to the Yukon border, the permafrost would be discontinuous.

will be accomplished by propane refrigeration systems at all compressor stations in Alaska.

The length of the various pipeline segments will be as follows:

Company	Location	Length (Miles)
Alcan Pipeline Company	Alaska	731
Foothills Pipe Lines (South Yukon) Ltd.	Yukon	517
Foothills Pipe Lines (Sask.) Ltd.	Saskatchewan	160
Foothills Pipe Lines (North B.C.) Ltd.	Yukon/B.C. Border to B.C./Alberta Border	439
Foothills Pipe Lines (South B.C.) Ltd.	Coleman to Kingsgate	106
Foothills Pipe Lines (Alta.) Ltd.	B.C./Alberta to James River	395
	James River to Colemen	176
	James River to Empress	235
	Total Alaska and Canada	2,759
Pacific Gas Transmission Co.	Kingsgate to Malin	612
Pacific Gas & Electric Co.	Malin to Antioch	299
Northern Border Pipeline Co.	Monchy to Dwight	1,117
	Total Contiguous States	2,028
	Total System Length	4,787

Exhibit 3 on the next page identifies and locates the various pipeline segments.


Prudhoe Bay Gas
Mackenzie Delta Gas
Whitehorse
Alcan Pipeline Company 731 Miles, 48"Line
Foothills Pipe Lines (South Yukon) Ltd. 517 Miles, 48"Line
Foothills Pipe Lines (Alta) Ltd. 176 Miles, 36"Line
Foothills Pipe Lines (South B.C.) Ltd. 106 Miles, 36"Line
Pacific Gas Transmission Co. 612 Miles Partial 36"Looping
Pacific Gas & Electric Company 299 Miles Partial 36"Looping
Foothills Pipe Lines (North B.C.) Ltd. 439 Miles, 48"Line
Foothills Pipe Lines (Alta) Ltd. 395 Miles, 48"Line
Foothills Pipe Lines (Alta) Ltd. 236 Miles, 42"Line
Foothills Pipe Lines (Sask) Ltd. 160 Miles, 42"Line
Northern Border Pipeline Company 1,117 Miles, 42"Line
DESCRIPTION OF
ALCAN PIPELINE PROJECT

Peak-day capacity utilizing nine compressor stations (see item 4 below) will be 2.6 bcfd, with an average daily volume of 2.4 bcfd. By installation of intermediate compressor stations, the system could be increased to 3.4 bcfd peak capacity, with an average day capacity of 3.2 bcfd. The system capacity could be further increased by addition to the compressor horsepower at each station.

Alcan Compressor Stations and Refrigeration Facilities in Alaska

Centrifugal compressors, powered by natural gas-fueled turbine engines, will be used on the Alcan system. In order to minimize thawing of the permafrost soil, the discharge gas at each compressor station in Alaska will be **chilled by a propane refrigeration plant.** The following describes the required compression and refrigeration facilities. All of these facilities are required for construction and initial operation.

Station	Milepost	Number of Gas Compressors	Total Installed Horsepower (ISO) Gas Compression	Gas Refrigeration
AL-1	75.0	1	26,500	7,660
AL-2	133.0	1	26,500	7,660
AL-3	242.3	1	26,500	13,830
AL-4	331.8	1	26,500	13,830
AL-5	418.8	1	26,500	13,830
AL-6	504.7	1	26,500	13,830
AL-7	589.9	1	26,500	13,830
AL-8	673.4	1	26,500	13,830
	TOTAL	8	212,000	98,300

Other Alcan Pipeline Facilities in Alaska

Metering facilities for the measurement of gas flow and gas quality will be required in Alaska at the Prudhoe Bay receipt point, at the Fairbanks sales point, and at the transfer point on the Alaska-Yukon border.

A central operating center, located in Fairbanks, will monitor and control all compressor station operations.[4/]

Alcan will utilize staging areas established for the Alyeska oil pipeline at Prudhoe Bay, Fairbanks, and Valdez. Material storage sites will be located at Anchorage, Seward, and Whittier, and at selected locations along the pipeline route.

Existing transportation and communication facilities will be utilized to the fullest extent practicable. Short lateral roads will be constructed to pipeline facilities as required.

Permanent bases for operating and maintaining the system will be selected and located after defining areas in which common problems may occur due to similarities of terrain and

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4/ The compressor stations will be automated for remote control of all normal functions, including discharge gas temperature.

climate. The bases will be located at or near compressor stations to avoid duplication of permanent above-ground facilities. Materials and various spare parts will be located at the bases to facilitate maintenance and repair operations.

All of these facilities will be required for construction and initial operation.

Lower 48 Facilities

For purposes of this part of the Decision, the facilities described generally below are deemed necessary for construction and initial operation, and will be entitled to expedited issuance of authorizations pursuant to Section 9 of ANGTA, provided that the final certification of such facilities shall be determined by reference to the size necessary to provide the transportation capacity certified to the FPC[5/] by the Secretary of Energy, as set forth in the terms and conditions section.

5/ The final certification function currently resides with the Federal Power Commission under the Natural Gas Act. On October 1, 1977, the Department of Energy will be activated pursuant to the Department of Energy Organization Act, Public Law 95-91, and the functions of the FPC under the Natural Gas Act will be transferred in part to the Federal Energy Regulatory Commission (FERC). Therefore, where reference is made herein to future actions of the FPC, they will be carried out by either the Secretary or the FERC, as the case may be, as of October 1, 1977.

In order to deliver gas contemporaneously to points both east and west of the Rocky Mountains in the lower continental United States, the Alcan system will bifurcate at James River, Alberta and form a Western Leg and an Eastern Leg. First, the Western Leg is described below, and then the Eastern Leg.

Western Leg

Alaskan gas will be transferred at the Canada/United States border near Kingsgate, British Columbia, to Pacific Gas Transmission Company (PGT). PGT will transport the gas through Idaho, Washington, and Oregon. At the Oregon/California border, the gas will enter the intrastate facilities of Pacific Gas and Electric Company (PG&E). The gas will be transported throughout much of California through existing and expanded intrastate gas pipelines.

The additional Western Leg facilities which are part of the Alcan project are those covered by the "1580 Design." The major component of this expansion will add approximately 873 miles of looping and result in complete looping of the 917-mile PGT/PG&E system from the Canada/United States border to Antioch, California (near San Francisco). The two parallel lines will be operated as a single system. Various modifications to the existing compression facilities will be required. However, the increase in system

capacity of 659 mmcfd could be achieved without installation of additional compression horsepower or increase of compression fuel usage. A minor addition of facilities south of Antioch may be made at a later date, depending on conditions prevailing at that time. All Western Leg facilities which are part of the Alcan project are subject to Section 9 of ANGTA.

The Eastern Leg

The Alcan system will transport Alaskan gas for delivery to Midwestern and Eastern markets in the lower continental United States through an Eastern Leg. The Eastern Leg will commence at the bifurcation point of the main express line at James River, Alberta and terminate at Dwight, Illinois (near Chicago). Total length of the Eastern Leg will be 1,352 miles, including 235 miles in Canada and 1,117 miles in the United States. All pipeline for the Eastern Leg will be 42 inches in diameter.

Alaskan gas will be transferred at the Saskatchewan/Montana border from the Canadian-owned portion of the Alcan system to the Northern Border Pipeline system (Northern Border). The Northern Border system will travel diagonally across Montana, North Dakota, South Dakota, Minnesota, and Iowa, and terminate near Chicago, Illinois. Along this

route, direct deliveries of gas will be made by Northern Border into the systems which cross the pipeline: Natural Gas Pipeline Company of America, Northern Natural Gas Company, and Michigan-Wisconsin Pipeline Company. Other purchasers will receive Alaska gas by displacement.[6/]

The specific facilities that will be required to interconnect the various pipelines to receive gas from the Northern Border system, either by direct delivery or by displacement, will be determined when gas sales contracts have been executed. Final design of the required facilities will depend upon the division of Alaskan gas among the various pipeline companies and various regions of the contiguous States. Final design will be complete at the time of final system certification in late 1978 or early 1979. All facilities which are part of the Northern Border system are necessary for construction and initial operation, and all facilities which are part of the Northern Border system as finally certified by the FPC are subject to Section 9 of ANGTA.

6/ "Displacement" of gas is a method by which gas may be supplied to a purchaser from close by in exchange for gas sold to the purchaser elewhere. Displacement, which is a commonly used method in the gas industry, eliminates the cost of physically transferring gas between markets.

SECTION 4 - DELINEATION OF PROVISIONS OF LAW THAT ARE SUBSUMED IN THIS DECISION AND REQUIRE WAIVER

Under Section 7(a)(4)(D) of ANGTA, the President shall

> identify those provisions of law, relating to any determination of a Federal officer or agency as to whether a certificate, permit, right-of-way, lease, or other authorization shall be issued or be granted, which provisions the President finds (i) involve determinations which are subsumed in his decision and (ii) require waiver pursuant to section 8(g) in order to permit the expeditious construction and initial operation of the transportation system.

At this time, however, there are only two statutory provisions that involve determinations subsumed in this decision and require waiver pursuant to section 8(g) of ANGTA.7/

Under Section 3 of the Natural Gas Act (15 U.S.C. 717b), the Federal Power Commission must issue an order to authorize any export of natural gas; such an order shall

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7/ Section 8(g)(1) of ANGTA states that the President will have the opportunity at a later date to identify and seek waiver of additional provisions of law. This subsection states:

> At any time after a decision designating a transportation system is submitted to the Congress pursuant to this section, if the President finds that any provision of law applicable to actions to be taken under subsection (a) or (c) of section 9 require waiver in order to permit expeditious construction and initial operation of the approved transportation system, the President may submit such proposed waiver to both Houses of Congress.

issue unless the Commission finds that the export is not consistent with the public interest.

In addition, under Section 103 of the Energy Policy and Conservation Act, the President is required to promulgate a general rule prohibiting exports of natural gas from the U.S., except that he may permit those exports which he determines to be consistent with the national interest and with the purposes of the Act (Section 103(b)(1)). To make such a determination, Section 103(d)(1) directs the President to take into account the need to leave uninterrupted or unimpaired "exchanges in similar quantity for convenience or increased efficiency of transportation with persons or the government of a foreign state."

As a result of the recent Agreement on Principles between the United States and Canada, Alcan will be required to make available limited quantities of Alaskan gas to communities in the Yukon Territory and the western provinces, subject to provision of replacement gas downstream in Canada. This transaction will be an export requiring separate authorizations under the above mentioned two statutes.

The requirements arising under Section 3 of the Natural Gas Act and under Section 103 of the Energy Policy and Conservation Act could be met without waiver of these provisions, but additional, and unnecessary, FPC and Presidential action would be required. Accordingly, both of these statutory subsections shall be waived for the exchange of gas mentioned herein.

SECTION 5 - TERMS AND CONDITIONS AND ENFORCEMENT

To ensure the proper management and timely completion of the construction of the designated transportation system, the following general terms and conditions shall be appropriately incorporated into any certificate, right-of-way, lease, permit or authorization directed to be made by any Federal officer or agency.

As described more fully below, these terms and conditions will be followed by a set of stipulations establishing general standards of environmental and construction performance, and the procedures for the submission and approval of construction plans and environmental safeguards, and then by site specific terms and conditions issued prior to actual construction of any pipeline segment. The terms and conditions described here are not meant to limit or foreclose the adoption of such stipulations and terms and conditions but are intended to begin the process by which a set of effective and workable safeguards are evolved. There is contemplated cooperative action by the Federal and Alaska State Governments in the development and enforcement of stipulations and site specific terms and conditions. Similar cooperative action is contemplated with the governments of all affected states.

Under the proposal made at the end of this section for the organizational involvement of the Federal Government with the successful applicant, the Federal Inspector for construction of the transportation system shall have supervision authority over the enforcement of these terms and conditions subject to the ultimate authority of the Executive Policy Board described below.

Terms and Conditions

The terms and conditions proposed for inclusion into this Congressional authorization are set forth, by category, as follows:

I. Construction Costs and Schedule Management and Organization

1. Prior to the issuance of the certificate, the successful applicant shall provide a detailed overall management plan, to be approved by the Federal Inspector, for the preconstruction and the construction phases of the transportation system project. The successful applicant shall define its relationship with the execution contractors, and shall give consideration to various management approaches -- such as Fast Track, Stage Design, and other management

240-448 O - 77 - 4

approaches -- that will facilitate the cost-effective, environmentally sound, and timely construction of the project.

2. The successful applicant may not use cost-plus type contracts with execution contractors, except where the Federal Inspector determines that special conditions warrant this type of contract. Otherwise, the applicant shall use fixed-price contracts, including the firm fixed-price, the fixed-price with escalation, and fixed-price incentive type of contract.

3. The successful applicant shall specify for approval of the Federal Inspector the insurance, bonding, and any other prequalification requirements for all consultants and execution contractors.

Construction Cost and Schedule Control Techniques

4. Prior to the initiation of construction, the successful applicant shall provide a detailed analysis and description of its proposed cost and schedule control techniques. The applicant shall give particular consideration to cost and manpower control and manpower estimating techniques.

5. Prior to the initiation of construction, the successful applicant shall develop and submit to the Federal Inspector a **final design, design-cost estimate, and construction schedule.** This design cost estimate and schedule must represent a construction design of at least 70 percent (or greater) of the total system, and the remainder may not represent any one contiguous or specific type of construction or geologic situation (e.g., river crossings, discontinuous permafrost, or elevated pipeline). The Federal Inspector may relax the above specified minimum percentage requirement, with the consent of the **Executive Policy Board**, if he finds there are extenuating circumstances that warrant such an action.

General Operating Strategies

6. The successful applicant shall develop and submit to the Federal Inspector cost-effective and feasible methods for supplying general and specialized equipment, as well as repair facilities and spare-part inventories, to the execution contractors. The applicant

shall give consideration to various techniques of equipment provision, including use of equipment pools, equipment leasing or buy-backs.

7. Prior to the initiation of construction, the successful applicant shall supply detailed information to the Federal Inspector on its labor relations procedures, and indicate the proposed means to address and resolve disputes arising under collective bargaining agreements.

8. In entering into contracts with execution contractors, the successful applicant shall seek to incorporate techniques for resolving disputes arising under such contracts without recourse to litigation.

Quality Assurance and Control Procedures

9. The successful applicant shall provide to the Federal Inspector a detailed description of quality assurance and control procedures that will be implemented prior to the start of construction. Such a description must at least include provisions for quality assurance and control procedures for environmental protection, corrosion, pipeline and compressor-station

welds, pipeline placement, equipment and other appropriate matters.

Procedures for Enforcement of Terms and Conditions

10. The successful applicant may not initiate activity on any aspect of the pipeline until authorization to proceed with construction, including site-specific terms and conditions for that aspect of the pipeline, has been issued and procedures for enforcement of terms and conditions have been established by the appropriate Federal officers.

Minority Business Enterprise Participation

11. The successful applicant shall develop and submit to the Federal Inspector for approval a plan for taking affirmative action to ensure that no person shall on the grounds of race, creed, color, national origin or sex be excluded from receiving or participating in contracts for management, engineering design or construction activity. The successful applicant shall require each of his contractors and subcontractors having contracts valued at $150,000 or more to develop similar plans providing the assurances specified in the preceding sentence.

II. Safety and Design

1. The successful applicant shall construct, operate, maintain and terminate the pipeline in accordance with Federal gas pipeline safety regulations. The applicant shall ensure that construction and operating specifications are in accordance with good engineering practice, both to maintain the safety and the integrity of the pipeline and to protect the health and safety of project personnel and the general public.

2. The successful applicant may not begin construction of any pipeline segment until the Federal Inspector has approved the design of that segment, including technical construction specifications, having had sufficient time to review the design.

3. The successful applicant shall establish a procedure for briefing the Federal Inspector, or his designated representative, on a regular basis concerning the status of the project during the design, construction, testing and start-up phases.

4. The successful applicant shall establish a procedure to ensure access to all project facilities by the Federal Inspector, or his designated representative, in the performance of official duties.

5. The successful applicant shall submit a plan or procedure for conducting its own inspections of project facilities during construction, to be approved by the Federal Inspector.

6. The successful applicant shall provide a seismic monitoring system, to be approved by the Federal Inspector, and shall ensure that there are adequate procedures for the safe shut-down of the project under severe seismic conditions.

III. Environment

1. The successful applicant shall construct, operate, maintain and terminate the pipeline with maximum concern for the protection of environmental values. A set of stipulations containing the general standards of environmental and construction performance, and the procedures for the

submission and approval of construction plans and environmental safeguards will be developed by the concerned government agencies and must be accepted by the applicant as a condition of his right to proceed over public lands. Additional "site-specific" terms and conditions will be incorporated in authorizations to proceed with construction issued by the appropriate Federal agency, into particular certificates, rights-of-way, permits and other authorizations to protect and enhance environmental values during the design, construction and operation of the pipeline. These additional "site specific" terms and conditions will be issued as appropriate to minimize disturbance from construction and operation of the pipeline to rivers and other water bodies and adjacent land and vegetation; to protect wildlife and endangered species and maintain forest, agricultural and other resource productivity; to control the risks of pipeline ruptures, leaks and hazards; to maintain air and water quality values; to make provision for control and disposal of sewage, garbage, wastes

and toxic substances; and take other measures necessary for protection of the environment during the design, construction and operation of the pipeline.

2. The successful applicant shall prepare a plan of operations which integrates environmental protection with the proposed schedule of construction and operations, the proposed supervisory and technical staffing, the proposed quality control programs, and the proposed quality assurance programs. In preparation and implementation of this plan, the successful applicant shall provide for timely integration of environmental mitigation and restoration practices with the activity which creates the need for the restoration or mitigation.

3. The successful applicant shall develop and submit to the Federal Inspector an effective plan for implementation of specific environmental safeguards through an educational program for field personnel prior to and during construction, operation, maintenance and termination of the pipeline.

4. The successful applicant shall establish an effective pipeline-performance monitoring system of inspection and instrumentation to insure performance in keeping with environmental concerns.

IV. Finance

1. The successful applicant shall provide for private financing of the project, and shall make the final arrangement for all debt and equity financing prior to the initiation of construction.

2. If the direct capital cost estimates excluding interest during construction for the overall project in 1975 constant dollars filed with the FPC immediately prior to certification, adjusted to reflect design changes to increase capacity that result from the Agreement on Principle between the United States and Canada, materially and unreasonably exceed the comparable capital cost estimates filed by Alcan with the Federal Power Commission on March 8, 1977, Section 6, page 2, the FPC may not issue a certificate for the project. If these final capital cost estimates are not excessive under the above standard, the FPC may use these final estimates for the U.S.

segments as the basis for fixing a variable rate of return on equity that will reward the applicant for project completion under budgeted cost and penalize the applicant for project completion above budgeted cost. The variable return shall be set to provide substantial incentives to construct the project without incurring overruns. These final capital cost estimates need not be the design-cost estimates based on the system design which must subsequently be submitted to the Federal Inspector. The applicant shall, however, submit to the FPC for approval on a timely basis all components of construction work in progress.

3. Neither the successful applicant nor any purchaser of Alaska gas for transportation through the system of the successful applicant shall be allowed to make use of any tariff by which or any other agreement by which the purchaser or ultimate consumer of Prudhoe Bay natural gas is compelled to pay a fee, surcharge, or other payment in relation to the Alaska

natural gas transportation system at any time prior to completion and commissioning of operation of the system.

4. The Alcan Pipeline Company, or its successor, and the Northern Border Pipeline, or its successor, shall be publicly held corporations or general or limited partnerships, open to ownership participation by all persons without discrimination, except producers of Alaskan natural gas.

V. Antitrust

1. The successful applicant shall exclude and prohibit producers of significant amounts of Alaska gas, or their subsidiaries and affiliates, from participating in the ownership of the Alaska natural gas transportation system, except that such producers may provide guarantees for project debt. The aforesaid producers of Alaska gas may not be equity members of the sponsoring consortium, have any voting power in the project, have any role in the management or operations of the project, have any continuing financial obligation in relation to debt guarantees associated

with initial project financing after the project is completed and the tariff is put into effect, or impose conditions on the guarantees of project debt permitted above which may give rise to competitive abuse, including power to veto pro-competitive policies.

2. All agreements for the sale of Alaska gas made between the aforesaid producers and purchasers who are shippers through the Alaska natural gas transportation system shall be fully disclosed to the Federal Power Commission, and all collateral agreements made between the same parties with respect to the sale of Alaska gas shall also be fully disclosed. All contracts for sale of Alaska gas, for all collateral agreements to these contracts, shall be submitted for approval by the Federal Power Commission.

VI. Certification of Facilities

1. Prior to the issuance of a certificate of public convenience and necessity to Northern Border Pipeline or to Pacific Gas Transmission Company, the Secretary of Energy shall certify to the Federal Power Commission whether there

has been any material change in the facts regarding future potential gas supplies for the East or West since the date of this Decision that would warrant certification of such facilities at a different rated capacity than authorized herein. If the Secretary certifies that there has been a material change in the facts, he shall instead certify to the Commission the capacity at which he has determined a certificate of public convenience and necessity should be issued and the reasons therefor, which capacity shall be determined in a manner that is as consistent as possible with the reasons for the initial authorization, as set forth in the Report submitted to the Congress pursuant to Section 7(b) of the Alaska Natural Gas Transportation Act, Public Law 94-586. The certificate issued by the FPC shall be consistent with the Secretary's determination.

Enforcement

To enforce the terms and conditions proposed above, and to carry out the duties of the office assigned and set forth by section 7(a)(5)(A)-(E) of ANGTA, an appropriate and qualified individual shall be appointed by the President

to serve as the Federal Inspector, with the advice and consent of the Senate. Upon approval of the Presidential designation of an Alaska natural gas transportation system, the Federal Inspector shall:

> (A) establish a joint surveillance and monitoring agreement, approved by the President, with the State of Alaska similar to that in effect during construction of the trans-Alaska oil pipeline to monitor the construction of the approved transportation system within the State of Alaska;
>
> (B) monitor compliance with applicable laws and the terms and conditions of any applicable certificate, rights-of-way, permit, lease, or other authorization issued or granted;
>
> (C) monitor actions taken to assure timely completion of construction schedules and the achievement of quality of construction, cost control, safety, and environmental protection objectives and the results obtained therefrom;
>
> (D) have the power to compel, by subpoena if necessary, submission of such information as he deems necessary to carry out his responsibilities; and
>
> (E) keep the President and the Congress currently informed on any significant departures from compliance and issue quarterly reports to the President and the Congress concerning existing or potential failures to meet construction schedules or other factors which may delay the construction and initial operation of the system and the extent to which quality of construction, cost control, safety and environmental protection objectives have been achieved.

In addition to these duties and responsibilities, the President will submit to Congress, upon approval of the Presidential decision, a limited executive reorganization plan to transfer to the Federal Inspector field-level

supervisory authority over enforcement of terms and conditions from those Federal agencies having statutory responsibilities over various aspects of an Alaska natural gas transportation system. The respective Federal agencies would retain their existing statutory authority pursuant to section 9(a) of ANGTA, to issue on an expedited basis the necessary certificates, permits, rights-of-way and other authorizations, and to prescribe any appropriate terms and conditions that are permissible under present law. The Agency Authorized Officers would directly represent the statutory authority of the respective Federal agencies in the field on all matters pertaining to construction of the pipeline. However, the Federal Inspector would have the necessary field-level supervisory authority to overrule the enforcement action of an Agency Authorized Officer, whenever the Federal Inspector determined that such a decision was warranted.

The President's supervision of the Federal Inspector will be carried out by an Executive Policy Board. The Board would be made up of the Secretaries of the Interior, Energy, Transportation, the Administrator of the Environmental Protection Agency, and the Chief of the Army Corps of Engineers, or their Deputies (or senior officers who have

been delegated authority over gas pipeline matters), as well as the Federal Inspector, who is the non-voting Chairman of the Board. The Board will provide policy guidance to the Federal Inspector, and act as an appellate body to resolve differences among the agencies and the Federal Inspector, including differences that may arise when the Federal Inspector overrules an enforcement action of an Agency Authorized Officer. The Board shall expeditiously resolve any such appeal with a limited period of time that shall be prescribed. The President will authorize by Executive Order the creation of the Executive Policy Board pursuant to his power under Section 301 of Title 3, and will delegate the necessary authority to the Board to carry out its functions. The Board shall be paramount for policy-making purposes on all matters pertaining to construction of an Alaskan natural gas transportation system; the Federal Inspector shall shall be the agent or conduit of the Board in such matters, and shall also have the necessary supervisory power over field level decisions.

246-448 O - 77 - 3

SECTION 6 - PRICING OF ALASKA GAS

Final financing for an Alaska natural gas transportation project cannot be arranged until the producer-owners of the Prudhoe Bay gas execute sales contracts. Without such contracts, no gas can be transported, and financing consequently would be unobtainable. Producers cannot be expected to negotiate sales contracts until a price has been established with a reasonable degree of certainty. If this project is to proceed expeditiously, the field price of the gas should be established as soon as possible.

Because no contracts for gas sales in interstate commerce have been concluded and submitted to the FPC for approval, the FPC has not, to date, attempted to determine the costs of providing the gas in order to establish what might be a just and reasonable (cost-based) wellhead price. The FPC, in fact, has excluded the Alaska gas from its national rate proceedings; Alaska costs and related reserve data have been excluded from all statistics underlying FPC rate determinations.

Alaska gas is produced in association with oil; therefore, it is impossible to determine precisely the costs of finding, developing and producing only the gas. Cost allocation and, therefore, cost-based pricing is

somewhat arbitrary. Because of the difficult and arbitrary nature of the allocation problem, the FPC in recent years has priced gas on the basis of the cost of only non-associated gas in each producing area, and then allowed the same price to be paid for associated gas produced in that area as well. Were the FPC to initiate a price proceeding under the Natural Gas Act, it is expected that its procedures and subsequent litigation over cost allocation and other matters would likely exceed a period of 18 months.

The Administration's proposed National Energy Act is before the Congress. That Act provides a basis for moving from cost-based pricing to commodity-value pricing. That transition is essential to restoring the balance between natural gas supply and demand. Under the gas pricing provisions in the National Energy Plan, Alaska gas would be classified as "old gas under a new contract" subject to a $1.45 per mcf ceiling price.

If, on the other hand, proposals to deregulate natural gas prevail, serious uncertainties and delays concerning the development of any Alaskan natural gas transportation

project could result. If producers are inclined to insist on prices of $2.00 per mcf or higher, questions concerning the saleability of the gas and the financeability of the project will arise. Such price levels could result in an additional $20 billion in consumer charges, as well as the added costs of any delays in project construction.

This decision, therefore, calls for enactment of a gas pricing approach similar to that contained in the National Energy Plan. That approach also provides a mechanism for allocating the cost of more expensive supplies to lower-priority users, rather than the residential and commercial users who have less capacity to convert to other fuels. The gas pricing policies which are part of the National Energy Plan are fair and equitable, and should apply to both the production and sale of Alaska gas.

SECTION 7 - AGREEMENT BETWEEN THE UNITED STATES OF AMERICA AND CANADA ON PRINCIPLES APPLICABLE TO A NORTHERN NATURAL GAS PIPELINE

The Government of the United States of America and the Government of Canada,

Desiring to advance the national economic and energy interests and to maximize related industrial benefits of each country, through the construction and operation of a pipeline system to provide for the transportation of natural gas from Alaska and from Northern Canada,

Hereby agree to the following principles for the construction and operation of such a system:

1. Pipeline Route

The construction and operation of a pipeline for the transmission of Alaska natural gas will be along the route set forth in Annex I, such pipeline being hereinafter referred to as "the Pipeline". All necessary action will be taken to authorize the construction and operation of the Pipeline in accordance with the principles set out in this Agreement.

2. Expeditious Construction; Timetable

a) Both Governments will take measures to ensure the prompt issuance of all necessary permits, licenses, certificates, rights-of-way, leases and other authorizations

required for the expeditious construction and commencement of operation of the Pipeline, with a view to commencing construction according to the following timetable:

- Alaska - January 1, 1980
- Yukon - main line pipe laying January 1, 1981
- Other construction in Canada to provide for timely completion of the Pipeline to enable initial operation by January 1, 1983.

b) All charges for such permits, licenses, certificates, rights-of-way, leases and other authorizations will be just and reasonable and apply to the Pipeline in the same non-discriminatory manner as to any other similar pipeline.

c) Both Governments will take measures necessary to facilitate the expeditious and efficient construction of the Pipeline, consistent with the respective regulatory requirements of each country.

3. Capacity of Pipeline and Availability of Gas

a) The initial capacity of the Pipeline will be sufficient to meet, when required, the contractual requirements of United States shippers and of Canadian shippers. It is contemplated that this capacity will be 2.4 billion cubic feet per day (bcfd) for Alaska gas and 1.2 bcfd for northern Canadian gas. At such time as a lateral pipeline

transmitting Northern Canadian gas, hereinafter referred to as "the Dempster Line", is to be connected to the Pipeline or at any time additional pipeline capacity is needed to meet the contractual requirements of United States or Canadian shippers, the required authorizations will be provided, subject to regulatory requirements, to expand the capacity of the Pipeline in an efficient manner to meet those contractual requirements.

b) The shippers on the Pipeline will, upon demonstration that an amount of Canadian gas equal on a British Thermal Unit (BTU) replacement value basis will be made available for contemporaneous export to the United States, make available from Alaska gas transmitted through the Pipeline, gas to meet the needs of remote users in the Yukon and in the provinces through which the Pipeline passes. Such replacement gas will be treated as hydrocarbons in transit for purposes of the Agreement between the Government of Canada and the Government of the United States of America concerning Transit Pipelines, hereinafter referred to as "the Transit Pipeline Treaty". The shippers on the Pipeline will not incur any cost for provision of such Alaska gas except those capital costs arising from the following provisions:

i) the owner of the Pipeline in the Yukon will make arrangements to provide gas to the communities of Beaver Creek, Burwash Landing, Destruction Bay, Haines Junction, Whitehorse, Teslin, Upper Liard and Watson Lake at a total cost to the owner of the Pipeline not to exceed Canadian $2.5 million;

ii) the owner of the Pipeline in the Yukon will make arrangements to provide gas to such other remote communities in the Yukon as may request such gas within a period of two years following commencement of operation of the Pipeline at a cost to the owner not to exceed the product of Canadian $2500 and the number of customers in the communities, to a maximum total cost of Canadian $2.5 million.

4. Financing

a) It is understood that the construction of the Pipeline will be privately financed. Both Governments recognize that the companies owning the Pipeline in each country will have to demonstrate to the satisfaction of the United States or the Canadian Government, as applicable, that protections against risks of non-completion and interruption are on a basis acceptable to that Government before proof of financing is established and construction allowed to begin.

b) The two Governments recognize the importance of constructing the Pipeline in a timely way and under effective cost controls. Therefore, the return on the equity investment in the Pipeline will be based on a variable rate of return for each company owning a segment of the Pipeline, designed to provide incentives to avoid cost overruns and to minimize costs consistent with sound pipeline management. The base for the incentive program used for establishing the appropriate rate of return will be the capital costs used in measuring cost overruns as set forth in Annex III.

c) It is understood that debt instruments issued in connection with the financing of the Pipeline in Canada will not contain any provision, apart from normal trust indenture restrictions generally applicable in the pipeline industry, which would prohibit, limit or inhibit the financing of the construction of the Dempster Line; nor will the variable rate of return provisions referred to in subparagraph (b) be continued to the detriment of financing the Dempster Line.

5. Taxation and Provincial Undertakings

a) Both Governments reiterate their commitments as set forth in the Transit Pipeline Treaty with respect to

non-discriminatory taxation, and take note of the statements issued by Governments of the Provinces of British Columbia, Alberta and Saskatchewan, attached hereto as Annex V, in which those Governments undertake to ensure adherence to the provisions of the Transit Pipeline Treaty with respect to non-interference with throughput and to non-discriminatory treatment with respect to taxes, fees or other monetary charges on either the Pipeline or throughput.

b) With respect to the Yukon Property Tax imposed on or for the use of the Pipeline the following principles apply:

i) The maximum level of the property tax, and other direct taxes having an incidence exclusively, or virtually exclusively, on the Pipeline, including taxes on gas used as compressor fuel, imposed by the Government of the Yukon Territory or any public authority therein on or for the use of the Pipeline, herein referred to as "the Yukon Property Tax", will not exceed $30 million Canadian per year adjusted annually from 1983 by the Canadian Gross National Product price deflator as determined by Statistics Canada, hereinafter referred to as the GNP price deflator.

ii) For the period beginning January 1, 1980, and ending on December 31 of the year in which leave to open the Pipeline is granted by the appropriate regulatory authority, the Yukon Property Tax will not exceed the following:

1980--$5 million Canadian

1981--$10 million Canadian

1982--$20 million Canadian

Any subsequent year to which this provision applies--$25 million Canadian.

iii) The Yukon Property Tax formula described in subparagraph (b)(i) will apply from January 1 after the year in which leave to open the Pipeline is granted by the appropriate regulatory authority until the date that is the earlier of the following, hereinafter called the tax termination date:

A) December 31, 2008, or

B) December 31 of the year in which leave to open the Dempster Line is granted by the appropriate regulatory authority.

iv) Subject to subparagraph (b) (iii), if for the year ending on December 31, 1987, the percentage increase of the aggregate per capita revenue derived from all

property tax levied by any public authority in the Yukon Territory (excluding the Yukon Property Tax) and grants to municipalities and Local Improvement Districts from the Government of the Yukon Territory as compared to aggregate per capita revenue derived from such sources for 1983 is greater than the percentage increase for 1987 of the Yukon Property Tax as compared to the Yukon Property Tax for 1983, the maximum level of the Yukon Property Tax for 1987 may be increased to equal the amount it would have reached had it increased over the period at the same rate as the aggregate per capita revenue.

v) If for any year in the period commencing January 1, 1988, and ending on the tax termination date, the annual percentage increase of the aggregate per capita revenue derived from all property tax levied by any public authority in the Yukon Territory (excluding the Yukon Property Tax) and grants to municipalities and Local Improvement Districts from the Government of the Yukon Territory as compared to the aggregate per capita revenue derived from such sources for the immediately preceding year exceeds the percentage increase for that year of the Yukon Property

Tax as compared to the Yukon Property Tax for the immediately preceding year, the maximum level of the Yukon Property Tax for that year may be adjusted by the percentage increase of the aggregate per capita revenue in place of the percentage increase that otherwise might apply.

vi) The provisions of subparagraph (b)(i) will apply to the value of the Pipeline for the capacities contemplated in this Agreement. The Yukon Property Tax will increase for the additional facilities beyond the aforesaid contemplated capacity in direct proportion to the increase in the gross asset value of the Pipeline.

vii) In the event that between the date of this Agreement and January 1, 1983, the rate of the Alaska property tax on pipelines, taking into account the mill rate and the method of valuation, increases by a percentage greater than the cumulative percentage increase in the Canadian GNP deflator over the same period, there may be an adjustment on January 1, 1983, to the amount of $30 million Canadian described in subparagraph (b) (i) of the Yukon Property Tax to reflect this difference. In defining the Alaska

property tax for purposes of this Agreement, the definition of the Yukon Property Tax will apply mutatis mutandis.

viii) In the event that, for any year during the period described in subparagraph (iii), the annual rate of the Alaska property tax on or for the use of the Pipeline in Alaska increases by a percentage over that imposed for the immediate preceding year that is greater than the increase in percentage of the Yukon Property Tax for the year, as adjusted, from that applied to the immediately preceding year, the Yukon Property Tax may be increased to reflect the percentage increase of the Alaska property tax.

ix) It is understood that indirect socioeconomic costs in the Yukon Territory will not be reflected in the cost-of-service to the United States shippers other than through the Yukon Property Tax. It is further understood that no public authority will require creation of a special fund or funds in connection with construction of the Pipeline in the Yukon, financed in a manner which is reflected in the cost of service to U.S. shippers, other than through the Yukon Property Tax. However, should public authorities

in the State of Alaska require creation of a special fund or funds, financed by contributions not fully reimbursable, in connection with construction of the Pipeline in Alaska, the Governments of Canada or the Yukon Territory will have the right to take similar action.

c) The Government of Canada will use its best endeavors to ensure that the level of any property tax imposed by the Government of the Northwest Territories on or for the use of that part of the Dempster Line that is within the Northwest Territories is reasonably comparable to the level of the property tax imposed by the Government of the Yukon Territory on or for the use of that part of the Dempster Line that is in the Yukon.

6. Tariffs and Cost Allocation

It is agreed that the following principles will apply for purposes of cost allocation used in determining the cost of service applicable to each shipper on the Pipeline in Canada:

a) The Pipeline in Canada and the Dempster Line will be divided into zones as set forth in Annex II. Except for fuel and except for Zone 11 (the Dawson-Whitehorse portion of the Dempster Line), the cost of service to each

shipper in each zone will be determined on the basis of volumes as set forth in transportation contracts. The volumes used to assign these costs will reflect the original BTU content of Alaskan gas for U.S. shippers and Northern Canadian gas for Canadian shippers, and will make allowance for the change in heat content as the result of commingling. Each shipper will provide volumes for line losses and line pack in proportion to the contracted volumes transported in the zone. Each shipper will provide fuel requirements in relation to the volume of his gas being carried and to the content of the gas as it affects fuel consumption.

b) It is understood that, to avoid increased construction and operating costs for the transportation of Alaskan gas, the Pipeline will follow a southern route through the Yukon along the Alaska Highway rather than a northern route through Dawson City and along the Klondike Highway. In order to provide alternative benefits for the transportation of Canadian gas to replace those benefits that would have been provided by the northern route through Dawson City, U.S. shippers will participate in the cost of service in Zone 11. It is agreed that if cost overruns on construction of the Pipeline in Canada do not exceed filed costs set forth in Part D of Annex III by more than 35

percent, U.S. shippers will pay the full cost of service in Zone 11. U.S. shipper participation will decline if overruns on the Pipeline in Canada exceed 35 percent; however, at the minimum the U.S. shippers' share will be the greater of either two-thirds of the cost of service or the proportion of contracted Alaska gas in relation to all contracted gas carried in the Pipeline. The proportion of the cost of service borne by U.S. shippers in Zone 11 will be reduced should overruns on the cost of construction in that Zone exceed 35 percent after allowance for the benefits to U.S. shippers derived from Pipeline construction cost savings in other Zones. Notwithstanding the foregoing, at the minimum, the U.S. shippers' share will be the greater of either two-thirds of the cost of service or the proportion of contracted Alaska gas in relation to all contracted gas carried in the Pipeline. Details of this allocation of cost-of-service are set out in Annex III.

c) Notwithstanding the principles in subparagraphs (a) and (b), in the event that the total volume of gas offered for shipment exceeds the efficient capacity of the Pipeline, the method of cost allocation for the cost of service for shipments of Alaskan gas (minimum entitlement 2.4 bcfd) or Northern Canadian gas (minimum entitlement 1.2 bcfd) in

excess of the efficient capacity of the Pipeline will be subject to review and subsequent agreement by both Governments; provided however that shippers of either country may transport additional volumes without such review and agreement, but subject to appropriate regulatory approval, if such transportation does not lead to a higher cost of service or share of Pipeline fuel requirements attributable to shippers of the other country.

d) It is agreed that Zone 11 costs of service allocated to U.S. shippers will not include costs additional to those attributable to a pipe size of 42 inches. It is understood that in Zones 10 and 11 the Dempster Line will be of the same gauge and diameter and similar in other respects, subject to differences in terrain. Zone 11 costs will include only facilities installed at the date of issuance of the leave to open order, or that are added within three years thereafter.

7. Supply of Goods and Services

a) Having regard to the objectives of this Agreement, each Government will endeavor to ensure that the supply of goods and services to the Pipeline project will be on generally competitive terms. Elements to be taken into account in weighing competitiveness will include price, reliability, servicing capacity and delivery schedules.

b) It is understood that through the coordination procedures in Paragraph 8 below, either Government may institute consultations with the other in particular cases where it may appear that the objectives of subparagraph (a) are not being met. Remedies to be considered would include the renegotiation of contracts or the reopening of bids.

8. Coordination and Consultation

Each Government will designate a senior official for the purpose of carrying on periodic consultations on the implementation of these principles relating to the construction and operation of the Pipeline. The designated senior officials may, in turn, designate additional representatives to carry out such consultations, which representatives, individually or as a group, may make recommendations with respect to particular disputes or other matters, and may take such other action as may be mutually agreed, for the purpose of facilitating the construction and operation of the Pipeline.

9. Regulatory Authorities: Consultation

The respective regulatory authorities of the two Governments will consult from time to time on relevant

matters arising under this Agreement, particularly on the matters referred to in paragraphs 4, 5 and 6, relating to tariffs for the transportation of gas through the Pipeline.

10. Technical Study Group on Pipe

a) The Governments will establish a technical study group for the purpose of testing and evaluating 54-inch 1120 pounds per square inch (psi), 48-inch 1260 psi, and 48-inch 1680 psi pipe or any other combination of pressure and diameter which would achieve safety, reliability and economic efficiency for operation of the Pipeline. It is understood that the decision relating to pipeline specifications remains the responsibility of the appropriate regulatory authorities.

b) It is agreed that the efficient pipe for the volumes contemplated (including reasonable provision for expansion), subject to appropriate regulatory authorization, will be installed from the point of interconnection of the Pipeline with the Dempster Line near Whitehorse to the point near Caroline, Alberta, where the Pipeline bifurcates into a western and an eastern leg.

11. Direct Charges by Public Authorities

a) Consultation will take place at the request of either Government to consider direct charges by public

authorities imposed on the Pipeline where there is an element of doubt as to whether such charges should be included in the cost of service.

b) It is understood that the direct charges imposed by public authorities requiring approval by the appropriate regulatory authority for inclusion in the cost of service will be subject to all of the tests required by the appropriate legislation and will include only

i) those charges that are considered by the regulatory authority to be just and reasonable on the basis of accepted regulatory practice, and

ii) those charges of a nature that would normally be paid by a natural gas pipeline in Canada. Examples of such charges are listed in Annex IV.

12. Other Costs

It is understood that there will be no charges on the Pipeline having an effect on the cost of service other than those:

i) imposed by a public authority as contemplated in this Agreement or in accordance with the Transit Pipeline Treaty, or

ii) caused by Acts of God, other unforeseen circumstances, or

iii) normally paid by natural gas pipelines in Canada in accordance with accepted regulatory practice.

13. Compliance with Terms and Conditions

The principles applicable directly to the construction, operation and expansion of the Pipeline will be implemented through the imposition by the two Governments of appropriate terms and conditions in the granting of required authorizations. In the event of subsequent non-fulfillment of such a term or condition by an owner of the Pipeline, or by any other private person, the two Governments will not have responsibility therefor, but will take such appropriate action as is required to cause the owner to remedy or mitigate the consequences of such non-fulfillment.

14. Legislation

The two Governments recognize that legislation will be required to implement the provisions of this Agreement. In this regard, they will expeditiously seek all required legislative authority so as to facilitate the timely and efficient construction of the Pipeline and to remove any delays or impediments thereto.

15. Entry Into Force

This Agreement will become effective upon signature and shall remain in force for a period of 35 years and thereafter until terminated upon 12 months' notice given in writing by one Government to the other, provided that those provisions of the Agreement requiring legislative action will become effective upon exchange of notification that such legislative action has been completed.

IN WITNESS WHEREOF the undersigned representatives, duly authorized by their respective Governments, have signed this Agreement.

DONE in duplicate at Ottawa in the English and French languages, both versions being equally authentic, this _____ day of _____, 1977.

For the Government
of the United States:

_____

For the Government
of Canada:

_____

The Pipeline Route

In Alaska:

The Pipeline constructed in Alaska by Alcan will commence at the discharge side of the Prudhoe Bay Field gas plant facilities. It will parallel the Alyeska oil pipeline southward on the North Slope of Alaska, cross the Brooks Range through the Atigun Pass, and continue on to Delta Junction.

At Delta Junction, the Pipeline will diverge from the Alyeska oil pipeline and follow the Alaska Highway and Haines oil products pipeline passing near the towns of Tanacross, Tok, and Northway Junction in Alaska. The Alcan facilities will connect with the proposed new facilities of Foothills Pipe Lines (South Yukon) Ltd. at the Alaska-Yukon border.

In Canada:

In Canada the Pipeline will commence at the Boundary of the State of Alaska, and the Yukon Territory in the vicinity of the towns of Border City, Alaska and Boundary, Yukon. The following describes the general routing of the Pipeline in Canada:

From the Alaska-Yukon border, the Foothills Pipe Lines (South Yukon) Ltd. portion of the Pipeline will proceed in a southerly direction generally along the Alaska Highway to

a point near Whitehorse, Yukon, and thence to a point on the Yukon-British Columbia border near Watson Lake, Yukon, where it will join with the Foothills Pipe Lines (North B.C.) Ltd. portion of the Pipeline.

The Foothills Pipe Lines (North B.C.) Ltd. portion of the Pipeline will extend from Watson Lake in a southeasterly direction across the north eastern part of the Province of British Columbia to a point on the boundary between the Provinces of British Columbia and Alberta near Boundary Lake where it will interconnect with the Foothills Pipe Lines (Alta.) Ltd. portion of the Pipeline.

The Foothills Pipe Lines (Alta.) Ltd. portion of the Pipeline will extend from a point on the British Columbia-Alberta boundary near Boundary Lake in a southeasterly direction to Gold Creek and thence parallel to the existing right-of-way of the Alberta Gas Trunk Line Company Limited to James River near Caroline.

From James River a "western leg" will proceed in a southerly direction, generally following the existing right-of-way of the Alberta Gas Trunk Line Company Limited to a point on the Alberta-British Columbia boundary near Coleman in the Crow's Nest Pass area. At or near Coleman the Foothills Pipe Lines (Alta.) Ltd. portion of the Pipeline will interconnect with the Foothills Pipe Lines (South B.C.) Ltd. portion of the Pipeline.

The Foothills Pipe Lines (South B.C.) Ltd. portion of the Pipeline will extend from a point on the Alberta-British Columbia boundary near Coleman in a southwesterly direction across British Columbia generally parallel to the existing pipeline facilities of Alberta Natural Gas Company Ltd. to a point on the International Boundary Line between Canada and the United States of America at or near Kingsgate in the Province of British Columbia where it will interconnect with the facilities of Pacific Gas Transmission Company.

Also, from James River, an "eastern leg" will proceed in a southeasterly direction to a point on the Alberta-Saskatchewan boundary near Empress Alberta where it will interconnect with the Foothills Pipe Lines (Sask.) Ltd. portion of the Pipeline. The Foothills Pipe Lines (Sask.) Ltd. portion of the Pipeline will extend in a southeasterly direction across Saskatchewan to a point on the International Boundary Line between Canada and the United States of America at or near Monchy, Saskatchewan where it will interconnect with the facilities of Northern Border Pipeline Company.

Zones for the Pipeline and the Dempster Line in Canada

Zone 1 Foothills Pipe Lines (South Yukon) Ltd.

Alaska Boundary to point of interconnection with the Dempster Line at or near Whitehorse.

Zone 2 Foothills Pipe Lines (South Yukon) Ltd.

Whitehorse to Watson Lake.

Zone 3 Foothills Pipe Lines (North B.C.) Ltd.

Watson Lake to point of interconnection with Westcoast's main pipeline near Fort Nelson.

Zone 4 Foothills Pipe Lines (North B.C.) Ltd.

Point of interconnection with Westcoast's main pipeline near Fort Nelson to the Alberta-B.C. border.

Zone 5 Foothills Pipe Lines (Alta.) Ltd.

Alberta-B.C. border to point of bifurcation near Caroline, Alberta.

Zone 6 Foothills Pipe Lines (Alta.) Ltd.

Caroline, Alta. to Alberta-Saskatchewan border near Empress.

Zone 7 Foothills Pipe Lines (Alta.) Ltd.

Caroline to Alberta-B.C. border near Coleman.

Zone 8 Foothills Pipe Lines (South B.C.) Ltd.

Alberta-B.C. border near Coleman to B.C.-U.S. border near Kingsgate.

Zone 9 Foothills Pipe Lines (Sask.) Ltd.

Alberta-Saskatchewan border near Empress to Saskatchewan-U.S. border near Monchy.

Zone 10 Foothills Pipe Lines (North Yukon) Ltd.

Mackenzie Delta Gas fields in the Mackenzie Delta, N.W.T., to a point near the junction of the Klondike and Dempster highways just west of Dawson, Yukon Territory.

Zone 11 Foothills Pipe Lines (South Yukon) Ltd.

A point near the junction of the Klondike and Dempster highways near Dawson to the connecting point with the Pipeline at or near Whitehorse.

Cost Allocation in Zone 11

The cost of service in Zone 11 shall be allocated to United States shippers on the following basis:

i) There will be calculated, in accordance with (iii) below, a percentage for Zones 1 - 9 in total by dividing the actual capital costs by the filed capital costs and multiplying by 100. If actual capital costs are equal to or less than 135% of filed capital costs, then United States shippers will pay 100% of the cost of service in Zone 11. If actual capital costs in Zones 1 - 9 are between 135% and 145% of filed capital costs, then the percentage paid by United States shippers will be adjusted between 100% and 66 2/3% on a straight-line basis, except that in no case will the portion of cost of service paid by United States shippers be less than the proportion of the contracted volumes of Alaskan gas at the Alaska-Yukon border to the same volume of Alaskan gas plus the contracted volume of Northern Canadian gas. If the actual capital

costs are equal to or exceed 145% of filed capital costs, the portion of the cost of service paid by United States shippers will be not less than 66 2/3% or the proportion as calculated above, whichever is the greater.

ii) There will be calculated a percentage for the cost-overrun on the Dawson to Whitehorse lateral (Zone 11). After determining the dollar value of the overrun, there will be deducted from it:

(a) the dollar amount by which actual capital costs in zones 1,7,8 and 9 (carrying U.S. gas only) are less than 135% of filed capital costs referred to in (iii) below;

(b) in each of Zones 2, 3, 4, 5 and 6 the dollar amount by which actual capital costs are less than 135% of filed capital costs referred to in (iii) below, multiplied by the proportion that the U.S. contracted volume bears to the total contracted volume in that zone.

If the actual capital costs in Zone 11, after making this adjustment, are equal to or less than 135% of filed capital costs, then no adjustment is required to the percentage of the cost of service paid by United States shippers as calculated in (i) above. If, however, after making this adjustment, the actual capital cost in Zone 11 is greater than 135% of the filed capital cost, then the proportion of the cost of service paid by United States shippers will be a fraction (not exceeding 1) of the percentage of the cost of service calculated in (i) above, where the numerator of the fraction is 135% of the filed capital cost and the denominator of the fraction is actual capital cost less the adjustments from (a) and (b) above. Notwithstanding the adjustments outlined above, in no case will the percentage of the actual cost of service borne by United States

shippers be less than the greater of 66 2/3% or the proportion of the contracted volumes of Alaskan gas at the Alaska-Yukon border to the same volume of Alaskan gas plus the contracted volume of Northern Canadian gas.

iii) The "filed capital cost" to be applied to determine cost overruns for the purpose of cost allocation in (i) and (ii) above will be:

The Pipeline in Canada (Zones 1 - 9)[1/]	"Filed Capital Cost" Estimates for the Pipeline in Canada (millions of Canadian dollars)
48" - 1260 lb. pressure pipeline -	3,873
or 48" - 1680 lb. pressure pipeline -	4,418
or 54" - 1120 lb. pressure pipeline -	4,234

1/ These filed capital costs include and are based upon (a) a 1260 psi, 48-inch line from the Alaska-Yukon border to the point of possible interconnection near Whitehorse; (b) a 1260 psi, 48-inch; or 1680 psi, 48-inch; or 1120 psi 54-inch line from the point of possible interconnection near Whitehorse to Caroline Junction; (c) a 42-inch line from Caroline Junction to the Canada-U.S. border near Monchy, Saskatchewan; and (d) a 36-inch line from Caroline Junction to the Canada-U.S. border near Kingsgate, British Columbia. These costs are escalated for a date of commencement of operations of January 1, 1983.

246-443 O - 77 - 7

	"Filed Capital Cost" Estimates for the Pipeline in Canada (millions of Canadian dollars)
Zone 11 of the Dempster Line[2/]	
30" - Section of Dempster line from Whitehorse to Dawson	549
or 36" - Section of Dempster line from Whitehorse to Dawson	585
or 42" - Section of Dempster line from Whitehorse to Dawson	705

Details for Zones 1 - 9 are shown in the following table:

2/ The costs are escalated for a date of commencement of operations of January 1, 1985.

Filed Capital Costs for the Pipeline in Canada

Zone	48" 1260 psi $ million (Canadian)	48" 1680 psi $ million (Canadian)	54" 1120 psi $ million (Canadian)
1	707	707	707
2	721	864	805
3	738	850	303
4	380	488	456
5	677	859	813
6	236	236	236
7	126	126	126
8	83	83	83
* 9	205	205	205
Total Zones 1-9	3,873	4,418	4,234

*The last compression station in Zone 9 includes facilities to provide compression up to 1440 psi.

It is recognized that the above are estimates of capital costs. They do not include working capital, property taxes or the provision for road maintenance in the Yukon Territory (not to exceed $30 million Canadian).

If at the time construction is authorized, both Governments have agreed to a starting date for the operation of the Pipeline different from January 1, 1983, then the capital cost estimates shall be adjusted for the difference in time using the GNP price deflator from January 1, 1983. Similarly at the time construction is authorized for the Dempster Line, if the starting date for the operation agreed to by the Canadian Government is different from January 1, 1985, then the capital cost estimate shall be adjusted for the difference in timing using the GNP price deflator from January 1, 1985. The diameter of the pipeline in Zone 11, for purposes of cost allocation, may be 30", 36" or 42", so long as the same diameter pipe is used from the Delta to Dawson (Zone 10).

The actual capital cost, for purposes of this Annex will be the booked cost as of the date "leave to open" is granted plus amounts still outstanding to be accrued on a basis to be approved by the National Energy Board. Actual

capital costs will exclude working capital, property taxes, and direct charges for road maintenance of up to $30 million Canadian in the Yukon Territory as specifically provided herein.

For purposes of this Annex above, actual capital costs will exclude the effect of increases in cost or delays caused by actions attributable to the U.S. shippers, related U.S. pipeline companies, Alaskan producers, the Prudhoe Bay deliverability or gas conditioning plant construction and the United States or State Governments. If the appropriate regulatory bodies of the two countries are unable to agree upon the amount of such costs to be excluded, the determination shall be made in accordance with the procedures set forth in Article IX of the Transit Pipeline Treaty.

The filed capital costs of facilities in Zones 7 and 8 will be included in calculations pursuant to this Annex only to the extent that such Facilities are constructed to meet the requirements of U.S. shippers.

Direct Charges by Public Authorities

*1. Crossing damages (roads, railroad crossings, etc.; this item is usually covered in the crossing permit).

*2. Road damages caused by exceeding design load limits.

*3. Required bridge reinforcements caused by exceeding design load limits.

4. Airfield and airstrip repairs.

5. Drainage maintenance.

6. Erosion control.

7. Borrow pit reclamation.

8. Powerline damage.

9. Legal liabilityfor fire damage.

10. Utility system repair (water, sewer, etc.)

11. Camp waste disposal.

12. Camp site reclamation.

13. Other items specified in enviromental stipulations.

14. Costs of surveillance and related studies as required by regulatory bodies or applicable laws.

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* In the case of these items and all other road related charges by public authorities, total charges in the Yukon Territory shall not exceed Canadian $30 million.

British Columbia Statement

The Government of the Province of British Columbia agrees in principle to the provisions contained in the Canada-United States Pipeline Treaty of January 28, 1977, and furthermore British Columbia is prepared to cooperate with the Federal Government to ensure that the provisions of the Canada-United States Treaty, with respect to non-interference of throughput and non-discriminatory treatment with respect to taxes, fees or other monetary charges on either the pipeline or throughput, are adhered to. Specific details of this undertaking will be the subject of a Federal-Provincial Agreement to be negotiated at as early a date as possible. Such Agreements should guarantee that British Columbia's position expressed in its telegram of August 31 is protected.

Alberta Statement

The Government of the Province of Alberta agrees in principle to the provisions contained in the Canada-United States Pipeline Treaty of January 28, 1977, and furthermore, Alberta is prepared to cooperate with the Federal Government to ensure that the provisions of the Canada-United States Treaty, with respect to non-interference of throughput and non-discriminatory treatment with respect to taxes, fees, or other monetary charges on either the Pipeline or thoughput, are adhered to. Specific details of this undertaking will be the subject of a Federal-Provincial Agreement to be negotiated when the Canada-United States protocol or understanding has been finalized.

Saskatchewan Statement

The Government of Saskatchewan is willing to cooperate with the Government of Canada to facilitate construction of the Alcan Pipeline through southwestern Saskatchewan and, to that end, the Government of Saskatchewan expresses its concurrence with the principles elaborated in the Transit Pipeline Agreement signed between Canada and the United States on January 28, 1977. In so doing, it intends not to take any discriminatory action towards such pipelines in respect of throughput, reporting requirements, and environmental protection, pipeline safety, taxes, fees or monetary charges that it would not take against any similar pipeline passing through its jurisdiction. Further details relating to Canada-Saskatchewan relations regarding the Alcan Pipeline will be the subject of Federal-Provincial agreements to be negotiated after a Canada-United States understanding has been finalized.

REPORT ACCOMPANYING A DECISION ON AN ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PREFACE

The Alaska Natural Gas Transportation Act (ANGTA) established a unique and comprehensive process designed to make use of the collective expertise of various branches and departments of government in reaching a final decision on an Alaska Natural Gas Transportation System. By statutory direction, after months of hearings, the Federal Power Commission issued on May 1, 1977, a one-volume report, Recommendation to the President, which urged the designation of an overland pipeline system. After the FPC Report, pursuant to Section 6(a) of ANGTA, ten Federal interagency task forces were organized to report, not later than July 1, 1977, on the impacts and considerations of an Alaska natural gas transportation system. The July 1 Reports submitted by these task forces covered the following subjects:

1. The energy policy impacts of an Alaska natural gas project;
2. Environmental considerations;
3. Sources of financing for capital costs;
4. The impact on competition;
5. Safety and design;
6. International relations;

7. National security, particularly security of supply;
8. Impact on the national economy;
9. Potential cost overruns and time delay; and
10. Socioeconomic impact of the transportation system.

Pursuant to Section 6(d) of ANGTA, the Council of Environmental Quality submitted a report on July 1, 1977, which found that the environmental impact statements submitted by the FPC with respect to Alcan, pursuant to Section 5(e) of ANGTA, are legally and factually sufficient.

In the preparation of this decision, all the inter-agency reports, the FPC Recommendation, and many other submissions and public comments received from Governors, local officials and other interested individuals have been carefully considered. This Report to the Congress on an Alaska Natural Gas Transportation System, as well as the President's decision which precedes it, are the product of this collective study process. As required by the Alaska Natural Gas Transportation Act, this Report explains in detail the basis for the decision favoring the Alcan project.

CHAPTER I - DESIRABILITY OF AN ALASKA NATURAL GAS PROJECT

Natural Gas Supply

United States

There is currently estimated to be a potential natural gas demand in the United States of 25 to 30 trillion cubic feet per year. The U.S. will have to use every source it can to maintain the early 1970 production level of approximately 20 trillion cubic feet per year. As our dependence on foreign sources of energy continues to rise, the nation can use all the reasonably priced domestic natural gas it can produce to displace oil imports. Because of its premium nature, the more gas the U.S. produces, the more it will be able to use.

Looking toward 1990, even under the most optimistic conservation and production assumptions, natural gas shortages are a very real possibility, even with the delivery of Alaska gas. This is so because of the expected tapering off of domestic gas production in the lower-48 states, and a reversal in the decline of natural gas demand when conservation measures have had their full effect and the nation experiences a renewed increase of demand growth from normal economic activity. This situation could be further aggravated by the expiration and nonrenewal of Canadian gas

export contracts through the 1980's. The Alcan project maximizes our chances for avoiding such curtailments.

The most optimistic 1985 projection for U.S. domestic production of gas is 17.5 tcf without Prudhoe Bay gas. This is 15 percent less production than in 1970. Yet during this same period - 1970 to 1985 - it is estimated that total energy demand will increase by over 40 percent. Further, a more pessimistic but still plausible estimate of the domestic resource base would reduce 1985 production of gas by an additional 0.9 tcf per year.

On the demand side, it is apparent that this nation could use all the reasonably priced natural gas it can produce. Even with the ambitious coal conversion program proposed earlier this year by the Administration, projections indicate that Alaska natural gas will be needed to meet demand in the coming decade.

Additionally, such projections do not make any allowance for unusually cold weather, such as that experienced last winter. The increase in gas demand last winter for space heating in the residential sector alone was estimated to be over 0.4 tcf. Under these probabilities, gas shortages are likely in the near future and throughout the 1980's with or without substantial new sources of supply.

In general, there are three economically attractive means to supplement traditional domestic gas supplies by 1985. The first is to accelerate OCS leasing in the Gulf of Mexico, which could produce as much as an additional 0.2 tcf per year by 1985 and 0.6 tcf per year by 1990. The second is to import gas from Mexico, which could be as much as 0.5 tcf per year by 1985 and 0.7 tcf per year by 1990 if the recently-announced gas sales contracts should be completed and approved. The third is to proceed with an Alaska gas project.

Proved saleable gas reserves of 20.6 to 22.8 trillion cubic feet (tcf) in the Main Pool accumulation in the Prudhoe Bay Field represent more than a full year of natural gas consumption at the current consumption rate of about 17.5 tcf per year. Prudhoe Bay production at 2.4 bcfd of gas will include production from other reservoirs which have been identified in the field, the Kuparuk and the Lisburne. Production at that rate would increase domestic gas production by approximately 5 percent in the years when Alaska gas first becomes available. Additional gas discoveries on the North Slope, or in other areas of Alaska through which the pipeline passes, would increase potential deliverability even further.

240-448 O - 77 - 8

The certain increase in supply from an Alaska gas project is estimated to be 0.7 tcf per year (2.0 bcfd) by 1985. By 1990, a volume greater than 0.9 tcf per year (2.4 bcfd) might be produced.

Under the best of circumstances - which assume the most optimistic supply projections, demand reductions and fuel substitutions - the addition of Alaska gas to domestic production will make a substantial contribution toward closing the gap between natural gas supply and demand. Such additional gas supplies could allow some industries with special processes to continue burning natural gas longer, and allow more residential use of natural gas, further displacing oil imports.

By 1990, use of every conceivable supply option under any scenario may still leave us with serious domestic gas shortages. By 1990, oil imports are projected to be 9.6 mmbd, provided that supplemental supply sources can furnish gas in the following volumes:

- 0.9 tcf per year from Alaska gas;
- 0.7 tcf per year from Mexican gas exports;
- 0.6 tcf per year from accelerated OCS leasing in the Gulf of Mexico.

Clearly, each of these gas supply options will become more desirable and important as conventional gas supplies decline in the years after 1990.

Our best efforts will only temporarily stem the decline in conventional onshore gas production in the lower-48 states. The U.S. may increasingly need supplemental sources of gas supply to meet demand. These will include:

- geopressurized methane
- Devonian shale
- deeper, tighter, formations
- coal gasification
- imports of liquefied natural gas (LNG)
- synthetic natural gas (SNG).

Although Alaska gas will add about 5 percent to total domestic gas production, it will be a larger proportion of supply for consumers in the Middle West and on the West Coast. For these regions, it will be between 6 and 10 percent of their supply depending on the distribution which is reflected in the final gas sales contracts. These volumes will be important to the availability of gas in these regions, and should be delivered at a competitive price with other supplemental sources of supply.

Canada

One of the most significant effects of the Alcan project on gas supply will be its effect on Canada's natural gas sales policies. In its July 4th decision on a northern pipeline project, the Canadian National Energy Board (NEB) found that unless the project gave Canadians access to their frontier gas reserves, Canada might not have sufficient supplies available to fulfill its existing gas export commitments to the U.S. If the frontier gas reserves were made available, however, increased supplies would exist to allow continuation of current export levels.

A possibility offered by the Alcan project is the effective availability of Alaska gas to the U.S. before completion of the project through pre-delivery of Canadian gas under existing export licenses. The southern portions of the Alcan project could be constructed first, and deliveries of excess gas from Alberta could reach as much as 1.1 bcfd by the winter of 1979 - 1980. As currently proposed, the pre-deliveries would be repaid by reduced export commitments in the late 1980's, or by time-swaps for Alaska gas. The pre-deliveries would make extra gas available over the next few years when the Nation faces

serious and immediate natural gas shortages, prior to the time when supply stimulation and demand reduction measures under the National Energy Plan have had any effect in helping bring natural gas supply and demand back into balance.

A pre-delivery arrangement involving Alberta gas would provide stimulus to exploration for additional supplies in that province by providing producers with additional markets for their gas. Similarly, agreement on a project which brings a major pipeline effectively within 500 miles of the Mackenzie Delta region should stimulate further exploration activity there. If that additional exploration is undertaken, the possibility of obtaining additional volumes of Canadian gas in future years will be enhanced. The joint project will thus ensure maximum availability of Canadian gas in the near term, through continued exports under existing contracts and possible pre-deliveries. It will also give the U.S. its best chance of obtaining longer-term supplies of Canadian gas by providing the impetus for broad-scale exploration programs.

Economic Considerations

An economic analysis of the Alaska gas projects can be made from both a private market perspective and from a national economic perspective. The utility of the project

from a private market perspective is determined by whether there are less expensive alternative fuels available. This depends on the field price of the gas and the transportation cost. The reliance upon the National Energy Plan (NEP) for setting of a field price is discussed in Section 6 of the Decision. For illustrative purposes here, the $1.45 price that would be set under the NEP is used. The transportation cost of service will be determined by the capital and operating costs of the delivery system. The project applicants have filed cost estimates that produce a 20-year average cost of service which ranges from $.80 to $1.07 per mmbtu (1975 dollars).

The large cost overruns of the Alyeska pipeline have raised new concerns regarding the accuracy of base capital cost estimates for such major projects. For the Alaska gas project, cost overrun assessments have been made which allow for capital cost increases by factors from about 1.3 to 2.0.

The expected 20-year average cost of service for the Alcan project described in the Decision, and including an expected case 40 percent cost overrun, is estimated at approximately $1.04 per mmbtu in constant 1975 dollars.

The cost of service under similar assumptions for the El Paso project is $1.21 per mmbtu. The "worst case" estimates for both projects result in a 20-year average cost of service of about $1.80 to $2.00 per mmbtu. In addition, the transporters (i.e., the project sponsors) will probably be required to bear a portion of the "conditioning" or processing cost of the gas. When the cost of service price of the Alcan project is added to a wellhead price of $1.45 to $1.75 per mmbtu (depending on the amount the FPC will allow producers for their processing costs), the wholesale or "city gate" price of the gas should be about $2.50 to $2.80 per mmbtu in constant 1975 dollars. The delivered cost of Alcan gas under three different overrun assumptions is:

20 Year Average Alcan Delivered Cost
(1975 Dollars)

	Filed Costs	Expected Cost Overrun	Worst Case Cost Overrun
Field Price	$1.45	$1.45	$1.45
Processing	0 to .30	0 to .30	0 to .30
Transportation	0.80	1.04	1.57
	2.25 to 2.55	2.49 to 2.79	3.02 to 3.32

The conservatively projected costs of imported LNG and other alternative non-conventional gas supplies would be at least $3.25 per mmbtu (in 1975 dollars). SNG would be at least $3.75 per mmbtu. Only if there were a "worst case" cost overrun and high processing costs would Alaska gas be more expensive than imported LNG; it would still be considerably less expensive than SNG. One of the most important objectives of the Federal Government's involvement during the planning and construction period will be to avoid such "worst case" overruns.

Estimates of availability and cost of gas from coal gasification and other unconventional sources must be considered speculative at this time. However, as there are no confirmed estimates which put the city gate price of marketable amounts of gas from these sources below $3.50 to $4.00 per mmbtu, the Alcan project would appear to be competitive for the life of the project.

The measure of the project's value to the nation is the Net National Economic Benefit (NNEB), which compares the present value of real resource expenditures for the project with the present value of its future benefits. The resource expenditures are measured by the capital and operating expenses. The benefits are measured by the costs

of alternate fuel displaced by the gas, such as imported oil or LNG. The benefit value which has been used for evaluating this project is approximately $2.60 per mmbtu (1975 dollars). This analysis shows that both the El Paso and Alcan projects would have net benefits of almost $5.0 billion at the expected overrun cost. This clearly indicates that construction of some project is preferable to the no project option. Significantly, the benefits of either project remain positive, although smaller, at the "worst case" cost overrun level.

Most significantly, the NNEB of the Alcan project is over $1.1 billion more than that of El Paso under the expected overrun case as indicated below:

	"Expected" Costs	"Worst Case" Costs
Alcan Project	$5.7 billion	$1.8 billion
El Paso	$4.6 billion	$700 million

If the resource value assumption is changed to take account of the reasonable potential for an increasing world oil price over the 25 year accounting life of the project, or if the price of supplemental gas supplies such as SNG (now at $3.75 or more per mmbtu) is used,

and if the benefits of the project beyond its 25 year accounting life are included, the expected case NNEB more than doubles.

Conclusion

This analysis indicates the importance and superiority of the Alcan project as compared to either the El Paso project or the no project option. It appears that Alaska gas will be one of our cheapest sources of supplemental gas supply and will assure at least near-term continuation of our access to Canadian gas supplies.

Even if we achieve the ambitious coal conversion, conservation and production goals outlined in the National Energy Plan, Alaska gas provides us with a needed additional resource for helping reduce oil imports while heating more of our homes and running more of our factories with a premium domestically produced fuel. If we fall short of our goals, Alaskan gas is essential in the effort to minimize imports and help fill the gap between natural gas supply and demand.

A realistic assessment of all the supply and demand potentials indicates that Alaska gas delivered by the Alcan system will be an important source of energy. The Alcan

project has a high expected net national economic benefit. It should provide transportation services at a projected cost that will assure the sale of Alaska gas. The Alcan project is both a good investment for the United States as a matter of national energy policy, and a good investment for the private interests that will manage and finance its construction.

Chapter II - FINANCIAL ANALYSIS

Conclusions

As indicated by the terms and conditions in Section 5 of the Decision, the Alcan project is required to be privately financed. As such, it will be the largest privately financed energy project ever undertaken, requiring between $10 billion and $15 billion by the time it is completed. This Chapter addresses the reasons for concluding the project can be privately financed and the conditions under which a private financing is expected to occur.

To effectuate such a private financing, a plan that equitably and carefully balances the project's benefits and risks is required. The following plan to share the risks and benefits of the Alcan project is proposed:

1. The equity investment in the project would be placed at risk under all circumstances and the budgeted equity investment be considered the first funds spent. The rate of return on equity would compensate sponsors for bearing this risk.
2. Producers and the State of Alaska, as direct and major beneficiaries of this project, should

participate in the financing either directly or in the form of debt guarantees.

3. The burden of cost overruns be shared by equity holders and consumers upon completion through the application of a variable rate of return on common equity. This would provide a strong incentive for the project to be constructed at the lowest possible cost.
4. Provision of debt service in the event of service interruption would be borne by consumers through a tariff that becomes effective only after service commences.

Analysis

Given the large volumes of proven reserves in the Prudhoe Bay Oil Pool, the high degree of experience and excellent performance record of gas pipeline transmission facilities, the support and best efforts of Canada, and the clear need for additional natural gas supplies throughout the United States, there is good reason to expect this project will be financed by the capital markets without the use of consumer noncompletion agreements. This determination takes into account the following considerations:

1. The risks associated with the construction and operation of the Alcan project must be assumed by creditworthy parties in order to achieve private financing. There is sufficient credit support capacity among the direct beneficiaries of the project to assure completion of the pipeline without assistance from consumers. Such beneficiaries are the gas transmission companies, gas producers, and the State of Alaska. The benefits of these parties sufficiently outweigh the risks associated with the project so that it is reasonable to expect them to provide support at small additional cost to consumers. Once operation begins, however, consumers must expect to pay the full cost of service based upon certified expenditures.
2. To reduce uncertainty to a minimum, the Federal Government should:
   a) specify clearly the terms and conditions that are to be imposed on the pipeline during its construction and operation prior to commencement of construction;

b) provide a mechanism to coordinate engineering and environmental regulation and permit rapid and unambiguous resolution of any difficulties which may be encountered;

c) provide for timely approval of outlays for incorporation into the project's rate base;

d) provide a mechanism to permit a high degree of cooperation with Canada and rapid resolution of any difficulties which are encountered;

e) allow sufficient time to plan, coordinate and manage procurement, logistics and construction.

3. To hold the total direct cost of the project to a minimum and the project on schedule, it is desirable to:

a) develop a variable rate of return on equity that provides for a realizable high return if actual costs are near or below budget and a reduced return if cost overruns occur;

b) provide for similar treatment of the return on equity in both the U.S. and Canada;

c) provide an incentive to the Canadian Government and its regulatory authorities to achieve

all possible cost savings and promote management efficiency.

The Terms and Conditions in Section 5 of the Decision, along with the Agreement on Principles included as Section 7, provides the requisite processes and assurances for the reduction of both uncertainty and costs.

The conclusion reached here regarding private financing without consumer noncompletion guarantees differs substantially from the position taken by most parties in the Federal Power Commission proceeding and by representatives of El Paso in their most recent statements. These statements were made prior to the significant steps that have been taken in recent weeks to reduce uncertainty and create proper planning, control and incentives. While the fundamental economic potential of the project has not changed, the likelihood of achieving that potential is greater.

Alcan Financial Plan

The Alaska natural gas transportation project proposed by Alcan will involve a large and complex financing which will be arranged prior to the commencement of construction.[1/]

1/ A detailed financial analysis of the competing proposals can be found in Report to the President, Financing an Alaskan Gas Transportation System, Department of the Treasury, Lead Agency, and other participating Agencies: July 1, 1977.

In view of the size of the project relative to the financing capacity of its sponsors, Alcan has proposed that the required capital be raised and secured by means of "project financing" as distinguished from the more traditional "balance sheet financing" used in the gas pipeline industry. That is, a new project entity will be created which will be expected in and of itself to generate sufficient revenues to pay for its operating costs, interest and principal on debt, and a return on, and ultimately a return of, equity to its investors.

It is expected that the equity funds for the project entities will be provided by the sponsoring consortium companies.[2/] Debt capital will come from a variety of lenders.

The basic requirement for a successful financing is the economic viability of the project. In Chapter IV of the Report, the basic economic soundness of the project is demonstrated. Even under extreme cost overruns, the delivered cost of Alaska gas will be economically attractive. Appropriate incentives will encourage the

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2/ For the sake of simplicity, the new interdependent project entities will hereafter be referred to collectively as "the project."

minimization of cost overruns. Pipeline and gas distribution companies can be expected to purchase the Alaska gas from Prudhoe Bay producers under long-term contracts and sign transportation contracts with Alcan.

The conclusion that Alcan can be privately financed is founded on the basic economic desirability of Alaska gas and the viability Alcan transportation system; nevertheless, skillful financial packaging and risk-benefit balancing will be required. It is therefore necessary to explore the boundaries of the financing problem by considering Alcan's likely capital needs and sources, relating those needs to the capital market in general, and reviewing the list of beneficiaries and examining the roles each might be expected to play in the financing.

Capital Requirements and Sources of Funds

Alcan has estimated the capital costs of its system under varying design, route and completion date assumptions. It has also made two capital requirements and source of funds projections under its 48-inch proposal: one was filed with the FPC in March 1977, and was based upon an "express" 1260 psi line carrying no Canadian gas; the other was based upon the July 4, 1977, NEB-recommended modifications of that system to divert to Dawson in order to carry Canadian gas

and make $200 million in socioeconomic payments. Both of these projections assumed delivery beginning October 1, 1981.

The Agreement on Principles with Canada has altered the system from that specified by the NEB. This alteration has little affect on the basic total capital needs of the system as compared with the needs estimated for the system including the NEB recommendations; the capital saved by rerouting from the Dawson diversion back to the prime route is almost exactly offset by the additional cost of installing a higher-capacity pipeline system from Whitehorse to Caroline Junct .[3/] Thus by simply adjusting the Alcan financial plan for the NEB recommended system to reflect a more realistic commencement date of January 1, 1983, a financial plan consistent with the agreed-upon system design, route and commencement date results. Exhibits 1 and 2 display the original and adjusted Alcan plans.

Alcan is expected to require approximately $10.3 billion according to cost estimates filed with U.S. and

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3/ On the basis of filed costs, moving back to the prime route saves $444 million while putting in 1680 psi pipe adds $472 million. The overrun estimate was $630 million for the Dawson diversion and $565 million for the increase in the capacity of the system.

Canadian regulatory bodies, adjusted to reflect commencement of operations on January 1, 1983. The projected sources for these funds are the following:

U.S. Banks	$ 1,233 million
Canadian Banks	542
U.S. Long-Term Debt	5,865
Canadian Long-Term Debt	445
U.S. Common Stock	1,362
Canadian Common Stock	855
	$10,302 million

With cost overruns, the requirements would be higher. For example, if the projected cost overrun percentage detailed elsewhere in this report of approximately 32 percent is used, the total capital requirements would rise to approximately $13.6 billion.

Capital Markets

The capital requirements of the Alcan project are so large that the project cannot be viewed in conventional terms by its pipeline sponsors and other potential investors. At the end of 1976, the total assets of the gas transmission industry were $26 billion. The project must be seen as a corporate entity in itself, capable of issuing and servicing its own debt and equity.

Exhibit 1
Financing Requirements
of Companies Associated with
THE ALCAN PIPELINE PROJECT*
(1978-1982)
(Dollars in Millions)

	1978	1979	1980	1981	1982	Total Basic Requirements
ALCAN PIPELINE						
U.S. Banks	$ -	$ 36	$ 555	$ 279	-	$ 870
U.S. Long Term Debt	-	700	600	450	-	1,750
U.S. Common Stock	-	350	270	260	-	880
	-	$1,086	$1,425	$ 989	-	$3,500
FOOTHILLS GROUP						
Canadian Banks	-	110	300	100	-	510
U.S. Long Term Debt	-	321	1,038	736	-	2,095
Canadian Long Term Debt	75	100	100	-	144	419
Canadian Common Stock	220	172	256	149	7	804
	295	703	1,694	985	151	3,828
PG&E						
U.S. Banks	-	-	-	-	-	-
U.S. Long Term Debt	-	-	-	388	-	388
U.S. Common Stock	-	-	-	-	-	-
				388		388
PG&E						
U.S. Banks	-		-	-	-	-
U.S. Long Term Debt	-	82	205	77	-	364
U.S. Common Stock	-	-	-	-	-	-
		82	205	77		364
NORTHERN BORDER						
U.S. Banks	-	-	-	290	-	290
U.S. Long Term Debt	-	46	410	465	-	921
U.S. Common Stock	-	16	136	250	-	402
	-	62	546	1,005	-	1,613
TOTAL						
Canadian Funds	295	382	656	249	151	1,733
U.S. Funds	-	1,551	3,214	3,195	-	7,960
	$295	$1,933	$3,870	$3,444	$151	$ 9,693

* Assumes "Dawson Re-Routing" and October 1, 1981, gas deliveries.

Source: Documents Submitted by Alcan Project to White House Task Force, August 2, 1977, Tab 4, Schedule B.

Exhibit 2
Adjusted Financing Requirements
of Companies Associated with
THE ALCAN PIPELINE PROJECT*
(1979-1983)
(Dollars in Millions)

	1979	1980	1981	1982	1983	Total Basic Requirements
ALCAN PIPELINE						
U.S. Banks	$ -	$ 38	$ 590	$ 297	-	$ 925
U.S. Long Term Debt	-	744	638	478	-	1,860
U.S. Common Stock	-	372	287	276	-	935
	-	$1,154	$1,515	$1,051	-	$3,720
FOOTHILLS GROUP						
Canadian Banks	-	117	319	106	-	542
U.S. Long Term Debt	-	341	1,103	782	-	2,227
Canadian Long Term Debt	80	106	106	-	153	445
Canadian Common Stock	234	183	272	158	7	855
	314	747	1,800	1,046	160	4,069
PG&E						
U.S. Banks	-	-	-	-	-	-
U.S. Long Term Debt	-	-	-	412	-	412
U.S. Common Stock	-	-	-	-	-	-
				412		412
PG&E						
U.S. Banks	-		-	-	-	-
U.S. Long Term Debt	-	87	218	82	-	387
U.S. Common Stock	-	-	-	-	-	-
		87	218	82		387
NORTHERN BORDER						
U.S. Banks	-	-	-	308	-	308
U.S. Long Term Debt	-	49	436	494	-	979
U.S. Common Stock	-	17	145	266	-	427
	-	68	581	1,068	-	1,714
TOTAL						
Canadian Funds	314	406	697	265	160	1,842
U.S. Funds	-	1,649	3,416	3,396	-	8,460
	$314	$2,055	$4,113	$3,661	$160	$10,302

* Based upon financial plan presented to White House Staff on August 2, 1977, adjusted to reflect one and one-quarter year lag in outlays and 5 percent inflation factor.

While this investment is large for the industry, its importance in terms of aggregate investment or total capital markets is modest. To put these requirements into perspective, U.S. gross private investment in 1976 was $241 billion. Alcan's peak year capital needs for U.S. funds, expressed in 1976 dollars, are only 1.1 percent of total U.S. gross private investment for that year, which was not a particularly good one for the economy.

It is anticipated that most, if not all, of the U.S. common equity will come from U.S. shippers (i.e., U.S. transmission or distribution companies). A broad consortium of companies would have sufficient financial capacity to make the required $1.4 billion investment. The transmission sector of the industry alone had almost double that amount in annual cash flow in 1976. While the industry must continue to make other investments, its internal cash flow, plus the ability to issue new securities, provides ample capacity to fund the necessary equity investment, including the equity portion of potential cost overruns.

The Canadian equity is expected to be provided by the four companies supporting the project in Canada: Westcoast Transmission Company, Ltd., Alberta Gas Trunkline Company,

Ltd. (AGTL), Alberta Natural Gas Company, Ltd., and Trans-Canada Pipelines, Ltd. While the first two companies are the major and previously the only firms in the Canadian consortium, the addition of the latter two in recent weeks has contributed additional financial strength to the Alcan project.4/

As to the debt portion of financing this project, Alcan's impact on the U.S. debt market cannot be considered burdensome. In 1976, non-government long-term debt offerings in the U.S. totaled $62.9 billion. Ignoring the state of the economy in 1976 and not including the likely positive real growth of the long-term debt market from 1976 until the Alcan debt is issued, Alcan's projected total U.S. long-term debt requirement (including the Foothills Group debt sold in the U.S.) in its peak year is only 3 percent of the market (both expressed in 1976 dollars). Over the five year period, 1978 through 1982, the aggregate requirement is less than approximatley 1.4 percent.

4/ The Alcan project is relatively more important to Westcoast and AGTL; together they have total assets of $1.6 billion at the end of 1976. Their equity investment in the project will be a major investment for them.

Similarly, the Canadian long-term debt to be issued by the Foothills group expressed as a fraction of all corporate bonds issued in Canada in 1975 is approximately 5 percent for the peak year and 3 percent overall.5/

It is also worth noting that even though the financing requirements expected for the Alcan system are large in an absolute sense, peak year requirements as a percentage of total market capacity are about the same as the peak year requirements for the Alyeska project in 1975. Yet no question of capital market capability was raised with respect to Alyeska.6/

5/ It is not necessary to restrict the supply to these two domestic markets. Other international capital markets could be utilized. For example, in 1974 Canadian net foreign liabilities reached $3.0 billion in mid-year, up from $1.7 billion one half year earlier, when business loan demand rose abruptly and exceeded domestic liability expansion.

6/ Alyeska's peak year financial requirements, in light of capital market capability, were as follows:

1975 Alyeska Debt Issued	$3.0 billion
1975 Total Corporate Debt Issued	$27.2 billion
Peak Year as a Percent of Total Issues	11.0 percent

The above analysis shows that the Alcan project would not squeeze out most other investment. It is true it will have to compete for funds with different investments in the energy as well as other fields, but if the project offers a competitive return for the perceived risk, its securities will be purchased. The capital markets are probably the most competitive element in our economic system.

Cost Overrun Financing

The question of how to finance cost overruns is closely related to the question of noncompletion. Once sponsor equity is invested, construction has started, and the lenders have committed to the project, it is unlikely that the capital markets would cease to provide funds simply because of higher than expected costs. The real consideration here is not the absolute level of costs, but the probability that the project would be ultimately successful. Analysis of the Alyeska experience shows that although the ultimate cost of the project was not known, as costs escalated lenders increased the amount of funds they were willing to provide on several occasions because they were convinced that the project would deliver oil at competitive prices. As a result, the risk of noncompletion due to cost overruns is insignificant once the project is

under way, and is only a problem at the initial stage of financing. It is at that time that the lenders must be convinced that the sponsoring group will follow the project through to completion. Committing equity funds at the outset provides the basis for that assurance.7/

The project sponsors alone cannot be expected to provide such assurances because of their limited assets, liabilities and cash flows; as a result, it is desirable to include in the sponsor group other beneficiaries as participants in the financing.

Project Participants and Beneficiaries

Tradition and equity suggest that the parties who stand to benefit directly from a transportation system participate in the financing and share the burden of these risks. The direct beneficiaries include the equity investors, namely a consortium of gas transmission companies;

7/ An important element of this financial plan will likely be the commitment of equity capital "up front." In order to provide for the risk-bearing characteristic of having the equity component of budgeted cost be invested before debt, while simultaneously keeping the interest during construction as small as possible, it is contemplated that debt and equity shall be obtained simultaneously in their long-run proportion with equity commitments to be honored even in the event of noncompletion.

the producers of the gas; and the State of Alaska with its royalty interest in the gas.

Equity Investors

The Alcan proposal was initially developed by Northwest Pipeline in conjunction with two Canadian transmission corporations, Westcoast Transmission Company and Alberta Gas Trunk Line and their subsidiary, Foothills Pipe Lines (Yukon) Ltd. Subsequently, the Alcan proposal has acquired the support of many large U.S. and Canadian gas transmission firms. An important advantage of the Alcan project over the El Paso alternative is the equity investment by Canadian transmission companies which will total at least $800 million.

The strength of the sponsoring consortium of gas transmission companies is a significant element of the financing. The consortium must have the ability to provide the sizable equity funds as well as the equity component of any cost overrun requirements. From the outset, Alcan will enjoy a strong consortium with participation by most of the large natural gas transmission corporations in both countries.

After careful study of their financial capacity, the conclusion has been reached that the natural gas transmission industry has ample capacity to provide the requisite equity commitments to the Alcan transportation project. The current members of the Alcan consortium are judged to be capable of meeting the equity requirements as proposed in the financing plan.

Producers of Alaskan Natural Gas

The owners and potential producers of Alaskan natural gas are primarily Exxon, Atlantic Richfield, and the Standard Oil Company of Ohio. These companies stand to benefit directly from the sale of their Prudhoe Bay natural gas reserves. Timely development of the Alcan system is in their best interests.

1. At the NEP price of $1.45 per mmbtu, the producers' constant 1977 dollar value of 23 Tcf of saleable reserves, net of royalty and severance taxes, is more than $30 billion.
2. Because of the time value of money, a field price that escalates more slowly than the amount producers could otherwise earn on the funds makes it more profitable to produce gas now rather than defer production for later.

Producer participation in the financing of the project is warranted due to their beneficiary status and their financial strength. The producing companies have the investment capacity to participate in the financing of a transportation system, especially as full returns from their North Slope oil and the Alyeska pipeline investment are realized. These three companies had total assets of $51.5 billion in 1976 and net income of $3.4 billion. Financial participation by the producing companies, most likely in the form of debt guarantees, can be structured consistent with the terms and conditions placed upon the producers in Section 5 of the Decision.

The State of Alaska

The State of Alaska could realize as much as $7.5 billion (1977 dollars) from the sale of Prudhoe Bay natural gas in the form of royalties and severance taxes. The State would also realize about $50 million per year in property taxes. Furthermore, the State will be able to utilize the pipeline for natural gas distribution and development within the State. Prudhoe Bay gas, including the State of Alaska's royalty gas, will be made available to local Alaskan communities along the route of the Alcan Pipeline System. Installation of additional pipeline facilities connecting

with the Alcan system could provide natural gas to other areas of the State, particularly the Cook Inlet region and Southeastern Alaska, and thus supply the energy base required for long-term economic development. The Alcan system also will offer a readily accessible transportation service for a number of potential Alaska gas reserves located in interior Alaska, Cook Inlet and the Gulf of Alaska.

The State of Alaska has indicated a willingness and ability to guarantee up to $900 million of the El Paso project debt, with the final amount depending upon the percentage of royalty revenues that the State Legislature votes to have placed in a permanent capital account that can be used for such purposes. While no comparable commitment has been received from the State for the Alcan project, such participation by the State in the financing would be in the interest of the State, the Nation and the expeditious construction of the project.

Transfer of Financial Risks

Gas Consumers

The issue of gas consumers bearing some or all of the financial risk of this project was widely discussed in the Federal Power Commission hearing and has been carefully

considered in reaching the Decision. The most frequently discussed mechanism for consumer support would involve a consumer financial guarantee through an "all-events" tariff with noncompletion arrangements. The noncompletion guarantee would include a consumer guarantee of at least debt service, and possibly a return of equity, in the event the project was not completed.

The financial advisors and sponsors of the El Paso project continue to believe that consumer guarantees through the "all-events" tariff with noncompletion features is required to finance an Alaska gas transportation project. The Alcan financial advisors and sponsors, however, have stated in correspondence that in their professional opinion the Alcan project can be financed under certain conditions with a more traditional tariff, that is without consumer noncompletion guarantees or Federal financial assistance.8/ They now propose a tariff arrangement similar to previously approved arrangements for major projects which would provide for maintenance of debt service through consumer charges in

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8/ Memorandum from Mark Millard, Vice Chairman of Loeb Rhoades, dated August 10, 1977, attached to a letter dated August 10, 1977, from John McMillian, President of the Alcan Pipeline Company, to Secretary of Energy, James Schlesinger.

the event of interruption only after the project is completed and initial operation of the delivery system has commenced.

The Agreement on Principles reached with Canada and the terms and conditions imposed in the Decision satisfy the conditions specified by the Alcan financial advisors. Their finding appears supportable and reasonable. Extraordinary consumer guarantees prior to completion of the project are judged to be unnecessary.

Federal Government Financial Assistance

Federal Government support to the project in the form of loan guarantees or insurance has also received extensive scrutiny. The El Paso proposal anticipated approximately $1.5 billion of Federal loan guarantees for the financing of the LNG tanker fleet through the existing Maritime Administration Shipbuilding Program (under Title XI of the Merchant Marine Act of 1936). The Lead Agency Report to the President on financing demonstrated that new and special Federal financing assistance was not necessary.9/ El Paso did not request new forms of Government assistance for this project. The Alcan financial advisors believe there is no need for any Federal financial assistance.

9/ Report to the President, Financing an Alaskan Gas Transportation System; Department of the Treasury Lead Agency, and other Participating Agencies; July, 1977.

240-448 O - 77 - 10

In addition to being unnecessary, Federal financial assistance for this project is considered undesirable for the following reasons:

1. Serious questions of equity result from the transfer of risks to taxpayers, many of whom are not gas consumers or will not receive additional gas supplies as a result of the Alaskan project.
2. Federal financial support substitutes the Government for private lenders in the critical risk assessment function normally performed by private lenders.
3. A subsidy in the form of lower interest rates yields an artificially low price for gas.
4. The incentive for efficient management of the project is reduced.
5. The Government is placed in conflicting roles as guarantor and as regulator of the project.
6. Providing unnecessary Federal assistance to this project would set a precedent with respect to other large energy projects that is misleading and counterproductive.

Variable Rate of Return

Since the tariff will require gas consumers to pay for

all costs except those found unreasonable by the regulatory authority, incentives to minimize cost overruns must be ensured. In order to give sponsors an incentive to control costs, the rate of return on equity should be tied to the size of the cost overruns. Within certain maximum and minimum levels, return on equity would increase were the project to come in at or under budget but decrease were costs to exceed budget. Were the project under budget, consumers would pay a lower price for gas and sponsors would receive a higher return on equity. Were the project over budget, the higher total invested capital would be partially offset by a lower allowed rate of return on that capital, so that equity investors would assume part of the cost overrun. The variable rate of return offers consumers the possibility of lower costs and the sponsors compensation for risking their equity, and may assist in making this project attractive to equity investors. The details of how the variable rate of return will be implemented are left to the FPC and NEB to balance the economic incentive with administrative feasibility.

The combination of an economic project, adequate compensation of risk capital, and contingent financing agreements appear to minimize the risk of cost overruns as it

relates to financing and the delivered cost of gas. With the cost overrun risk reduced to manageable proportions, the project will have a high probability of being successfully financed in the private sector.

Cost to the Consumer

The aspect of the financing plan adopted here which will have the greatest effect on the total transportation cost paid by consumers is the assumption of the entire noncompletion risk by the project sponsors and other beneficiaries. The alternative would be to let consumers or taxpayers bear part or all of that risk through a noncompletion guarantee or through Federal government guarantees.

In the capital markets additional risks are assumed only if additional rewards are provided, and that principle is likely to operate in this instance. If the State of Alaska and the producers provide assurances for cost overrun financing, they would expect to receive some commitment or guarantee fee, although the amount of such fee should be relatively small given the small risk they are bearing.

Insofar as there is any risk, most of it will be assumed by the sponsors as equity capital investors. Under the plan recommended here, their equity would finance the

first $2 billion of investment. They would, therefore, bear what little risk there is of project abandonment.

While it is difficult to give a precise value to this risk-sharing principle, the rate of return on equity used in developing all the numerical analysis has been 15 percent rather than the more normal 12.5 to 14.0 percent found in recent FPC decisions. Thus, for example, the effect of changing the rate of return on equity from 13.5 percent to 15 percent is an increase in the average cost of service of about 4 percent.

This risk-sharing principle, however, provides an important incentive for efficient management and cost control that would be foregone if consumers or the Federal Government were to assume noncompletion guarantees. The effect of this incentive on total project costs may more than offset the direct effect on the rate of return associated with avoidance of consumer completion guarantees. Overall, therefore, the objective of placing the risk of noncompletion on sponsors and beneficiaries other than consumers appears equitable and cost-effective.

Financeability

In its Recommendation to the President, the FPC found:

> El Paso would be the easiest system to finance because of its slightly lower initial cost and because of Federal guarantees of bonds for its tankers under Title XI of the Merchant Marine Act.

This finding is no longer accepted in view of several recent developments. First, while El Paso requires less total initial outlay, approximately 20 percent of Alcan's total capital requirements are now anticipated to be drawn from the Canadian capital market. This sharing of the raising and servicing of Alcan's capital by the strong Foothills group makes the total U.S. capital requirements less for Alcan than El Paso.

Second, the cornerstone of financeability is economic viability. There is no doubt that Alcan's superior economic efficiency (lower operating cost and higher fuel efficiency), which has now been further assured by the Agreement on Principles, will make its financial instruments more attractive than those of the El Paso system.

In general, El Paso's dependence upon Federal Government support for financeability is not a particularly desirable characteristic. Overall, it is reasonable to conclude that Alcan will be at least as easy and probably easier to finance privately than El Paso.

Presidential Finding That the Alcan System Can be Privately Financed

The Alcan sponsors and financial advisors have stated the Alcan project can be privately financed. The financial analysis above supports this conclusion. Therefore, it is reasonable to anticipate that the Alcan project can be financed in the private sector.

Novel regulatory schemes to shift this project's risks from the private sector to consumers are found to be neither necessary nor desirable. Federal financing assistance is also found to be neither necessary or desirable, and any such approach is herewith explicitly rejected.

CHAPTER III - ENVIRONMENTAL AND SOCIOECONOMIC CONSIDERATIONS

The Environmental Advantages of Alcan

It is significant to note that the Alcan proposal was originally presented to the FPC after the preliminary environmental impact statements had been critical of both the El Paso and Arctic Gas proposals. The "environmentally preferred route" suggested by the FPC staff early in the proceeding was followed closely by Alcan in developing its system. The success of the Alcan proposal is in large measure a result of its attention to environmental impact.

The environmental impact of large-scale construction in a northern environment is a particularly sensitive issue. The tundra and permafrost are delicate and slow to heal; the fauna is unaccustomed to the presence of large-scale human activities, and the breeding patterns and survival rate are easily upset. Endangered wildlife species cling precariously to existence; aquatic life is as sensitive as terrestrial life; and native populations must subsist on this fragile environment for their economic and physical well-being.

Many parties in both the U.S. and Canada contended that the Arctic Gas proposal, even if it was, as some claimed, superior on economic grounds, had the potential

for substantial environmental and socioeconomic impact. The Arctic Gas route would not have followed existing utility corridors and would have cut through the Arctic National Wildlife Range in the northeast corner of Alaska. While Arctic Gas proposed mitigating measures that included, among other things, all-winter construction across the North Slope and above the 60th parallel with snow roads and work pads, some parties considered these measures technically unfeasible. The State of Alaska also opposed construction in the Range.

The Canadian National Energy Board found that the Arctic Gas route in Canada was "environmentally unacceptable" because it would have impacts "which could not be avoided, which could not be accepted, and for which mitigative measures are unknown or uncertain of development." This finding of the NEB effectively forced the withdrawal of the Arctic Gas proposal from further consideration.

On environmental and socioeconomic grounds, both El Paso and Alcan are superior to Arctic Gas because they generally follow existing utility corridors where the incremental environmental impacts tend to be small. In this respect, the Alcan proposal is particularly advantageous. The Alcan route follows the Alyeska oil

pipeline in Alaska until it turns to follow along the Alaska Highway into Canada at Delta Junction; from Delta Junction the pipeline will generally make use of the Alaska Highway right-of-way or the now-abandoned Haines-Fairbanks pipeline right-of-way (a line built during World War II to transport oil products to Fairbanks from Haines, which is north of Juneau, Alaska).

The environmental impact of the El Paso proposal, on the other hand, would be more adverse than Alcan's. After departing from the Alyeska corridor near Valdez, the El Paso route would traverse the wild and mountainous Chugach National Forest for about 40 miles, an area of great beauty which supports many forms of wildlife and has no roads. A gravel haul road and LNG plant could affect the bald eagles and Sitka black-tail deer that inhabit the area. Furthermore, El Paso would also have an adverse impact on the marine biota of Prince William Sound from the thermal, chlorine and other toxic material discharge of its LNG plant. The impact of this LNG plant would have to be mitigated by the addition of cooling towers - which have their own environmental impact - at an estimated 1975 dollar cost of $75 million. Similarly, El Paso's California regasification facility also has the potential for adverse impact on marine biota with its cold water

discharge into the Pacific Ocean. By comparison to these impacts, no particular impact of Alcan has been singled out for the same degree of concern.

The environmental impacts of Alcan's eastern and western legs in the lower-48 states have never been considered serious. In the FPC hearing, Alcan showed sensitivity to a myriad of local impacts and suggested mitigative measures that appear adequate.

Finally, Alcan's far superior fuel efficiency means that the system will deliver more units of clean-burning and efficient natural gas than El Paso for the same amount of wellhead deliveries. Alcan is expected to consume only about three-fourths as much gas for fuel as the El Paso system.

Presidential Finding - Environmental Impact Statements

In its Recommendation to the President, the Federal Power Commission found after months of hearings and evaluations of impact statements that "no doubt, the Alcan route promises the least environmental impact." In its subsequent July 1 Report, the Interagency Task Force on Environmental Issues, under the lead of Department of the Interior, concluded that Alcan appeared to have the least environmental impact of the proposed routes, provided that proper mitigative actions are taken. The conservationist intervenors in

the proceedings (Sierra Club, The Wilderness Society, National Audubon Society, and the Alaskan Conservation Society) also stated a clear preference for the Alcan proposal.

Pursuant to Section 6(d) of ANGTA, the Council on Environmental Quality submitted a report on July 1, 1977, which found that the environmental impact statements submitted by the FPC with respect to Alcan, pursuant to Section 5(e) of ANGTA, are legally and factually sufficient.

After four days of public hearings, and extensive study, the CEQ reached the following conclusion: "Alcan is the environmentally preferable route. Its impacts are largely restricted to existing transportation corridors ... and involve no large-scale intrusion into wilderness values." The CEQ also found that the information was insufficient to determine whether the El Paso project is environmentally acceptable. It is clear from the FPC hearings, the environmental impact statements prepared by the FPC and Department of the Interior the certification of those impact statements by the CEQ, and many other submissions from many parties that the Alcan route is clearly the superior system on environmental grounds.

The President hereby determines pursuant to the direction of Section 8(e) of ANGTA, that the required environmental impact statements relative to an Alaska natural gas transportation system have been prepared, that they have been certified by the CEQ and that they are in compliance with the National Environmental Policy Act of 1969.

Consequently the enactment of a joint resolution approving the Decision shall be conclusive as to the legal and factual sufficiency of the final environmental impact statements as provided by Section 10(c)(3) of ANGTA.

Socioeconomic Impact

The socioeconomic impacts of both systems are roughly the same in Alaska. Under either proposal, the royalty, severance tax, property tax and income tax revenues to the State of Alaska will increase substantially. The Department of Commerce's Report on Socioeconomic Impacts found the El Paso proposal would provide a greater impetus to the Alaskan economy, but if factors such as adverse effects on native communities and local lifestyles are given primary importance, the Department concluded that the El Paso proposal would then suffer in comparison with Alcan.

On the basis of relative growth, Cordova, 13 miles southeast of Gravina Point, will suffer the most change with the El Paso project. Because of LNG plant and construction, the population would be expected to fluctuate from 2400 in 1977 to 9100 in 1979 to 4100 in 1982. As a result, the character of the town itself might change from a fishing village to an industrial town. The State of Alaska has noted that the socioeconomic costs to small communities will be greatest for the El Paso project.

Otherwise, it should be noted that both proposed pipelines follow existing utility corridors; the native communities near these corridor have already been affected by the pressures created from major construction activity. Accordingly, the socioeconomic impact of Alcan's construction, which more closely follows these corridors, should not be as great as El Paso's.

Conclusion

To sum up, environmental values have been extensively considered and evaluated throughout the certification and decision process. In the future, Federal oversight of design and construction of the Alcan system should strengthen and implement the environmental priorities established in this decision process. Significantly, both the Administrator of the Environmental Protection

Agency and the Secretary of the Interior will be represented on the Executive Policy Board. The Board, as discussed in Chapter VI of the Report and specified in Section 5 of the Decision, will provide policy direction through the Federal Inspector to the Agency Authorized Officers, including those from the EPA and Interior, who will directly represent and exercise the statutory authorities of their respective agencies. The strong representation of EPA and Interior on the Executive Policy Board will help ensure the protection of environmental interests through the enforcement activities of the Federal Inspector.

As required by ANGTA, environmental concerns have been paramount in the study and decision process, and will be translated into a responsive permitting and enforcement mechanism for implementation of the Decision. Federal oversight will seek to avoid "trade-offs" between protection of environmental priorities and construction economics by seeking through advance planning by the Government and the applicant for the coordinated enhancement of both.

CHAPTER IV - ECONOMIC CONSIDERATIONS

Potential for Cost Overruns and Time Delay

The cost overruns that occurred in construction of the Alyeska oil pipeline naturally raise questions about the potential of any Alaskan natural gas transportation system for cost overruns. Such overruns can result from poor initial cost estimates, waste, institutional delays, inflation, low construction productivity, or management inefficiency. While it is difficult to assess the likelihood of such problems prior to the start of construction, they provide a useful basis on which to compare the respective projects. The major causes of cost overruns appear to be the following:

1. Incentives to make a low initial cost estimate. In projects where institutional approval must be obtained prior to the start of construction, the project applicant may try to increase the chances for approval by conservative estimates of the project costs.

2. Use of new complex technology or scaled increases in design size. Technologically uncomplicated systems are less expensive and have fewer uncertainties that increase capital costs.

3. Labor productivity and equipment capacity. There is a well-recognized inverse correlation between productivity and the increasing utilization of the capacity in an industry. As the use of labor capacity, equipment capacity, or management availability approaches 100 percent, productivity begins to decline rapidly. Furthermore, the more complex the project, the greater the loss in productivity or efficiency as the project capabilities are reached or exceeded. When large-scale projects experience equipment and material shortages, they generate their own internal, demand-pull inflation, resulting in an increase in equipment and material costs.

4. Cost of service tariffs and cost-plus contracts. Cost increases during construction of public utility projects merely expand the rate base of the utility absent a variable rate of return, they do not result in any loss to investors. The same effect occurs from use of cost-plus contracts; the contractors' profit will not be adversely affected by cost overruns.

5. Construction schedule pressure. In most situations, accelerated construction schedules can be accomplished only at a high premium in cost.

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6. Long delays after project start-up. Large scale projects are frequently delayed because of litigation, labor grievances, and cumbersome bureaucratic actions or regulations.

7. Remote areas or inhospitable environments. Remote locations create severe logistical problems and magnify the costs of poor planning. Breakdown of equipment that would cause only minor delays in well settled areas may result in considerable delays in remote areas. Furthermore, new techniques, methods, and materials are frequently required when work is done in an inhospitable environment. Such conditions often cause on-site modifications of equipment or design.

8. Unforeseen geotechnical factors. Even to experienced geologists, the earth holds many surprises -- especially in the Arctic. Unexpected water flows or earth movements can create severe construction problems and cause expensive delays. The unstable permafrost soils in the Arctic regions are particularly troubling for large-scale construction.

Comparisons with Alyeska

Both the Alcan and El Paso projects would encounter these problems to one degree or another. Like Alyeska, they have the potential for significant cost overruns. But when

the Alyeska experience is examined, a convincing case can be made that the cost overruns for Alcan and El Paso would not be as great. The major problems described above provide a useful framework for comparison.

1. Low cost estimates. The early cost estimates by Alyeska were made for a system smaller than the one Alyeska finally built. Alyeska had no appreciation at the time of these estimates for the vast changes in construction techniques that would be required for arctic construction by subsequently enacted environmental laws. Alyeska also had no experience with the logistics problems and low labor productivity characteristic of arctic construction. By 1974, Alyeska had become aware of the increased costs of environmental requirements, but still had no data on labor or contractor productivity in arctic conditions. By mid-1975, when Alyeska submitted its first design cost estimate of $6.3 billion, it had developed considerable experience with pipeline construction.

El Paso's cost estimates for Alaska construction of its 2.3614 bcfd case were submitted to the Federal Power Commission in late 1975 and Alcan's estimates were submitted in mid-1976. Thus, El Paso and, to an even greater degree,

Alcan had the opportunity to factor into their cost estimates the Alyeska experience. While there are valid reasons to expect both Alcan's and El Paso's estimates to be conservative, there is little reason to expect that their initial estimates are as grossly under-estimated as the early estimates of Alyeska. Both projects had too much data and experience available to them to have made large errors, and excessive underestimates would have been challenged by competitors.

2. New technology and increases in scale. While El Paso and Alcan involve some new technology and increases in scale, the problems from these factors will be of an order of magnitude less than Alyeska's. The large capacity systems of both projects require an increase in operating pressures. DOT has concluded, however, that subject to testing to be conducted by the applicant in conjunction with the U.S. and Canadian governments, such increases are within current technological capability and safety standards.

In addition, no scale-up in construction equipment (e.g., building equipment to handle 48-inch pipe) will be required for the gas pipeline. The problems of scale-up were mostly solved by Alyeska. Thus, El Paso with its

42-inch pipe, or Alcan, with its 48-inch pipe, would have the benefit of using field-proven equipment.

The Alyeska pipeline also required a large amount of automated and sophisticated equipment. Remotely controlled "topping plants" (i.e., miniature refineries) and storage areas at pumping stations were used to provide the turbine fuel to drive the pumps. A separate gas pipeline was constructed to bring the fuel to the northernmost pump stations. In addition, Alyeska could not bury a hot oil line in the thaw-unstable permafrost. It had to employ considerably sophisticated and advanced technology to design the vertical support members and heat exchangers necessary to insulate the oil line from the surrounding environment. Approximately 400 miles or 50 percent of the line is elevated.

By contrast, a natural gas pipeline is a far more simple, less sophisticated system. Fuel for the compressor turbines is drawn directly from the gas stream, and controls are simple and easily automated. The chilled gas pipeline is compatible with the permafrost environment even in a buried mode. There are uncertainties regarding the best design and engineering to eliminate frost heave potential in discontinuous permafrost areas. However, this problem is not comparable in complexity or size with the problem of adapting a hot oil pipeline to the arctic environment.

Scale-up problems might generate cost overruns during construction of the El Paso natural gas liquefaction plant. The proposed LNG plant would require a significant scale-up from existing plants and involves lower fuel usage than has heretofore been achieved in practice. In addition, the techniques proposed to protect the proposed plant and storage tanks from earthquake damage would also require a size scale-up. Consequently, the LNG plant and terminal appear to have a potential for significant cost overruns.

3. Labor and equipment capacity. The Alyeska project is a classic example of a construction project that exceeded its predetermined labor and equipment capacity. Alyeska was forced to use inexperienced labor and contractors, and thereby incurred significant increases in the size of management and engineering staffs. This resulted in low productivity, management inefficiency, and created the project's own internal demand-pull inflation for some critical items.

Construction of a gas pipeline in Alaska should present fewer problems. Less labor is required for a continuous buried mode of construction and the Alyeska experience expanded the pool of skilled workers and contractors available for arctic construction.

The Alcan project may encounter skilled-labor shortages in Canada. Anticipated shortages in skilled labor and experienced subcontractors could reduce productivity and raise costs. However, training programs and proper project planning would mitigate this problem.

Alcan has been criticized because it will not have an overall project manager. The Canadian companies, however, can control construction in their respective segments of the system without the large increases in management or engineering required for a single project. In addition, the companies will be using control and accounting procedures with which they are familiar. It is reasonable to expect that Alcan will not suffer from the management and control inefficiencies that plagued Alyeska.

4. Incentives to minimize construction costs. The El Paso and Alcan projects would have stronger incentives to control costs than are normally present in a public-utility type project. The variable rate of return will link the earnings of equity investors directly to the cost control performance of management. In Canada, the costs to Canadian consumers for Canadian gas will be materially dependent upon the level of cost overruns in the main Alcan line, providing Canadian regulatory agencies with an incentive to control costs.

One of the terms and conditions contained in the decision will limit the use of cost-plus contracts unless approved by the Federal Inspector. Contractors will thus have incentives to hold down costs. The magnitude of the project investment and the generally limited availability of capital at present will also create financial constraints that should act to minimize costs. Furthermore, the managements of the various gas companies also have a substantial incentive to show that a major arctic project can be constructed with relatively minor cost overruns.

5. The time factor. With a simpler construction mode, fewer environmental problems, a more experienced labor force available, and more favorable terrain in most of Canada, construction of the Alcan system should pose fewer problems, and have a longer lead time to deal with them. While Alyeska had a long delay from 1969 to late 1973, there is little evidence that intensive planning occurred during that period. After Congressional approval came in late 1973, Alyeska carried out its final planning and construction in three and one-half years. The final planning and execution period for either gas project is at least five years and the overrun analyses herein have allowed for six to six and one-half years.

6. Delays. The Alyeska project suffered excessive delays because of strict new environmental laws enacted after it had initially ordered the pipe and some construction equipment. Government agencies required considerable time to write regulations and to staff operations. In addition, after construction started, numerous government inspectors monitored contractors and subcontractors, occasionally shutting down construction.

Conditions should be considerably better during construction of the gas pipeline. First, the government itself is now more knowledgeable about the inspection process and can be expected to make fewer errors. The Office of Federal Inspector is designed to achieve greater coordination of the government monitoring and enforcement process. The occasionally conflicting orders given by different departments or agencies during construction of the Alyeska project will be avoided. Second, contractors have learned to some extent to adapt to the government inspection process. Third, the gas line will raise fewer environmental problems. Overall, delays resulting from environmental regulations and government oversight and inspection should be much less during construction of a gas pipeline.

The projects will also be much less constrained by institutional delays of the type that confronted Alyeska from 1969 until enactment of the TAPS Act in 1973. Similar to the TAPS Act, Section 11 of ANGTA contains tight restrictions on judicial review of the authorization and certification process. While private litigants can still challenge Government actions, such claims must be brought within 60 days of such action, and filed only in the U.S. Court of Appeals for the District of Columbia. This Court will act as a Special Court with exclusive jurisdiction over such matters. There are no specific limitations on judicial review of Federal enforcement actions, but it is not foreseen that such litigation will result in injunctions or restraining orders that increase the potential for delays and cost overruns.

El Paso and Alcan each face institutional barriers other than potential judicial delays. For El Paso, the problem of siting an LNG facility in California has high potential for delay. The Western LNG Terminal Company has been investigating proposed locations for approximately two years, and no final decision has yet been reached. Recently, an offshore LNG facility has been receiving consideration, but gas companies and State officials estimate

that 8 to 10 years of design development and construction work would be required before it could be operational.

For Alcan, the problem of resolving native claims in the Yukon Territory in Canada had once threatened to delay construction. However, the Government of Canada has recently assured the U.S. that resolution of these claims will not delay construction and will not result in any monetary cost or claim against the Pipeline. Under the Agreement, it is expected that construction in the Yukon will commence by January 1, 1981.

In general, the magnitude of these projects virtually ensures some delay in the start of full operations -- either because of material supply, logistics, reduced labor productivity or other problems. Therefore, this Report estimates that commencement of full operations for Alcan could be delayed to January 1, 1984, and for El Paso to July 1, 1984. By comparison, the Task Force Report on Cost Overrun and Construction Delay estimated a starting date of July 1984 for Alcan and February 1985 for El Paso.

7. Remote and inhospitable location. Both projects would experience many of the same problems associated with remote locations as did Alyeska. The benefit of the Alyeska experience, however, should assist in coping more

successfully with these problems. The most tangible benefit of the Alyeska experience is the existence of the infrastructure -- e.g., roads, camps, communications -- created by Alyeska. In Canada, the southern portions of the Alca' system would be in less remote locations and present fewer problems.

8. Geotechnical considerations. Alyeska encountered many unexpected geotechnical conditions, but had done relatively little advance coring and soil testing which could have reduced the unexpected problems that arose later and allowed for improved engineering design and scheduling of work requirements.

Either of the gas pipeline projects will be able to reduce its number of site-required design changes by using the construction data generated by Alyeska and by carrying out a more extensive coring and soil testing program prior to construction. In addition, the site-specific design changes that were required will probably be less expensive.

Unexpected geological conditions could significantly increase the cost of constructing an El Paso LNG plant and shipping terminal. Similarly, Alyeska experienced significant cost overruns in constructing the Valdez terminal.

El Paso probably would escape such problems if, as expected, it finds shallow bedrock at the Gravina Point terminal site. If not, El Paso could duplicate or exceed the Valdez terminal cost overrun.

Cost Overrun Estimates Under Expected Conditions

Comparison of the El Paso and Alcan projects under expected conditions with Alyeska indicates that both projects would be able to avoid or minimize many problems that led to high cost overruns for Alyeska. Cost estimates of both projects appear to be based on much more reliable data and experience. There are also fewer uncertainties than were associated with Alyeska's early estimates, or even its estimates made as late as 1974 or early 1975. In addition, several problems that significantly contributed to cost overruns on the Alyeska project will not be as serious for these projects. While overruns can be expected, they will be of relatively lower magnitude than Alyeska's.

Obviously, any prediction of future cost overruns is highly judgmental. Specifically, it depends on judgments about future productivity, future supply-demand relationships, and geological and technical problems. But despite these uncertainties, for the purpose of this analysis some judgments must be made.

Overall, it has been estimated that cost overruns of 30 percent or more should be expected in Alaska and Canada for construction of a gas transportation system. But in many areas, the managers of a gas transportation project should benefit from the Alyeska experience and hold down overruns. This conclusion is based on careful comparison with the Alyeska experience and proceeds from the findings of the July Task Force Report on Cost Overruns and Construction Delays.

Certain distinctions, however, should be drawn between Alcan and El Paso with regard to cost overruns. For Alcan, the cost estimates in Canada are substantially lower than the cost estimates for equivalent work done in Alaska. These estimates are highly uncertain. Alcan offers several explanations for the significant differential between costs to do the same job in Alaska and Canada. It contends that wage rates in Canada are about one-half the level in Alaska and that the productivity of labor in Canada has historically been higher. Furthermore, with the exception of the Yukon section, the Canadian terrain is typically much better. Below the 60th parallel, the requirement for gravel work pads is minimal. As the line moves into British Columbia and Alberta, the Alcan construction conditions will not vary

materially from those encountered in the Northern United States, and lower construction costs can be expected.

On the other hand, the NEB closely examined Alcan's costs in Canada and concluded that cost overruns in the range of 20 to 30 percent were "not unlikely". Furthermore, it is significant that the Alcan productivity estimates for Alberta are substantially higher than the estimates of Arctic Gas for comparable terrain. The Alcan cost estimates must be substantially adjusted to enable a realistic comparison between Alcan and El Paso. Therefore, the cost estimates used herein provide for a 40 percent increase in the filed costs of Alcan for Canada.

The cost estimates of El Paso are in turn, subject to two major uncertainties. The first is El Paso's cost estimates for pipeline construction in Alaska. El Paso estimated these costs, including interest during construction, at $2.204 billion ($1975) -- $242 million less than Alcan's Alaska estimates of $2.446 billion. The relation between the El Paso cost estimates and the Alcan cost estimates is simply not consistent, however, with the physical plant requirements, but may be partially explained by the fact that the El Paso estimates were made several months earlier.

The higher Alcan estimates represent 731 miles of pipeline in Alaska, 9.6 percent less mileage than El Paso's 809 miles.[10/] While Alcan would use a larger diameter pipe (48-inch for Alcan, 42-inch for El Paso), it would also have a thinner wall (0.60 inch for Alcan, 0.752 inch for El Paso). Consequently, Alcan would require about 17 percent less pipe steel in Alaska than El Paso. This differential is reflected in the respective cost estimates of the parties. The El Paso estimated materials cost for pipe was $805 million. Alcan estimated $659 million, or some 18 percent less. Finally, El Paso could have 10 compressor station sites in Alaska; Alcan would have only 8 sites. El Paso would have 234,000 installed compressor horsepower; Alcan would have 212,000 horsepower.

On the other hand, Alcan would have more installed refrigeration horsepower than El Paso, and installation costs for 48-inch pipe would be slightly higher than those for 42-inch pipe. The following Exhibit summarizes the comparisons.

10/ There would be 831 miles for the realignment which El Paso now proposes to build. The comparisons here consider only the base cases of El Paso and Alcan. El Paso estimated the realignment to have a net cost of about $70 million additional.

EXHIBIT 3

Comparison of El Paso & Alcan Pipeline Facilities in Alaska

	El Paso (2.4 Bcfd)	Alcan (2.4 Bcfd)	%
Miles (L)	809	731	-9.6%
Pipe	42" (D) x .75 (T)	48" (D) x .60 (T)	
Relative Steel Factor (π D/L)	8.006	6.614	-17.4%
Pipe Material Est.	$805,171,000	$659,239,000	-18.1%
Compressor Stations	10	8	-20.0%
Compressor HP Installed	234,000	212,000	-9.4%
Refrigeration Comp. Installed	53,690	84,470	+57.0%

By way of further comparison, Alcan and El Paso propose virtually identical alignments for the first 539 miles in Alaska. The overall costs of the two systems should be comparable to that point. At Delta Junction, the Alcan line departs from the Alyeska corridor and proceeds southeast along the Alcan Highway. The El Paso line continues along the Alyeska corridor to a point about 40 miles from Gravina Point, from which it creates a new right-of-way through the mountainous Chugach National Forest. From the common point of Delta Junction southward, Alcan would traverse 192 more miles in Alaska, while El Paso would traverse about 265 miles and some significantly more difficult terrain.11/ There is no readily apparent reason that the 192 miles of Alcan pipeline should cost significantly more than the 265 miles of El Paso pipeline.

The proper relationship between El Paso and Alcan is reflected in the recently released Aerospace, Inc., study of June 1977 that was prepared for the Department of the Interior. The direct cost estimates therein for the El Paso pipeline in Alaska are $1.963 billion. The cost estimate for a

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11/ The El Paso realignment case has about 285 miles beyond Delta Junction.

48-inch, 1680 psig[12/] pipeline along the Alcan base route in Alaska is $1.812 billion.

To allow for cost overruns the El Paso estimates were escalated by the same amount used by the Cost Overrun Task Force to arrive at $2.5 billion in direct costs (1975 dollars) or $2.85 billion (1975 dollars) including interest during contruction (IDC). The overrun case for Alcan used here is $2.38 billion in direct costs, $2.67 billion including IDC. These figures provide a better comparison between Alcan and El Paso in Alaska.

The second major uncertainty for El Paso is the cost of the LNG liquefaction plant and marine terminal on Prince William Sound, Alaska. The scale up factor and the geotechnical uncertainties create a high risk of substantial cost overruns. The Cost Overrun Task Force estimated the cost of these facilities to be $2.0 billion. The Aerospace, Inc., study estimated $1.59 billion. The estimates here used allow for $1.8 billion, plus $75 million to cover cooling towers that would likely be required to minimize the thermal pollution of Prince William Sound.

12/ This would be more expensive than Alcan's 48-inch, 1260 psi system because of more pipe steel.

El Paso would also construct eight LNG tankers of 165,000 to 175,000 cubic meter capacity (m^3) with roughly 125,000 tons displacement.13/ El Paso estimates the LNG tanker cost at $1.365 billion. The Cost Overrun task force estimated $1.65 billion; Aerospace, Inc. uses $1.234 billion. The evidence submitted by Arctic Gas in the FPC proceeding shows an 8.8 percent overrun or $1.485 billion, and in fact, the most probable estimate is $1.45 billion.

In the lower 48 States, the facilities for El Paso and Alcan present no unique construction problems. Therefore, the cost overrun case used herein assumes only a few percent overrun for these facilities.

The following table sets forth the estimated capital costs for the base and overrun cases. The capital cost or the gross plant in service is a dominant element in the cost of service and net national economic benefit calculations.14/

13/ The ultimate size of the El Paso ships would be determined by the siting of the regasification facility in California. For example, if Point Conception was the site, 165,000 m^3 would be adequate. If Oxnard was the site, 175,000 m^3 would be required. See FPC, Recommendation to the President, pp. VIII - 26-28.

14/ NNEB calculations, however, use only the direct capital costs, without interest during construction.

Capital Costs
(Billions of Dollars)

	Base Case[2] (Current $)	Overrun Case (Current $)	Overrun Case (1975 $)
ALCAN[1]			
Alaska	3.335	4.147[3]	2.673
Canada	4.365	6.501	4.191
Northern Border	1.427	1.573	1.014
PGT, PG&E	.914	.983	.634
Subtotal	10.041	13.204	8.511
U.S. Share of Dempster Line	.431	.653	.382
Subtotal	10.472	13.857	8.893
Less Canadian "Share"	(1.000)	(1.489)	(.960)
U.S. "Share" of Capital Cost	9.472	12.368	7.933
EL PASO			
Alaska Pipeline	3.050	4.419	2.849
Alaska LNG	2.385	3.289	2.120
Ships	2.027	2.285	1.473
Regas Plant	.542	.674	.434
Lower-48	.991	1.032	.665
Total	8.995	11.699	7.541

1/ Based on a 48 inch 1680 psi system between Whitehorse and James River capable of transporting 3.6 bcfd. If a 54 inch 1120 psi system was constructed, the capital costs could be slightly less.

2/ Derived from the 1975 Direct Capital Costs submitted by the applicant.

3/ The Base cases assume completion one year earlier than the overrun cases which accounts for a portion of the difference.

The foregoing table includes all capital costs in Canada in which the U.S. shares. If the Dempster Line is never constructed, the capital cost on the main line in the overrun case would be $6.111 billion (1984 dollars) because of the reduced compression horsepower requirements. Total U.S. share of capital cost would be $12.767 billion.

Cost of Service

The cost of service advantage of the Alcan overland pipeline system is substantial and constitutes a crucial element of this decision. Cost of service is perhaps the principal factor in determining the value of the project to individual consumers. If the cost of service is not sufficiently low enough to ensure that the delivered cost of the gas will be below the cost of alternative fuels, the value of the project is greatly reduced.

A cost of service calculation generally includes all transporation charges other than fuel expense. The major categories of expense include the return on invested capital (interest and dividends), return of invested capital (through annual depreciation charges), Federal and State income taxes, other taxes, and operating and maintenance expenses (O&M). While annual depreciation charges are constant

throughout the depreciable life of the project and O&M expenses tend to increase with the rate of inflation, the other items decline over time as the amount of net invested capital (gross plant less accumulated depreciation) falls.

These declining items usually result in a project cost of service that decreases steadily over time, with the extent of the decrease dependent upon the rate of inflation. Although this decreasing cost of service is customary, a downward-sloping service charge to the consumer over the life of the project is not essential. Payments from consumers can be adjusted to a more constant or stable level over the accounting life of the project.

However, to compensate investors for deferral of their return in the early years of the project, and to cover the resultant increase in the total interest burden, the average delivered cost of the gas to consumers must be increased substantially; a complete leveling would increase the average cost about 20 percent over the life of the project. The decision whether to "level out" the tariff must be made by the FPC in the context of the actual financing and tariff proposals made by the applicants prior to final certification.

Alcan and El Paso: Cost of Service Comparison

The fundamental difference between El Paso and Alcan is that an overland pipeline system is inherently more efficient than an LNG transportation system. The liquefaction process involves significant energy losses that have a multiplying adverse effect upon cost of service. First, the direct cost[15/] for the natural gas consumed by El Paso is 34 percent higher than Alcan or equivalent to 3 cents per mmbtu (1975 dollars). Second, the volumes of gas delivered are reduced thus leaving a 3.4 percent smaller base over which to spread the capital costs. The increase in cost of service for this volume differential is about 4 cents per mmbtu. The El Paso system also has 100 percent higher operating costs, or the equivalent of another 9.5 cents per mmbtu increase in the cost of service. This operating cost differential is attributable to the added labor required to operate the Alaska LNG plant and the LNG tankers. In sum, the Alcan pipeline system has a 16.5 cent direct advantage apart from capital cost of financing consideration.

15/ Consistent with practice throughout the Report the fuel cost is assumed to be $1.00 per mmbtu (1975 dollars). This unquestionably is lower than actual cost will be. A higher fuel cost would increase El Paso's cost of service to a relatively higher degree than Alcan's.

The El Paso cost of service would approach the Alcan cost of service only if the more technologically complex El Paso system could be constructed for about 25 percent less than the portion of the Alcan system attributable to the U.S. There is no basis for such a conclusion. No reasonably plausible independent assessment of capital costs, suggests that to be a possibility[16/]. On the basis of filed costs, the El Paso 20-year average cost of service is $1.09 per mmbtu; Alcan's is $.81 per mmbtu[17/], or $.28 less. The Cost Overrun task force "expected case" cost of service was $1.26 for the El Paso system and $1.09 for the Alcan system, or $.17 less.

As indicated in the following Table, the overrun cases used in the Decision and Report place the cost of service at $1.21 for El Paso[18/] and $1.04 for Alcan.[19/] This is a $.17 difference. Over the first 20 years alone, the overland pipeline system will save consumers conservatively about

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16/ The overrun case used herein places El Paso 5 percent lower; the July 1 task force "expected case" placed El Paso 4.2 percent lower, of course, not including the adjustments resulting from the Agreement on Principles with Canada.

17/ Not including a U.S. share of the Dawson Spur which on filed costs would be $.0479.

[Footnotes continued]

COMPARATIVE SYSTEM COST ECONOMICS
COST OVERRUN CASE

	El Paso	Alcan[a/]	Alcan[b/]
Direct Cost ($1975)	$6.800 billion	$7.166 billion	$8.011 billion
Interest During Construction	0.740	0.767	0.882
Total Capital Cost ($1975)[c/]	$7.540 billion	$7.933 billion	$8.893 billion
Annual O&M Costs ($1975)	$ 168 million	$ 84 million[d/]	
Annual Fuel Cost @ $1/mmbtu	106 million	79 million	
Annual U.S. Delivered Volumes[e/]	888 Tbtu	918 Tbtu	
Fuel Efficiency	89.1%[f/]	92.1%	
Average U.S. Cost of Service ($1975)			
First 5 years	$ 1.84	$ 1.71	
Second 5 years	1.28	1.13	
Third 5 years	.95	.77	
Fourth 5 years	.77	.57	
Twenty year average	1.21	1.04	
Net National Economic Benefit	$ 4.63 billion	$ 5.77 billion	

a/ Direct and total capital costs are complete Alaska and lower-48 costs plus the U.S. share of these costs for the section of the system in Canada plus 83.3% of the Dawson-to-Whitehorse section of the Dempster line.

b/ The direct and total capital costs are the complete cost of the entire system, including the Canadian section of the main line in its entirety, plus 83.3% of the Dawson-to-Whitehorse section of the Dempster line.

c/ In current dollars, at an assumed inflation rate of 5%, the total capital costs are $11.7 billion for El Paso and $12.4 and $13.9 billion for the U.S. allocated and total Alcan system, respectively. See p. 157.

d/ Based on U.S. share of costs in the sections of the system carrying both U.S. and Canadian volumes, plus 83.3% of O&M costs on the Dawson-Whitehorse section of the Dempster line.

e/ Based upon 2.4 bcfd at 1138 Btu/cf input at Prudhoe Bay and each system's fuel efficiency. The El Paso system as filed is designed to transport and liquify slightly lower volumes (2.3614 bcfd) at slightly lower Btu content (1130).

f/ Excludes bunker oil consumption by El Paso tanker fleet which would further reduce overall system energy efficiency to 87.5%.

$6 billion (nominal), an average of $300 million per year. Further, savings will continue long into the future. The Prudhoe Bay field is expected to produce gas in significant volumes for more than 25 years. The pipeline facilities will have a useful life in excess of 40 years.

Alcan Cost of Service Pursuant to the Agreement on Principles

The Alcan cost of service must be analyzed from the perspective of both the Canadian National Energy Board (NEB) Decision and the Agreement on Principles between the United States and Canada.

(continued from page 160)

18/ Apart from cost overruns, the principal variable in the El Paso cost of service is financing costs. The $1.21 per mmbtu cost of service is based upon 8.5 percent cost of debt for the LNG tankers on the assumption that the MARAD guaranteed loans be available. The return on equity for the ships is 17 percent calculated on a discounted cash flow basis, as filed by El Paso. The overall cost of the remainder of the capital is dependent upon the debt-equity ratio assumed and whether and how much preferred stock could be used. These matters have been the subject of considerable debate thrugh the proceeding. The capital structure used here is the same as that assumed for Alcan, 75-25 debt-equity ratio, 15 percent return on equity, 10 percent cost of debt. Under various other assumptions,the cost of service could be between $1.19 and $1.21.

19/ Including the cost of the U.S. share of the cost of the Dawson Spur.

The NEB decision provided for a rerouting of the Alcan main line through Dawson City, Yukon, to facilitate the transportation of up to 1.2 bcfd of Mackenzie Delta reserves. That rerouting would have compelled the expenditure of $600 million at least two to three years prior to the time it would be needed and would have added further interest costs of $150 to $240 million. If Canada did not construct the Dempster Line, the U.S. consumer would have paid more than $2 billion over the life of the project for no reason.

If the Dempster Line had been constructed, and 1.2 bcfd of Canadian gas flowed, the U.S. cost of service would have increased from $1.07 to $1.12 per mmbtu because of system inefficiencies. The amount of natural gas delivered to the U.S. would have decreased by about 40 Tbtu annually. As a result of these lost volumes and inefficiencies, the cost to American consumers would still have been $2 billion more over the first 20 years than the project which emerged from the Agreement on Principles.

The project authorized in the Agreement on Principles also represents one of those unique, rare negotiating results in which both parties can justifiably claim to have

improved their position over the starting point - the original NEB decision. This is apparent from the following comparison.

	Agreement on Principles		NEB Decision	
	U.S.	Canada	U.S.	Canada
Dempster Line Not Constructed				
Cost of Service[a/]	1.00	-	1.07[b/]	-
Fuel Usage	6.1%	-	6.7%	-
Dempster Line Constructed				
Cost of Service	1.04	1.23	1.12	1.43
Fuel Usage	7.7%	7.3%	11.2%	9.7%

a/ U.S. cost of service is the 20-year average in 1975 dollars. Canadian cost of service is for 1985, in nominal dollars.

b/ Including the $200 socioeconomic payment recommended by the NEB.

The Agreement on Principles contemplates that a higher capacity system[20/] will be constructed from Whitehorse to the James River. If Canada does not construct the Dempster Line, the United States would bear the full additional cost of the higher capacity system. The cost of service data contained in this analysis is based upon a 48-inch, 1680 psi system from Whitehorse to James River. The 1680 psi system is slightly more efficient in the 3.6 bcfd range than the 54-inch, 1120 psi system. Thus, if the 54-inch system ultimately is installed, the U.S. cost of service would be higher by about 1 percent in all cases except where Canada does not construct the Dempster Line.[21/]

If a 1680 system is installed and Canada does not build the Dempster Line, the 20-year average U.S cost of service would be about $1.00. The system would have lower fuel and operating expenses than a 1260 system but the savings would not be quite sufficient to offset carrying charges on the increased capital outlays. On the other hand, the system

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20/ Either a 48-inch, 1680 psi or a 54-inch, 1120 psi are the most likely alternatives. The selection will be determined after a joint testing program is completed.

21/ At 2.4 bcfd, the 54-inch, 1120 psi system would be slightly more economically efficient. It has a lower initial capital cost.

does provide a large amount of inexpensive expansibility that would be used in the event significant new finds of natural gas are made in Alaska.

If Canada builds the Dempster Line and deliverability from the Mackenzie Delta is 1.2 bcfd, the cost of service will vary with the level of cost overruns on the mainline system in Canada and on the Dawson Spur. From a 0 to 35 percent cost overrun, the U.S. would pay 100 percent of the Whitehorse to Dawson section. At the expected 40 percent case, the U.S. would pay 83 1/3 percent or the ratio of U.S. to joint volumes at Whitehorse, whichever is higher. At 45 percent and over the U.S. would pay 66 2/3 percent, or the ratio of U.S. to joint volumes at Whitehorse, whichever is higher.

In the cost overrun range of 35 to 45 percent, the U.S. share would vary linearly from 100 percent to 66 2/3 percent, unless the actual volumes of U.S. gas in the line commit the U.S. to provide a greater share.

In the lower cost overrun case of 35 percent or below, under which the U.S. would be required to pay the entire cost of the Dawson spur, the cost of service reduction from such overrun savings on the main line would more than offset

any increase in cost of service resulting from increasing to 100 percent the U.S. share of the Dawson to Whitehorse segment. For example, with an overrun of 25 percent in Canada, the U.S. pays 100 percent. In this example, the average U.S. cost of service over a twenty year period would be approximately $1.00 per mcf (1975 dollars), or 4 cents less than the expected overrun case of 40 percent under which the U.S. would pay only 83 1/3 percent of the Dawson spur instead of the 100 percent the U.S. would pay in the 25 percent overrun case.

The agreement also imposes a ceiling on U.S. liability for the Dawson spur of 35 percent above filed costs. The Canadians, in turn, can credit all the cost overrun savings they achieve on the main line system carrying just Canadian gas, and 2/3's (or relative volumes) of such savings on the shared system, against their cost overruns on the Dawson to Whitehorse section. Finally, the U.S. share of the Dawson spur cost of service can never be less than the U.S. percentage of actual volumes at Whitehorse, multiplied by the actual costs of the Dawson spur, notwithstanding the Dawson spur ceiling and the overrun formula. This last condition is only relevant in the case where substantial overruns in excess of 50 percent are experienced on the entire system.

This agreement creates new incentives - on a portion of the project within Canada's jurisdiction and not otherwise subject to our control - which could significancly lower the cost of service to the U.S. and at the same time enhance the project's financeability.

The application of these principles in varying factual situations is illustrated by the following table.

	Main Line Cost Overrun	Dawson Spur Cost Overrun	U.S. Base COS[a/]	Dawson Spur COS U.S.	Total U.S. COS
1.	25%	25%	.9556	.0567	1.0122
2.	30%	30%	.9679	.0601	1.0280
3.	30%	50%	.9679	.0717	1.0396
4.	30%	100%	.9679	.0692	1.0371
5.	35%	35%	.9822	.0606	1.0478
6.	40%	35%	.9927	.0505	1.0432
7.	40%	40%	.9927	.0505	1.0432
8.	45%	35%	1.0047	.0404	1.0451
9.	45%	45%	1.0047	.0436	1.0483
10.	50%	50%	1.0130	.0480	1.0610
11.	50%	100%	1.0130	.0582	1.0712

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a/ Assumes volumes of 2.4 bcfd from Prudhoe Bay and 1.2 bcfd from the Mackenzie Delta.

Lines 1 and 2 represent 25 percent and 30 percent cost overrun cases for both the main line and the Dawson Spur. Under the Agreement, the U.S. would pay 100 percent of the Dawson spur cost of service.

Line 3 provides an example of the crediting mechanism between the main line and the Dawson spur. The 30 percent cost overrun would result in a capital savings of about $245 million below the 35 percent cost overrun. Assuming that U.S. and Canadian volumes are 2.4 bcfd and 1.2 bcfd, respectively, and all of the cost reduction is on the main line south of Whitehorse, Canada would have a credit of $163 million to apply to the cost of the Dawson Spur. A 50 percent cost overrun on the Dawson spur would be only $81 million greater than a 35 percent cost overrun. Thus, Canada would have a sufficient credit to hold the U.S. share to 100 percent.

The case in Line 4 assumes a 100 percent cost overrun on the Dawson spur.[22/] The Canadian credit here also would be $163 million. The Dawson Spur (DS) adjustment is determined by the following formula:

22/ This assumes a very unlikely occurrence in light of the cost of the main line.

$$\frac{\text{1.35 Filed DS Cost (Base)}}{\text{Actual DS Cost minus Credit}}$$

Applied to this case, the formula is:

$$\frac{733}{1084 - 163} = .7959 \times \text{DSCOS}(.0869) = .0692$$

for the Dawson Spur cost of service.

Note that the U.S. contribution to the Dawson Spur is slightly less in this 100 percent Dawson Spur overrun case than in the 50 percent overrun case. Under the agreement, the U.S. share of the Dawson spur cost of service decreases from 100 percent to 66 2/3 percent in this instance depending on the overrun level of the Dawson Spur. This increase in capital costs of the Dawson spur above a 35 percent overrun level has a greater impact under the formula in reducing U.S. cost of service share than it has in increasing the full Dawson Spur cost of service. This is so because full cost of service contains fixed costs that do not vary with capital cost overruns (e.g., operating and maintenance expenses). The greater the percentage of fixed costs, the less cost the overall cost of service will increase because of a given addition to capital costs.

While this precise effect (i.e., reduction in U.S. share where cost overruns are higher) would not obtain if the system was more capital intensive, e.g., a 36-inch or

42-inch pipe was installed, the general direction would be the same. Cost overruns on the Dawson Spur will not have a significant impact on U.S. cost of service in any case where the 66 2/3 percent floor is not reached.

The case in Line 5 is the "base" case. There are no credits available from main line construction. The Dawson Spur overrun is 35 percent. The U.S. would pay 100 percent of the Dawson Spur.

In the example on Line 6, the U.S. share of the Dawson Spur is at 83 1/3 percent because of the 40 percent overrun on the main line.

In the case represented by Line 7, the base U.S. share is 83 1/3 percent, but the Dawson Spur adjustment operates since Dawson Spur overruns are above 35 percent. The result is:

$$\frac{733}{760} = .9645 \times .833 = .8034 \times .0629 = \$.0505$$

for the Dawson Spur cost of service, and $1.0432 overall.

In Case 8, the U.S. share of the Dawson Spur has declined to 66 2/3 percent (or a volumetric share) because of overruns on the main line.

In Cases 9, 10 and 11, the mainline overruns have caused the U.S. share of the Dawson Spur to decline to 66 2/3 percent. Since the 66 2/3 percent floor has been reached, the U.S. pays that percent of total Dawson Spur cost of service, or .667 x .0650 = $.0436 for the Dawson Spur cost of service in the 45 percent case. In the 50 percent case, the Dawson Spur cost of service would be .667 x .0717 = $.0480. In the 100 percent case, it would be .667 x .0869 = $.0582.

All of the above capital cost and cost of service data assume that the input volumes of gas will be 2.4 bcfd for the U.S. and 1.2 bcfd for Canada. On the basis of present geological information, 2.4 bcfd from Prudhoe Bay is more likely than 1.2 bcfd from the Mackenzie Delta. Deliverability from the presently proved reserves in the Mackenzie Delta more likely would be in the range of .7 to .8 bcfd. A reduction in Canadian volumes would, of course, substantially increase the U.S. share of the system in Canada. However, it would not materially alter the U.S. cost of service. If the joint system was designed for 3.1 to 3.2 bcfd, the capital costs would be lower by about $100 million, the U.S. operating expenses would be lower, fuel consumption would be lower in absolute and relative terms, and

the delivered volumes would be higher. These cost reduction factors would offset the increase caused by the larger U.S. share of the base capital costs of the mainline system. For example, at 1.2 bcfd from Canada with a 40 percent overrun in Canada, the base U.S. cost of service would be $.9927. With the system redesigned for .7 bcfd from Canada, the U.S. cost of service would be $.9950.

The capital cost, operating expenses and delivery factors operate as well with respect to the cost-sharing on the Dawson Spur. To illustrate, the estimated overall U.S. cost of service at 3.6 bcfd (2.4 plus 1.2) in the overrun case is $1.0432. With 3.1 bcfd (.07 bcfd of Canadian gas) the U.S. cost of service would be slightly lower, about $1.035.

Net National Economic Benefit

The net national economic benefit (NNEB) to the United States of the Alcan project also substantially exceeds that from the El Paso project. The NNEB measures the desirability of a project from the public perspective. The NNEB of a project is the present value of the benefits derived less the present value of the resources employed in undertaking the project. The benefit is measured by the value of energy

delivered to the lower-48 states. A value of $2.62 per mmbtu for natural gas in 1975 dollars was used throughout the FPC hearings and is based upon a study done for the Department of the Interior that was market oriented rather than resource oriented. This value also formed the basis of the NNEB calculation contained in the National Economic Impact Task Force Report of July 1977.

To ascertain the reasonableness of this value, the resource cost of the most probable substitute for natural gas, No. 2 distillate, was determined. Based upon a mid-1977 price of $14.50 per barrel for imported oil and plausible assumptions regarding producer taxes and the resource investment that is required to refine crude to obtain No. 2 distillate, $2.60 per mmbtu is a fair measure of the current resource cost of this substitute for natural gas.[23/]

Further, the real value of natural gas is likely to increase over time as the real cost of imported oil increases. If the real value of gas increases at a rate of only 2 percent per year, the value of the gross benefits

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23/ The value of gas is undoubtedly higher since the intrinsic value of gas is greater than that of oil (clean, efficient, etc.) and a continuation of gas supply avoids the capital costs of conversion.

determined herein would increase approximately 35 percent, and the NNEB would approximately double.

There are five general categories of resource costs used in the NNEB calculation: the Prudhoe Bay field costs of conditioning the gas and using water injection in place of reinjected gas to pressurize the field; the initial capital costs of the transportation systems; annual operating and maintenance costs; the costs of public services used to support the project (measured in terms of the property taxes the project will be required to pay); and, in the case of Alcan, the annual cost of service payments to Canada for transporting the gas.[24/]

The components underlying these benefit and cost factors are displayed in Exhibits 4 and 5, and the NNEB components are summarized in Exhibit 6 for El Paso and Alcan under the cost overrun case herein. Alcan's NNEB exceeds that of El Paso by over $1.1 billion, which is approximately 25 percent of the El Paso NNEB. Most of that difference is attributable to the reduced volumes of gas

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24/ Fuel costs are not included. The U.S. will supply its share of fuel used to transport the gas through Canada and that cost is reflected automatically in the benefit calculation.

Exhibit 4

ALCAN NNEB COMPONENTS

YEAR	DELIVERED GAS (TRILLIONS BTU'S)	FIELD GATHERING & CONDITIONING ($MILLION)	FIELD OPERATION & MAINTENANCE ($MILLION)	U. S. TRANSPORT. FACILITIES ($MILLION)	U. S. WORKING CAPITAL ($MILLION)	U. S. OPERATION & MAINTENANCE ($MILLION)	OTHER U. S. TAXES ($MILLION)	U. S. SHARE CANADIAN COSTS ($MILLION)
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0
1979	0.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0
1980	0.0	200.0	0.0	240.0	0.0	0.0	0.0	0.0
1981	0.0	344.0	0.0	828.0	0.0	0.0	0.0	0.0
1982	0.0	400.0	0.0	1497.0	0.0	0.0	0.0	0.0
1983	0.0	500.0	0.0	1259.9	0.0	0.0	0.0	0.0
1984	935.5	0.0	8.0	0.0	16.4	37.4	136.4	1330.4
1985	936.1	0.0	8.0	0.0	0.0	39.2	128.7	1239.8
1986	914.7	0.0	8.0	0.0	0.0	41.2	121.2	1174.4
1987	916.0	0.0	8.0	0.0	0.0	43.3	114.2	1109.6
1988	915.9	0.0	8.0	0.0	0.0	45.4	107.6	1051.8
1989	916.7	0.0	8.0	0.0	0.0	47.7	101.3	1019.4
1990	917.4	0.0	8.0	24.3	0.0	50.1	95.4	992.5
1991	918.0	0.0	8.0	18.4	0.0	52.6	79.7	967.7
1992	917.6	0.0	8.0	17.7	0.0	55.2	73.4	944.8
1993	918.3	0.0	8.0	14.1	0.0	58.0	68.2	923.4
1994	918.6	0.0	8.0	0.0	0.0	60.9	63.3	903.5
1995	918.9	0.0	8.0	0.0	0.0	63.9	58.5	885.0
1996	919.0	0.0	8.0	0.0	0.0	67.1	54.0	868.0
1997	919.6	0.0	8.0	0.0	0.0	70.5	49.6	852.2
1998	920.0	0.0	8.0	0.0	0.0	74.0	45.5	837.6
1999	920.6	0.0	8.0	0.0	0.0	77.7	41.4	825.3
2000	920.5	0.0	8.0	0.0	0.0	81.6	37.5	812.6
2001	920.5	0.0	8.0	0.0	0.0	85.7	34.5	812.8
2002	919.7	0.0	8.0	0.0	0.0	89.9	30.6	799.2
2003	919.4	0.0	8.0	0.0	0.0	94.4	26.8	767.1
2004	919.0	0.0	8.0	0.0	0.0	99.2	22.8	736.5
2005	919.0	0.0	8.0	0.0	0.0	104.1	19.0	707.0
2006	919.0	0.0	8.0	0.0	0.0	109.3	15.2	678.7
2007	919.0	0.0	8.0	0.0	0.0	114.8	11.5	651.6
2008	919.0	0.0	8.0	0.0	0.0	120.5	7.7	625.5
2009	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	22998.0	1444.0	200.0	3949.4	16.4	1783.7	1544.0	22516.4

Exhibit 5

EL PASO NNFB COMPONENTS

YEAR	DELIVERED GAS (TRILLIONS BTU'S)	FIELD GATHERING & CONDITIONING ($MILLION)	FIELD OPERATION & MAINTENANCE ($MILLION)	U. S. TRANSPORT. FACILITIES ($MILLION)	U. S. WORKING CAPITAL ($MILLION)	U. S. OPERATION & MAINTENANCE ($MILLION)	OTHER U. S. TAXES ($MILLION)	U. S. SHARE CANADIAN COSTS ($MILLION)
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	80.0	0.0	0.0	0.0	0.0
1979	0.0	0.0	0.0	180.0	0.0	0.0	0.0	0.0
1980	0.0	200.0	0.0	530.0	0.0	0.0	0.0	0.0
1981	0.0	344.0	0.0	1275.0	0.0	0.0	0.0	0.0
1982	0.0	400.0	0.0	2375.0	0.0	0.0	0.0	0.0
1983	0.0	500.0	0.0	1880.0	0.0	0.0	0.0	0.0
1984	444.0	0.0	4.0	480.0	0.0	130.3	125.6	0.0
1985	888.0	0.0	8.0	0.0	0.0	273.6	270.8	0.0
1986	888.0	0.0	8.0	0.0	0.0	287.3	260.3	0.0
1987	888.0	0.0	8.0	0.0	0.0	301.6	249.8	0.0
1988	888.0	0.0	8.0	0.0	0.0	316.7	239.3	0.0
1989	888.0	0.0	8.0	0.0	0.0	332.5	228.8	0.0
1990	888.0	0.0	8.0	0.0	0.0	349.2	219.3	0.0
1991	888.0	0.0	8.0	0.0	0.0	366.6	207.8	0.0
1992	888.0	0.0	8.0	0.0	0.0	384.9	197.2	0.0
1993	888.0	0.0	8.0	0.0	0.0	404.2	186.7	0.0
1994	888.0	0.0	8.0	0.0	0.0	424.4	176.2	0.0
1995	888.0	0.0	8.0	0.0	0.0	445.6	165.7	0.0
1996	888.0	0.0	8.0	0.0	0.0	467.9	155.2	0.0
1997	888.0	0.0	8.0	0.0	0.0	491.3	144.7	0.0
1998	888.0	0.0	8.0	0.0	0.0	515.8	134.1	0.0
1999	888.0	0.0	8.0	0.0	0.0	541.7	123.6	0.0
2000	888.0	0.0	8.0	0.0	0.0	568.7	113.1	0.0
2001	888.0	0.0	8.0	0.0	0.0	597.2	102.6	0.0
2002	888.0	0.0	8.0	0.0	0.0	627.0	92.1	0.0
2003	888.0	0.0	8.0	0.0	0.0	658.4	81.6	0.0
2004	888.0	0.0	8.0	0.0	0.0	691.3	71.1	0.0
2005	888.0	0.0	8.0	0.0	0.0	725.9	60.5	0.0
2006	888.0	0.0	8.0	0.0	0.0	762.2	50.0	0.0
2007	888.0	0.0	8.0	0.0	0.0	800.3	39.5	0.0
2008	888.0	0.0	8.0	0.0	0.0	840.3	29.0	0.0
2009	444.0	0.0	4.0	0.0	0.0	441.2	9.2	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	22200.0	1444.0	200.0	6800.0	0.0	12746.2	3732.8	0.0

EXHIBIT 6 - NNEB COMPARISON
($ Billions 1975)

	El Paso[a/]	Alcan[a/]
Value of Gas	$10.849	$11.791
Less:		
Field Capital Costs	.873	.873
Transport Facilities	4.074	2.334
U.S. Working Capital	0	.008
U.S. O & M (field and system)	.820	.157
U.S. Other Taxes	.456	.222
Canadian Cost of Service	0	2.431
NNEB	$ 4.626	$ 5.766

a/ Based upon 2.4 bcfd input at 1137.8 Btu/cf.

that El Paso would deliver because of its high fuel consumption. The real resource costs associated with the transportation are nearly equal, with the higher sum of the Alcan facilities, plus Canadian cost of service for Alcan, being offset by El Paso's large operating and maintenance expenditures.

While both projects exhibit the ability to absorb substantial cost overruns without becoming uneconomic, Alcan's ability is greater than that of El Paso. Assuming that the elasticity of cost of service with respect to direct cost overruns is about 0.8, Alcan's direct costs could increase almost 124 percent over the cost overrun case before it would become socially uneconomic; the comparable figure for El Paso is 114 percent.

In conclusion, the economic considerations overwhelmingly favor the Alcan overland pipeline measured against the El Paso LNG transportation system. The cost of service will be significantly less; the net national economic benefits will be significantly higher; the amount of energy delivered will be significantly higher; and the ability to absorb cost overruns is greater.

CHAPTER V - SAFETY, RELIABILITY AND EXPANSIBILITY

Considerations of safety, reliability and expansibility favor the Alcan overland pipeline system in comparison to the LNG system proposed by El Paso.

The safety record for LNG storage and transportation has been excellent during the past quarter of a century. Nevertheless, LNG facilities present marginally higher risks of a major accident than overland pipelines. An LNG project requires a careful approach to facility siting. The United States may need to rely more upon LNG in the future. However, the use of LNG should be chosen where there is no economically and environmentally feasible alternative.

The greater reliability of the Alcan system should be emphasized. The El Paso system is a multiple-mode system that would be sized and operated at very close capacity and operational tolerances, a factor that tends to decrease reliability. Further, the El Paso pipeline would cross several major geologic faults--the Alaska LNG facility and the California regasification facility would be sited in some of the most seismically active areas in the world. Although the faciliites can be designed and constructed to survive structurally a major seismic event, there

inevitably would be interruption in service during repair. By contrast, the seismic risk to the Alcan system is very small. It will approach relatively few seismically active areas and will cross no known active faults in Alaska.

Finally, expansibility of capacity also weighs in favor of the Alcan system. The capacity of a properly designed all-pipeline system can be expanded incrementally up to a point simply by the addition of compression at relatively low capital cost. The capacity of an LNG system, on the other hand, must be expanded in large increments that may be excessive in relation to the actual need.

The specific safety and design areas which have been addressed by U.S. and Canadian authorities and to which Alcan must now properly respond as the project moves forward include:

- Safety of Design and Operation
- Potential for Service Interruption -- Reliability
- Efficiency of Design and Capability of Expansion
- Monitoring Construction and Joint U.S./Canadian Coordination

These safety and design issues, involving new technologies for the Alaska gas system, were reviewed by an Interagency Task Force under the lead of the Department of Transportation (DOT), with participation by the Departments of the Interior and Commerce, the Federal Energy Administration, the Energy Research and Development Administration, and the Environmental Protection Agency.

Safety of Design and Operation

The technical problems in operating a pipeline at high pressures and the transportation of natural gas at chilled temperatures have been carefully considered by government and industry officials. Specific issues include:

- high strength pipe metallurgy,
- the possibility of frost heave effects on the pipeline in permafrost soils,
- the choice of pressure testing methods, and
- development of advanced valve designs.

Final resolution of these technical issues will be needed before there can be site specific approvals of system design and initiation of construction.

Pipe Metallurgy. The principal factors that affect safety of the pipeline system are the type, design, physical properties, the metallurgy of the pipe used, and quality control for the pipe.

Alcan initially proposed to operate its 48-inch system at 1260 psig pressure with the pipeline buried and the gas chilled below 32°F before shipment through permafrost regions. It is probable that Alcan will redesign its system between Whitehorse, Yukon, and Caroline Junction, Alberta, to increase capacity and allow for the economical transportation of Canadian gas from the Mackenzie Delta. The principal alternatives are a 48-inch, 1680 psi system or a 54-inch, 1120 system. In addition, if a 1680 system is installed south of Whitehorse, consideration will be given to installation of a 1680 psi system in Alaska, perhaps with a pipe diameter less than 48-inch. The higher pressure system is generally more economically efficient than lower pressure designs.

To date, the highest pipeline operating pressure has been approximately 1000 psi. From the evidence submitted at the FPC hearings, the DOT and the Safety and Design Task Force tentatively have concluded that the higher operating pressures (1670 to 1680 psi) could be safely achieved with

adequately designed pipe. However, further testing and evaluation will be required. The Agreement on Principles between the United States and Canada provides for a jointly conducted testing and evaluation program to determine which system would offer the highest degree of safety, reliability and efficiency. Upon completion of the testing program, the respective regulatory authorities of each country will make a final decision as to which type of system might be installed in each country.

Another issue pertaining to high pressure pipe is whether special "crack arrestors" will be required to stop fracture propagation in the event a fracture should occur. The Safety and Design task force concluded that the fracture toughness properties designed into the pipe specified by the various operators should be sufficient to prevent the initiation of a propagating crack even at arctic temperatures. It therefore concluded that crack arrestors were merely a precaution to ensure that in the remote chance a crack were to initiate, any resulting propagation would be controlled. The task force also reported that with proper

246-448 O - 77 - 14

design and installation, the arrestors would introduce no problems of corrosion control or stress concentration.

However, if Alcan uses crack arrestors, the particular design and installation plans will be reviewed on a site-specific basis by the DOT to assure that they are consistent with the Federal gas pipeline safety standards.

Alcan plans to use high-strength, grade X-70 pipe. The grade has been rated acceptable in the most recent survey of pipe specifications published by the American Petroleum Institute (API). However, a reference specification for X-70 pipe is not presently incorporated in the Federal gas pipeline safety regulations. Reports of operating experience with X-70 pipe and its approval under liquid pipeline safety standards, as well as in the standards and regulations of many other countries, make it probable that the DOT will incorporate the API X-70 pipe specifications into its regulations before commencement of the construction on the Alaska portion of the system. The economic benefits from the use of X-70 pipe provide an incentive to incorporate it into the design of the Alaska gas system.

Potential for "Frost Heave." The problem of frost heave (i.e., the upward movement of a buried pipeline resulting from freezing and thawing conditions), which pipelines can experience when buried in areas of discontinuous permafrost, must be adapted for the particular conditions encountered on a site-specific basis. Depending upon soil characteristics, some discontinuous permafrost areas are more subject to frost heave than others. Given the time to finalize the route survey, field testing to determine soil conditions, and engineering design capability, Alcan should be able to solve the frost heave problem satisfactorily although costs for doing so may vary from initial estimates.

Alcan has stated that it expects to encounter 80 miles of frost-susceptible soil along its right-of-way. It plans to use a passive system which consists of loose fitting insulation and select backfill. This will be supplemented by cycling flowing gas temperatures, thermistor monitoring of the pipeline to detect frost heave problems for corrective action, and periodic patrol and visual inspection based upon accessibility of its right-of-way.

The DOT will review the frost heave site-specific design approach for the Alaska section to assure that the final

design will provide the required pipe support, and meet the other pertinent provisions of the Federal gas pipeline safety standards in 49 CFR Part 192. Because frost heave problems occur over a period of time, monitoring of the design, construction, and operation of the Alaska gas transportation system by Alcan and government agencies should detect problem areas early and provide the high level of safety and reliability required.

Pressure Testing. Once the pipeline is installed, Federal pipeline safety standards require that pipeline systems be pressure tested before initial operation. Alcan proposes to use a hydrostatic test and preheat the test water to prevent its freezing in the line where buried in permafrost areas. This procedure proved workable on the Alyeska crude oil pipeline. However, the Alyeska pipeline was buried only in areas of thaw-stable material and was designed, from a thermal expansion standpoint, to carry warm oil. The Alcan pipeline, on the other hand, will be buried in varied types of soil conditions and designed to carry chilled gas.

The Task Force on Safety and Design concluded that "the proposed Alcan procedure for hydrostatic testing with heated water would not be appropriate in sections traversing permafrost or discontinuous permafrost unless stringent control

of test water temperatures is maintained and adequate temperature sensing devices are installed adjacent to the buried pipe." That report also concluded that an approach similar to the one proposed by Arctic Gas, i.e., a hydrostatic test using a water/methanol freeze-depressant solution at stress levels approaching 100 percent specified minimum-yield strength, provided the best assurance that any defects present in the pipe will be disclosed prior to placing the line in service.

Extensive studies were performed by Arctic Gas on the procedures to be used, the manpower to be expended, and the equipment and costs associated with both air and methanol/water testing. The proposed Arctic Gas test plan included procedures for disposing of the methanol after testing and safeguards to be used in the event of a pipeline test failure. Reports to the DOT confirm that there are very few test failures on newly constructed gas pipelines. In the remote event of failure, environmental concerns can be alleviated through development of a spill containment contingency plan and proper method of methanol disposal. Alcan should utilize hydrostatic testing research data developed by Arctic Gas; such information should be made available to Alcan.

Valve Design and Performance. If Alcan constructed a 1260 psi system, it would face few problems with regard to design of valves for chilled service. However, if Alcan increases pressure to 1680 psi, either for the Alaska segment of its line alone or for sections in Canada, additional valve design evaluation will be necessary. Valves currently installed in operating pipelines have not had service experience at those higher pressures with chilled gas temperature conditions even though some development and test work has been done at the ranges of pressure which were anticipated for the Arctic Gas and El Paso systems. If higher-pressure service is used, valving plans will be reviewed by DOT on a site-specific basis to assure that the designs are consistent with Federal gas pipeline safety standards.

Correlation Between Canadian and U.S. Gas Pipeline Safety Standards. To assure the overall integrity of the Alaska natural gas transportation system and the continued reliability of service to the U.S., it will be necessary to coordinate specific elements of the Canadian and U.S. gas pipeline safety standards. A review is underway to identify and correlate the various specific features of the Canadian and U.S. standards, and with effective technical liaison between the U.S. and Canadian regulatory

agencies, these slightly differing standards should not create any problems. It will be necessary for those regulatory officials monitoring construction of the U.S. pipeline system to be aware of and resolve differences in design, particularly as they relate to acceptable levels of safety and reliability of service.

Design and Active Seismic Areas. The proposed Alcan route encounters relatively few active seismic areas and the risk of damage to the Alcan system from earthquake activity is small. Alcan crosses no known active faults in Alaska. The Denali fault is approximately 30 miles away at its closest point. In Canada, Alcan traverses the Shakwab fault which is large but not likely to be active. Alcan plans to provide for earthquake protection by wide-shallow ditch design and granular backfill to provide support for the pipe to an 8.5 Richter scale, and to install valves at either side of the fault.

Compressor stations for the Alcan system will incorporate structural design for anticipated earthquake stresses and utilize heavier wall pipe where appropriate.

Potential for Service Interruption -- Reliability

Accessibility of the Alcan route by the Alyeska haul road and existing highways in Alaska and in Canada will

facilitate proper maintenance of the pipeline system. In certain tundra areas where conflicts may arise between requirements of the Federal gas pipeline safety standards and the environmental protection rules of Federal or State agencies, trade-offs between environmental considerations and pipeline safety and reliability will need to be carefully weighed in specific instances.

The FPC concluded earlier that each of the three systems originally proposed could be operated with a reliability acceptable to the gas consumers of the United States. The record of pipelines generally shows that their continuity of service is by far the best of any mode of transportation in the United States, and Canadian experience, including experience with the pipelines, in the far north is comparable.

The FPC and the Task Force on Safety and Design also concluded that repair of a pipeline outage on any of the systems as originally proposed would normally be very rapid. Again, the accessibility of the Alcan route to haul roads, work pads, and existing highways would facilitate rapid repair. Special techniques and equipment will be required for repairs in remote tundra areas during the period of summer thaws. Techniques originally planned to be used by Arctic Gas for such repair should be considered by Alcan in its maintenance and repair plans.

Efficiency of Design and Capability of Expansion

It was also suggested in the safety and design report that for economic reasons, Alcan should consider increasing the operating pressure and wall thickness of its 48-inch diameter pipeline in order to allow for more efficient increases in throughput rate for additional reserves which might be committed to the system from either Alaska or Canadian sources.

These physical factors determine the capacity of a gas pipeline:

- diameter of pipe,
- operating pressure,
- the rate (velocity) at which gas moves through the line.

For any new system the first two items are selected in relation to the expected "throughput" of the gas and are then fixed. Any subsequent increase in the capacity of that pipe requires movement of gas at a higher rate. The velocity of gas is increased by adding compression to the pipeline. Compression requires fuel essentially in proportion to the horsepower added. Thus, as more throughput is

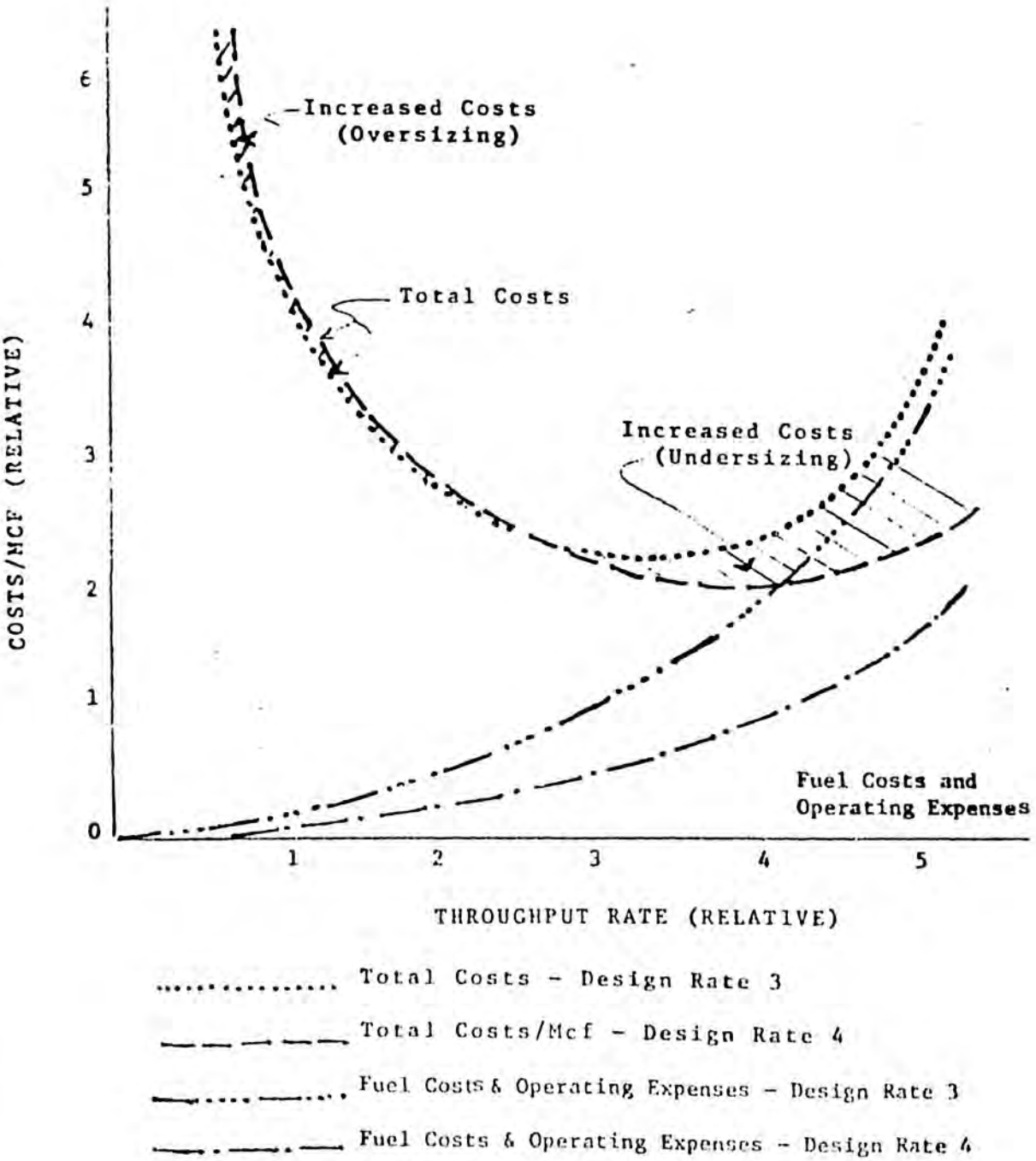
required in an existing pipeline, horse power (capital cost) and fuel use (operating cost) will increase.25/

The introduction of the additional gas also allows the division of fixed costs by more units of throughput. If the line is operating at less than optimal capacity, the decline in unit fixed costs will be greater than the increase in unit costs for additional horsepower and fuel, and the overall unit cost will decrease. On the other hand, if the pipeline is forced beyond its optimal capacity by addition of yet more compression, the reverse is true: horsepower and fuel increases faster than the declini. unit fixed costs, resulting in an increase in overall unit cost of service. Exhibit 4 illustrates the problem.

Overall, considering the arctic construction, inflationary impacts, and environmental impacts, the ultimate cost to consumers of providing capacity for increased gas throughput would be much lower if the capacity is provided initially by increasing the diameter or working pressure of the pipe, than if it is provided later by adding compressor horsepower or looping the pipeline.

25/ Horsepower and fuel requirements increase roughly as the the difference between the squares of the relative throughputs. Doubling the throughput would require about 4 times as much fuel.

RELATIVE COST vs RELATIVE RATE
DIFFERENT DESIGN CAPACITY



The routing of the Alcan system provides future access to reserves which might be discovered in the Beaufort Sea or eleswhere on the North Slope. Alcan similarly could transport gas from other areas of Alaska or even from the Gulf of Alaska by means of somewhat longer supply laterals. Further, the Agreement with Canada provides for the use by Canada of the Alcan main line at a throughput up to 1.2 bcfd. Therefore, redesign of the system to enable inexpensive expansibility up to 3.9 to 4.0 bcfd south of Whitehorse, Yukon Territory, is essential.

CHAPTER VI - ORGANIZATION OF FEDERAL INVOLVEMENT AFTER SYSTEM SELECTION

Introduction

A frequently cited problem with construction of the Alyeska pipeline was the multitude of Federal Government agencies that severally prescribed and enforced terms and conditions with only minimal coordination of purpose or effort. Uncoordinated government actions can cause needless construction delays and cost increases. Coordinated Federal oversight of project management and construction would:

- provide coherent and uniform rules, and make them clear to the applicant;
- provide consistent enforcement of the rules;
- avoid rules and bureaucractic procedures that are merely cumulative and would be sources of delay.

ANGTA provides for creation of a new Federal officer, the Federal Inspector for construction of an Alaska natural gas transportation system. Under Section 7(a)(5) of ANGTA, this Federal Inspector shall-

> (A) establish a joint surveillance and monitoring agreement, approved by the President, with the State of Alaska similar to that in effect during construction of the trans-Alaska oil pipeline to monitor the construction of the approved transportation system within the State of Alaska;

(B) monitor compliance with applicable laws and the terms and conditions of any applicable certificate, rights-of-way, permit, lease, or other authorization issued or granted;

(C) monitor actions taken to assure timely completion of construction schedules and the achievement of quality of construction, cost control, safety, and environmental protection objectives and the results obtained therefrom;

(D) have the power to complete, by subpoena if necessary, submission of such information as he deems necessary to carry out his responsibilities; and

(E) keep the President and the Congress currently informed on any significant departures from compliance and issue quarterly reports to the President and the Congress concerning existing or potential failures to meet construction schedules or other factors which may delay the construction and initial operation of the system and the extent to which quality of construction, cost control, safety and environmental protection objectives have been achieved.

While the Federal Inspector can "monitor" the enforcement and compliance actions of the various Federal agencies, he does not have any specific enforcement powers. A coordinated regulatory approach will be elusive unless the Federal Inspector has the necessary supervisory authority at the field level over enforcement of terms and conditions to ensure that coordination occurs.

Therefore, as set forth in the Presidential decision, the President will submit to Congress upon approval of the

Decision a limited executive reorganization plan for the very specific purpose of transferring to the Federal Inspector field-level supervisory authority over the enforcement of stipulations and terms and conditions from those Federal agencies having statutory responsibilities over various aspects of an Alaska natural gas transportation system. This coordinated field level authority over compliance and enforcement activities of the respective Federal agencies is essential to avoid project delays and minimize cost overruns.

However, the Federal Inspector will be subject to the ultimate policy direction and supervision of an Executive Policy Board, made up of the Secretaries of Interior, Energy, and Transportation, the Administrator of the Environmental Protection Agency and the Chief of the Army Corps of Engineers. Furthermore, all Federal agencies will retain their existing authorities, pursuant to section 9(a) of ANGTA, to issue original certificates, permits, rights-of-way and other authorizations, and to prescribe any appropriate stipulations and terms and conditions to such authorizations that are permissible under existing law. Finally, the Agency Authorized Officers, who will exercise the delegated

authorities of their respective agencies, will directly enforce the stipulations and terms and conditions--subject to the field-level supervisory direction of the Federal Inspector.

With these organizational proposals, and with the general terms and conditions set forth in the Decision, the Federal Government will have an expanded role in the oversight of project management and construction. The oversight authority conferred by the terms and conditions set forth in the Decision will be far more comprehensive than the limited Federal monitoring effort over Alyeska's project management. If these general terms and conditions are effectively enforced, most of the management abuses associated with the Alyeska project should not recur. The general terms and conditions, however, do not hold the successful applicant to any specific management approach, but merely provide certain minimum standards for cost and quality control and timely completion of construction, which reflect the collective experience and knowledge gained by the various Federal agencies from involvement with the Alyeska project.

The Organization of Federal Involvement with the Alcan Project

As noted above, the Federal Inspector will have the field-level supervisory authority over the Agency Authorized Officers who will be assigned on a full-time basis to administer the authorities of their respective agencies over various aspects of the Alcan project. The Federal Inspector and the Agency Authorized Officers will constitute an Alaskan Natural Gas Pipeline Office.[26/] This Office will consist of administrative and field inspection and monitoring staff working under the direction of the Federal Inspector. The Executive Policy Board will approve the level of staff support, and determine Agency Authorized Officer participation in providing such staff support to the Federal Inspector.

Essentially, the organization of Federal involvement with the Alcan project has three elements:

1. The Federal Inspector. The Federal Inspector will be a Presidential appointee confirmed by the

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26/ The Office should be located in Alaska, at least for the construction phase of the project, and later in reduced form for the operational phase. It is probable that preconstruction planning and design will necessitate an Alaska-based pipeline office (e.g., to coordinate site-specific terms and conditions) even though the size of the Washington, D.C.-based staff will be larger in the earlier phases of the project.

240-446 O - 77 - 15

Senate and is an officer independent of other existing Federal agencies. In addition to his statutory duties under section 7(a)(5), the Federal Inspector will have supervisory authority at the field level over enforcement of terms and conditions, and will otherwise coordinate Federal involvement with the pipeline operator during the design and construction phases of the project. The Federal Inspector is designed to be the principal point of contact with the pipeline owners, the contractors, State agencies, and Canadian entities on matters pertaining to Federal oversight of the project. As chairman of the Executive Policy Board, he should be the executor of its policy decisions. The Federal Inspector also has the power to compel information by subpoena and to issue quarterly reports to the President and Congress concerning existing or potential failures to meet construction schedules and other matters.

2. The Executive Policy Board. Presidential supervision over the Federal Inspector will be delegated to an Executive Policy Board. The Board would be made up of the Secretaries of Interior, Energy, Transportation, the Administrator of the Environmental

Protection Agency, and the Chief of the Army Corps of Engineers, or their Deputies (or senior officers who have been delegated authority over gas pipeline matters). The Federal Inspector shall serve as the non-voting chairman of the Board.

The Board will provide policy guidance through the Federal Inspector to the Agency Authorized Officers and will be paramount in all policy matters. It will also act as an appellate body to resolve any differences between the agencies and the Federal Inspector, including differences that may arise when the Federal Inspector overrules an enforcement action of an Agency Authorized Officer. In such cases, the Board shall expeditiously resolve any appeal within a specified time period. Otherwise, the Board shall confine itself to policy-making matters, and the Federal Inspector will be the conduit of the Board in carrying out policy.

3. The Agency Authorized Officers. These officers will represent and exercise the internally delegated authorities of their respective agencies in matters pertaining to the project. Although these authorities can be exercised only by the

respective Agency Authorized Officers, they will be subject to supervision of the Federal Inspector at the field level, and receive policy direction from the Executive Policy Board through the Federal Inspector on enforcement matters.

The Agency Authorized Officers should have no other administrative duties that would require less than full attention to the project, unless the Executive Policy Board consents to waive this requirement in a particular case. It is hoped that the use of Agency Authorized Officers to represent the various agencies will minimize coordination problems between the project applicant and the Federal Government.

Implementation of Organizational Plan

The proposed transfer of field-level supervisory authority to the Federal Inspector should be submitted for approval by Congress in a government reorganization plan, rather than implemented by executive order. This plan will propose a limited, single-purpose transfer of field-level supervisory authority over enforcement of terms and conditions for the duration of the preconstruction and construction phases of the Alcan project. No other transfer of existing authority, or transfer of any coordination function, will be proposed in the reorganization plan.

To avoid the possible overlap with Congressional action on the Presidential decision itself, the reorganization plan will not be submitted to Congress until that decision has been approved. Congress would then have 60 legislative days in which to consider the merits of the plan under the special parliamentary procedures provided by the Reorganization Act of 1977, 5 USC 901 et seq.

The President can immediately issue an executive order creating the Executive Policy Board and by his power pursuant to Section 301 of Title 3, delegate the necessary authority to the Board to carry out its functions. The Board can then make certain initial administrative decisions regarding the Office of Federal Inspector--e.g., the level of staff support for the Federal Inspector, and the possible use of the Army Corps of Engineers for such staff support. In the interim, the Federal Inspector can immediately exercise his responsibilities under existing ANGTA authority to "monitor" compliance by Alcan with applicable laws and authorizations.

Coordination with the States

In addition to the duty of organizing Federal involvement, the Federal Inspector has the substantial responsibility under ANGTA to establish a joint surveillance

and monitoring agreement with the State of Alaska and other affected States. The strengthened field level supervisory authority proposed for the Federal Inspector will be of great assistance in the performance of this statutory responsibility.

The Alcan system will pass through hundreds of miles of land owned by the States, particularly by the State of Alaska. Officials of the State of Alaska have previously declared that the State will issue a right-of-way lease to the gas pipeline for crossing these lands, regardless of which project is approved, and have indicated that environmental terms and conditions will be part of this lease.

The States and the Federal Government share responsibility to ensure that lands, water and wildlife are not unnecessarily disturbed by the gas pipeline and that where disturbed, maximum restoration is carried out. The Federal Inspector and Agency Authorized Officers will therefore work with the State of Alaska and with other States in a cooperative fashion both for the protection of the environment and for the expeditious construction of the pipeline. The terms and conditions and stipulations which pertain to State and Federal lands should be as similar as possible. A reasonable accommodation of State and Federal interests

is expected with the Federal Government having primary responsibility where the pipeline crosses Federal land and private lands, and with the State Governments having primary responsibility where the pipeline crosses State lands. Cooperative agreements based on these principles have been successful in the recent past, and should be the point of departure for further strengthening the Federal and State cooperation during construction of the gas pipeline.

CHAPTER VII - IMPACT ON COMPETITION IN THE NATURAL GAS INDUSTRY

The antitrust and competitive impact effects of an Alaskan natural gas system have been thoroughly studied by the Federal Power Commission and by the Justice Department under Sections 6 and 19 of the Alaska Natural Gas Transportation Act of 1976. Under section 19, the Attorney General prepared and submitted to Congress on July 14, 1977, a detailed analysis of potential antitrust issues and problems. Under Section 6, the Attorney General submitted that same report to the Alaskan Natural Gas Task Force, along with a commentary on the FPC's findings with respect to competitive impact. In addition, the Justice Department submitted a letter on August 9, 1977, which elaborated its views concerning possible participation by the gas producers in financing the transportation system. A copy of the letter is appended to the end of of this Chapter.

Based on these studies, it can be concluded that the Alcan project will have no harmful effect on regional or national competition in the natural gas industry, and that any potential of competitive abuse can be cured by proper proper federal regulation. In addition, consistent with

the Administration's antitrust objectives, producers of Alaskan gas could participate in financing this expensive transportation system through guaranteeing some portion of the project debt.

Gas transmission and distribution industry

The Federal Power Commission and the Justice Department agreed that certification of a transportation system for Alaskan gas will not have a significant impact upon competition in the natural gas transportation and distribution industries.

Based on statistics presented in the Justice Department's Report to Congress, the American sponsors of the Alcan project, including PGT, PGE and the Northern Border companies, transport approximately 40 percent of all the interstate natural gas shipped in the U.S. However, in an industry as heavily regulated as natural gas, indices of concentration tend to overstate the potential for anti-competitive behavior. In the presence of effective regulation, the actual prospect of anticompetitive behavior is minimized, and there is only a small risk that the Alcan sponsoring companies could control national or regional gas markets.

Gas producers

Alcan has no oil companies or subsidiaries of oil companies among its sponsors. This fact in itself sharply reduces potential antitrust concerns.

Nevertheless, since elsewhere in this Report it is urged that the gas producers participate in financing this project, it is necessary to examine the competitive considerations associated with producer participation. The Attorney General concluded that "present Federal Power Commission regulation appears to preclude an opportunity for competitive abuse by the gas producers." However, the Department warned that if wellhead prices were decontrolled or substantially relaxed, some opportunity might arise for producers, if they owned or controlled the transportation system, to transfer profits from the regulated transportation operation to their unregulated upstream production operations.

The Department of Justice indicated that its concern about producer ownership or control of the pipeline does not preclude producer participation in financing the system. For example, consistent with antitrust objectives, producers could be involved in guaranteeing a portion of the project's initial debt or cost overrun debt. To assure

antitrust insulation, any producer role in the management of the transportation system prior to its becoming operational should be the minimum necessary to protect the producers' investment interest but in any event should not permit producers to engage in anticompetitive conduct. In addition, producer debt guarantees should terminate upon completion of the project and commencement of the tariff. Finally, the Federal Power Commission should utilize its approval power over gas purchase contracts, and more generally, over project financing plans, to ensure that any conditions producers impose in exchange for debt guarantees do not create situations which might permit abuses of competition.

Thus, as is urged elsewhere in this report, gas producers could guarantee portions of the project debt consistent with this Administration's antitrust objectives.

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Overall, we conclude that the potential for anticompetitive abuse by either the gas transmission and distribution industry or the gas producers (to the extent they might participate in guaranteeing project debt) is small, especially under a continuing system of price regulation.

Any potential competitive problems can be guarded against through (1) imposing proper conditions in the license to construct the transportation system (including the nondiscriminatory conditions under section 13(a) of the Act); (2) monitoring gas purchase contracts between gas producers and gas transmission companies; (3) requiring the disclosure of any collateral agreements between producers and transmission companies; (4) requiring government scrutiny and approval of any plans for gas reallocation or displacement, and government monitoring of any industry discussions to derive such plans; and (5) imposing regulatory sanctions in any specific cases of abuse that may arise.

EXHIBIT

ASSISTANT ATTORNEY GENERAL
ANTITRUST DIVISION

Department of Justice
Washington, D.C. 20530

August 9, 1977

Mr. Leslie J. Goldman
Assistant Administrator
Energy Resources Development
The White House
Washington, D. C. 20500

Dear Mr. Goldman:

The Attorney General submitted his Reports on the competitive aspects of the Alaska natural gas transportation system to the President and to the Congress on July 14, 1977. One of the conclusions drawn in those Reports was that producers of substantial amounts of natural gas should not be permitted to own any portion of or participate in any manner in the selected Alaska natural gas transportation system.

The Department has been requested by the Alaska Natural Gas Task Force to consider whether this recommendation precludes the participation of the Alaskan natural gas producers in the financing of the selected project. We have been requested to focus our attention on the two routes still under active consideration -- the all-pipeline route proposed by Alcan Pipeline Company and the pipeline-LNG route proposed by El Paso Alaska Company.

The Department's recommendation concerning gas producer ownership and participation was based on the premise that such ownership or participation under a regime of deregulated or relaxed wellhead price regulation could lead to the evasion of effective pipeline regulation and create the opportunity for the earning of monopoly profits through anticompetitive activity. Despite the continuation of wellhead price regulation and the present lack of gas producer ownership or participation in either the Alcan or El Paso projects, we continue to express our concerns on this important issue, since the long term status of wellhead price regulation appears uncertain and it is not now clear who will be the ultimate owners of these projects. However, our concern about gas producer ownership of the projects does not mean that there would necessarily be antitrust objections to participation in project financing on the part of Alaskan gas producers.

From consultation with other members of the Alaskan Natural Gas Task Force, we understand that gas producer participation in the financing of the selected project may be essential to the success of the project. We believe, therefore, that consistent with our recommendations producers could be involved in the guarantee of a portion of the project debt. We view this guarantee as consistent with our recommendations so long as the gas producers would not be equity members of the sponsoring consortium, would not have any voting power, would not have any role in the management or operations of the transportation system once the system would become operational and would be obliged to terminate their guarantor roles upon completion of the project and the tariff's going into effect. Any role in the management of the transportation system prior to the system becoming operational would be minimal and consistent with the size of the guarantee and would not lead to the types of anticompetitive conduct indicated in the Attorney General's Report on the Alaskan natural gas transportation system and in this letter.

Although not opposed to some financial backstopping under these conditions, we reiterate our opposition to any type of financial participation by producers that would enable them to engage in any form of anticompetitive conduct, such as the restriction of pipeline throughput, the denial of access to nonowners, or the resistance or denial of future expansion of pipeline capacity.

The Department recognizes that if the gas producers were to act as debt guarantors they would have the right to request conditions to protect their financial involvement. The Department would not oppose conditions to this effect so long as the conditions would not give rise to the potential for competitive abuse, including the power to veto procompetitive policies, referred to above. In this regard, we would expect to urge the Federal Power Commission, or its successor agency, at the appropriate time, to utilize its approval power over gas purchase contracts and, more generally, over project financing plans, to ensure that producer-imposed conditions do not conflict with the antitrust objectives outlined in the Attorney General's Reports.

In addition, as a further safeguard, the Department suggests that it review all the terms and conditions of any financial guarantee of a portion of the project debt negotiated with the Alaskan gas producers. You are assured

of our willingness to assist in exploring and developing an appropriate method of gas producer financial participation in an Alaskan natural gas transportation system that will not subvert the competitive spirit and intent of the recommendations contained in our Reports.

Sincerely yours,

Hugh P. Morrison Jr

Hugh P. Morrison, Jr.
Acting Assistant Attorney General
Antitrust Division

cc: Roger C. Altman
Assistant Secretary
(Domestic Finance)
Department of the Treasury
Washington, D. C. 20220

CHAPTER VIII - NATIONAL SECURITY

The Department of Defense (DOD) provided a study on the national security implications of the proposed Alaska gas transportation systems both to the Department of Interior, for its report required by the Trans-Alaska (Oil) Pipeline Act (P.L. 93-153)[27/], and to the Federal Power Commission (FPC) for its use in evaluating the proposals. The conclusions of the DOD study were that analysis of military factors alone would not indicate an overriding preference for one route over another.

A DOD representative testified on the study before the FPC and was cross-examined by representatives of both El Paso and Arctic Gas, after direct examination by the FPC's Administrative Law Judge Litt and a staff attorney. As reported by Judge Litt:

> ....the evidence shows each system has its advantages and disadvantages. El Paso's entire pipeline portion of its system is under U.S. control, and thus defense strategy may be facilitated. However, El Paso's project tends to concentrate potential targets, like its liquefaction and regasification plants, whose destruction would present major, long-term outage problems. Similarly, both the oil and gas pipelines would be susceptible to concentrated attack or sabotage on the Yukon River

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27/ "Alaska Natural Gas Transportation Systems, A Report to the Congress Pursuant to P.L. 93-153," U.S. Department of the Interior, December, 1975.

240-448 O - 77 - 10

> Bridge. Arctic Gas and Alcan, while not concentrating vulnerable facilites at single locations or subjecting their systems to interdiction at sea, suffer somewhat from the length and location of their pipelines. Moreover, these projects must rely on Canadian security forces for defense over much of their pipeline lengths.[28/]

The consensus was that each of the proposed systems has some national security problems which are peculiar to that system, and that the extremely modest danger due to hostile acts is of some concern, whether such acts are in wartime or are acts of sabotage. However, such danger was considered to to be far less likely to disrupt pipeline operations than system failures of a purely natural or mechanical nature.

DOD also submitted a report to the President on July 1 commenting on the national security implications of the FPC's Recommendation to the President.[29/] In that report, DOD reiterated its conclusion that there is no overriding preference for one route over another when analysis is based on military factors alone. However, the report pointed out that dependence on imported oil presents a grave danger to the national security, and stressed that completion of a transportation system for delivery of Alaska North Slope

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28/ Initial Decision on Proposed Alaska Natural Gas Transportation Systems, Federal Power Commission, February 1, 1977, p. 411.

29/ Recommendation to the President, Federal Power Commission, May 1, 1977.

natural gas to the contiguous 48-states must be considered an important national security objective.

With the Alcan joint project with Canada, we believe Canada will have a major interest in maintaining a uninterrupted flow of gas through the pipeline as well as a treaty obligation to do so under the recently ratified pipeline treaty. First, the Canadian companies which will be the owners of the Pipeline in Canada will have a substantial investment which they will want to have protected. Canadian investors would be adversely affected by any interruption in throughput. Second, remote communities in both the Yukon Territory and the western provinces will be served by the Pipeline, and any interruption in flow will directly affect availability of gas to those communities. Finally, a much larger number of Canadian gas consumers will have a direct interest in uninterrupted throughput when the Dempster Line comes into service from the Mackenzie Delta. The Canadians expect the Dempster Line to be built within several years of initiation of service on the main line.

Provision for access to the Mackenzie Delta reserves will have beneficial effects on the national security of both countries due to decreased dependence on imported oil. Canadian oil import requirements will be directly reduced by availability of gas to Canadian consumers. Access to frontier gas reserves will allow Canada to fulfill its current gas export commitments, preventing an increased degree of U.S. oil import dependence due to curtailment of Canadian gas supplies. Attaching Canadian frontier gas and providing a stimulus to the Canadian oil and gas producing industry may ultimately allow some increase in the level of Canadian gas exports, which would allow even further reduction in oil import dependence.

CHAPTER IX - THE WESTERN LEG

The Authorization of Facilities

There are two basic methods for delivering Alaskan natural gas to the West Coast. The first method is to construct a "Western Leg" to the Alcan system by constructing a new pipeline and some looping in Canada from Caroline Junction to Kingsgate, and by increasing the capacity of the existing Pacific Gas Transmission (PGT) and Pacific Gas and Electric (PG&E) pipeline, also through looping. A fully looped system would cost about $770 million (1975 dollars).

The second method is to deliver the gas to the West by "displacement." The Northern Border section of the Alcan project to Chicago could be sized to deliver all Alaska gas to the Midwest. Natural gas from West Texas and New Mexico that otherwise would flow to the Midwest could then be diverted to the West Coast through the El Paso, Transwestern and Northwest pipeline systems.

As set forth in the Presidential Decision, construction of a Western Leg will be authorized for direct delivery of Alaskan gas to the West Coast. See page 20 of the Decision. The Western Leg facilities proposed by the sponsors in the FPC hearings (i.e.,

the "1580 Design") will be authorized for "construction and initial operation." All such facilities will be entitled to the special mandatory certification and expediting procedures provided by ANGTA.

However, the facilities proposed in the "1580 Design" will be subject to a final review and possible adjustment prior to final certification by the FPC. As in the case of the Northern Border system, the Secretary of Energy shall determine at the time of certification whether the facilities proposed in the "1580 Design" are larger or smaller than necessary to handle the contracted supplies of Alaskan gas and Canadian exports and whether "pre-construction" is necessary to accommodate short-term excess deliveries of Canadian gas from Alberta. The "1580 Design" facilities would be needed to handle exports from Canada continuing beyond current contract expiration dates or if new gas supplies from Alaska are developed. Furthermore, complete delivery by displacement would not be feasible if Mexican gas becomes available and the 30 inch gas pipeline that is part of the El Paso system between Texas and California is converted to an oil pipeline for use in the Sohio project to transport surplus Alaskan crude oil.

At the time of certification, however, when there will likely be better information upon which to project future gas supplies, the "1580 Design" may prove not to be the appropriate size. Therefore, the Decision does not make an irrevocable commitment to construct new capacity that is either too small or too large for the projected needs. Prior to final certification of a Western Leg, the Secretary of Energy shall make the precise determination of facility size and volume to account for material changes in the facts, if any, since the Presidential decision. The Western Leg may also be utilized in connection with short-term deliveries from Canada.

The Western Leg facilities required for direct delivery will depend on several estimates -- the estimated Western share of Alaskan gas, the estimated volume of Canadian exports, the amounts of Mexican gas, and the abandonment of the El Paso gas line in favor of the Sohio oil transport system. These estimates provide the basis for the decision to authorize the Western Leg.

The Western Share of Alaskan Gas

The proportion of natural gas that is distributed to a particular region of the country is ordinarily determined by private contract between the producers, on the one hand,

and the purchasers which are usually interstate pipeline or local distribution companies, on the other.

There is no reason to change these rules for Alaskan gas. A region of the country that is arbitrarily and inequitably deprived of its share of Alaskan gas will have the opportunity to seek relief from the FPC. But, in the absence of such discrimination, regional distribution of Alaskan gas will be made by the usual means of private agreement.

Since contracts for the purchase and sale of Alaska North Slope gas have not yet been executed, it cannot now be determined with precision how much of that gas will eventually be destined for the western states. However, in the absence of sales contracts, it is reasonable to assume that 30 percent of the Alaskan gas will be purchased by parties served by the Western Leg. It is also assumed that deliveries of Alaskan gas to the lower 48 States will begin at 2 bcfd in 1983 and increase to about 2.4 bcfd within a few years. For purposes of this analysis, then, approximately 700 mmcfd will be considered the maximum Western share of Alaskan gas through this period.

Increased and Accelerated Canadian Exports

In its July 4th decision authorizing the Alcan proposal, the Canadian National Energy Board (NEB) assured the continuation of current Canadian supplies to the West. It rejected outright any suggestion that existing Canadian agreements to export gas to U.S. markets not be honored. The NEB also concluded that gas production from the established fields of Alberta and British Columbia would exceed total demand, including exports, by as much as 400 bcf in 1978, and had created a temporary excess supply.

It proposed that the current Canadian "gas bubble" be sold to export customers, either as "predeliveries" on contract volumes that would otherwise be delivered in the 1984-90 period, or under an "ironclad" guarantee that it would be replaced later by Alaskan gas delieved in Canada. And finally, in order to assure the delivery of these additional volumes, it recommended the "preconstruction" of that portion of the total system that would be located in southern Canada.30/

30/ See NEB, Reasons for Decisions: Northern Pipelines, Vol. 1 pp. 1-69 to 1-83, 1-161, June 1977.

The recently signed Agreement on Principles makes it even more likely that there will be an increase or acceleration of gas exports from Alberta. By providing Canada with access to frontier gas reserves in the Mackenzie Delta, the Alcan proposal stimulates the gas industry in Canada, and enhances the availability of Canadian supplies for absolute increases in exports to the United States.

The following sections set forth the analysis of the capacity available in existing pipeline systems to transport these additional volumes of Alaskan or Canadian gas directly or by displacement to the Western States.

Estimated Excess Pipeline Capacity in Existing Systems

Existing Facilities of the Western States

At the present time, the West is provided with most of its natural gas via interstate pipelines from two major producing areas -- the established gas fields of the southwestern United States, particularly in the Permian and San Juan Basins, and the Alberta and British Columbia reserves in Canada. For purposes of this analysis, there are two principal interstate pipeline systems that should be considered in evaluating the capacity requirements of Western States. They are: (1) the Pacific Gas Transmission and

Pacific Gas & Electric systems from Kingsgate, B.C. to Antioch, California, which supply Washington, Oregon and Idaho markets, as well as California, with Canadian gas, and (2) the El Paso and Transwestern systems in the Southwest (referred to collectively hereafter as the Southwest pipeline system), which deliver gas from the Permian and San Juan Basins to California, Arizona and New Mexico. As will be seen below, the full share of Alaskan gas plus additional Canadian supplies could not be delivered directly by the PGT and PG&E systems for at least several years and in the interim might well use up and exceed the capacities of the El Paso and Transwestern systems that would be used for displacement.

Direct Delivery

As noted, the Western Leg proposal would amount principally to looping of the existing pipeline facilities from Alberta to California. The existing system could not itself be utilized for direct deliveries of any Alaskan or additional Canadian gas because it is now being utilized to capacity and will be until at least later 1985.

There are four principal contracts pursuant to which Canadian gas is now delivered via the PGT and PG&E systems

directly to California, their volumes and the expected expiration dates are as follows:

Authorized Average Daily Volume (in mcfd)	Expiration Date
184.9	10-31-85
419.9	10-31-86
205.0	10-31-89
213.0	10-31-93

Thus, even if none of these contracts is renewed -- the likelihood of which is reduced as a result of the Agreement on Principles -- direct delivery of substantial volumes in existing facilities will be impossible for the first three or four years of an Alaskan gas transportation system.

Displacement

Under the "displacement" option, the Western share of Alaskan gas would not be directly delivered to the West but moved there indirectly through exchange arrangements with customers of the Northern Border system.

In order to carry out the displacement scheme, the capacity of the Northern Border system would have to be such as to accomplish the direct delivery of both the East's and West's share of North Slope gas. Full displacement would

require either that the proposed 42-inch Northern Border line south of Empress, Alberta, be fully-powered or that a 48-inch line be constructed over this segment to carry the same volume of gas, at an additional capital cost but with the flexibility to increase capacity.

On the surface, displacement appears to be the most cost effective method. The $770 million (in 1975 dollars) cost of a fully looped Western Leg could be avoided. Increasing the capacity of the Northern Border system would be much less capital intensive; $258 million for fully powering the 42-inch Northern Border System, and $404 million for increasing the pipe diameter to 48-inch. In either case the cost of service for the displacement plan would be about $50 million per year less than direct delivery. However, there are several reasons why displacement is not a desirable long term method in this situation.

(a) Any displacement plan would consume more energy than direct delivery to the West. The West's Alaska gas essentially would move east to Chicago and then back west from the Permian or San Juan basins. By contrast, the looping of the PGT and PG&E systems would increase the overall fuel efficiency for those systems. The difference is about 25 bcf of gas per year, worth $68 million at $2.60 per mmbtu.

240-448 ((- 77 - 17

(b) Use of displacement to transport all of the West's Alaskan gas would create capacity constraints on the existing El Paso and Transwestern lines if:

- o one El Paso 30 inch line is converted to an oil line by the Sohio Project;
- o substantial volumes of Mexican gas become available for transportation to the West Coast;
- o there are any advanced or increased deliveries of Canadian gas to the U.S. which would also have to be moved West by displacement; and
- o the Algeria II LNG project is completed on schedule.

For purposes of analysis, all four of these conditions should be regarded as reasonably likely to occur.

While the Federal Government has not specifically endorsed the Sohio Project, it has endorsed generally the need for the expeditious construction of a pipeline to transport surplus Alaskan crude oil from the West Coast to refining markets east of the Rocky Mountains.[31/] Such a system is needed to provide economic and efficient transportation of Alaska North Slope oil to markets in the

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31/ See Executive Office of the President, The National Energy Plan, April 29, 1977, p. 55.

U.S. The conversion of the El Paso pipeline by the Sohio Project, which is assumed in the present analysis, will result in a substantial decrease in overall capacity of the Southwest gas pipeline system.

Recent events have given cause for considerable optimism about increased exports from Mexico which would enter through the Southwestern and El Paso system. Petroleos Mexicanos (Pemex), the government-controlled oil and gas monopoly in Mexico, has recently expressed its intention to construct a 48-inch, 850-mile pipeline from the Reforma fields in Chiapas and Tabasco to the U.S. border near McAllen, Texas. Pemex expects initially to deliver 1 bcfd to the U.S. upon completion of the pipeline (probably not before 1980), and to increase the flow to 2 bcfd by about 1982. On August 3, 1977, Pemex and six U.S. companies signed a memorandum evidencing their intention to enter into supplier-purchaser relationships for 6 years, renewable for another 6-year term if the purchasers meet the best tender Pemex may have for the gas at the end of the first term.

Notwithstanding several remaining uncertainties, it now appears likely that the Mexican Project will soon become a significant new source of gas supply in the Southwest.

Between El Paso and Transwestern, the West could reasonably expect to receive about 220 mmcfd of Mexican gas by 1980 and a total of 440 mmcfd beginning in 1982.

As discussed above and throughout this Decision and Report, the Alcan system will offer the potential for accelerated delivery of Canadian exports under existing contracts; it will also enhance the overall availability of Canadian gas for absolute increases in exports. Since these additional volumes of Canadian gas could not be delivered directly in the PGT and PG&E systems, as noted above, they would also have to be displaced through the El Paso and Southwestern systems for delivery to the West.

Finally, the Algeria II project, El Paso's application for which is pending before the FPC, would deliver up to 325 mmcfd of regasified LNG from the Texas Gulf Coast to the Southwest by as early as 1983 and could deliver a total of 650 mmcfd by the following year.

Under these conditions, delivery of Alaskan gas through the Northern Border system for displacement to the West would preempt all the excess capacity now available in the existing Southwest pipeline system from the Permian and San Juan Basins. Any substantial new supplies from the deep Permian formations -- or increased supplies from coal gasification projects -- would compound the problem.

Indeed, under optimistic assumptions about future gas supplies to the West and the existing capacity to California which would be utilized, there is a serious risk of a capacity shortage for the years 1983-87. This shortage can be determined from the data set forth in Exhibit 1.

The Exhibit indicates that without a Western Leg, a displacement scheme capacity shortage could exist in 1983-85 and would be uncomfortably close in 1986. If current Canadian supply contracts are renewed, as it is hoped they will be, a capacity shortage could exist in 1983 and later years as well.

Finally, it should be noted that full utilization of the Northern Border system for a displacement scheme would preclude the ability to expand the Northern Border system at a low capital cost for additional deliveries to the East if more Alaska gas becomes available.

The Nation's gas delivery system must have the overall flexibility to make a rapid and economic response to many variables - the level of future exports from Mexico, the level of future exports from Canada, the rate at which new supplies of Alaskan gas can become available, and the rate at which LNG and coal gasification projects are developed. Therefore, to ensure sufficient capacity

Exhibit 1

	1981	1982	1983	1984	1985	1986	1987
Capacity (mmcfd)							
El Paso (after abandonment)	3,274	3,272	3,274	3,274	3,274	3,274	3,274
Transwestern	785	785	785	785	785	785	785
Total Capacity	4,059	4,059	4,059	4,059	4,059	4,059	4,059
Supply (mmcfd)							
Permian Basin	1,551	1,448	1,358	1,271	1,190	1,114	1,042
San Juan Basin	1,253	1,247	1,209	1,176	1,144	1,113	1,083
Canadian Short-Term (by displacement)	221	167	112	56	--	--	--
Mexican	220	440	440	440	440	440	440
Algeria II LNG	--	--	325	650	650	650	650
Coal Gas	--	--	--	--	70	140	280
Total Supply	3,245	3,302	3,444	3,593	3,494	3,457	3,495
Excess Capacity	814	757	615	466	565	602	564
Less Alaskan Gas by Displacement	--	--	700	700	700	522[a/]	120[a/]
Capacity Excess (Shortage)	954	757	(85)	(234)	(135)	80	444

a/ Assumes that existing Canadian contracts will not be renewed.

for future supplies to California and other Western States, provision should be made for direct delivery of Alaska gas to the West.

Size and Volume of a Western Leg

The approved facilities for the Western Leg are embodied in the so-called "1580 Design." It would require a 36-inch, 176-mile pipeline, to be constructed by the Alberta Gas Trunkline Ltd. (AGT), from James River Junction in Alberta to Coleman on the British Columbia border, where it would connect with the existing Alberta Natural Gas Company Ltd. (ANG) line in British Columbia. One-hundred and five miles of the existing ANG line, from Coleman to Kingsgate on the U.S. border, would be looped with 36-inch pipe. In the U.S., 612 miles of the PGT line from the Canadian border to Malin, Oregon, and 297 miles of the PG&E line from Malin to Antioch, California, would also be looped with 36-inch pipe. No new compression would have to be added to the existing systems.

With this project, 659 mmcfd of North Slope gas could be delivered directly to the western U.S, which is roughly the total expected volume of Alaskan gas delivered to the West. PGT intends to deliver 22 mmcfd of this amount to Northwest Pipeline Company for distribution in the Pacific Northwest, and the remainder would be delivered to California,

where 200 mmcfd would be distributed by PG&E in the North and 437 mmcfd would be distributed by the Southern California Gas Company in the South. Any share of Alaskan gas or additional Canadian gas greater than 659 mmcfd would not require a new facility but could readily be delivered to the West by displacement. There would easily be sufficient capacity in the Southwest system to absorb this relatively small volume of Western gas.

Conclusion

The evidence clearly suggests that the natural gas pipeline capacity available at present will not be adequate to accommodate both the Sohio Project and the movement of Alaskan gas to the West in the mid-1980's and perhaps beyond. While this conclusion is based on optimistic supply projections, it nevertheless is a significant probability on the basis of which a Western Leg Facility should be planned.

There is some risk in authorizing a Western Leg that it or other existing pipeline systems to the West could at some time become somewhat underutilized, perhaps resulting in some increase in per unit costs to gas consumers. But the consequences of not authorizing a Western Leg are even greater. Not only could failure to build a Western Leg under the most reasonable supply projections cause higher direct

costs to the consumer, but it could also greatly reduce the West's flexibility to receive new gas supplies if and when they develop in the future. Indeed, whether gas supplies in addition to what are presently projected will be available from sources like Canada and Mexico may well be dictated by whether gas pipeline capacity is available to transport it. If the almost unamimous comments of their elected officials are any indication, the people of the West are willing to accept whatever additional cost may be involved in order to be assured that pipeline capacity will be adequate to meet all future contingencies.

Prior to final certification of a Western Leg, there may be better information about potential supplies to determine whether the proposed "1580 Design" is over- or under-sized for the anticipated need. Before the issuance of a final certificate of public convenience and necessity, the Secretary of Energy will determine the size and volume of the Western Leg to be certified, as well as review the need for any pre-building to take direct deliveries for the West Coast of any short-term increases in Canadians exports from Alberta. Any deviation from the capacity of the "1580 Design will directly reflect any material changes in gas

supply or pipeline capacity projections that occur between now and the date the certificate is issued. The Secretary's determination shall be communicated to the FPC and shall be binding on it for purposes of its certification.

CHAPTER X - RELATIONSHIP OF THE DECISION TO THE RECOMMENDATION OF THE FEDERAL POWER COMMISSION

Section 7(b) of ANGTA requires a statement of the "reasons for any revision, modification of, or substitution for the Commission (FPC) recommendation."

This Decision is consistent with the FPC recommendation as set forth in its letter of transmittal dated May 2, 1977:

> We recommend that an overland route through Canada be selected, if such a route is made available by the Government of Canada on acceptable terms and conditions.

The condition has been met, and an overland route is selected by this Decision.

Two FPC Commissioners recommended the Alcan system. The other two FPC Commissioners recommended the Arctic Gas system "conditioned upon timely affirmative decisions by the Government of Canada to make the route available," but they said that otherwise Alcan should be approved. There was a failure of that condition with respect to Arctic Gas when the Arctic Gas route was rejected by the Canadian National Energy Board. Therefore, this Decision is in accordance with the specific system recommendation of

all FPC members who participated in the May 2, 1977, Recommendation to the President.[32/]

The Federal Power Commission recommended the deferral for "one to two years the certification of any new facilities for the western leg...." This Decision provides for approval of the western leg facilities subject to the same condition as other portions of the project. The Secretary of DOE is authorized to make a determination of the necessary capacity for both the western and eastern legs at the time of the issuance of the final certificate of public convenience and necessity. This approval is necessary to entitle all such facilities to the expeditious authorization pursuant to Section 9 of ANGTA.

This Decision differs from the Recommendation of the Federal Power Commission in one other material respect. The Commission suggested alternative financing plans - a private risk bearing model and a consumer risk bearing model. In conjunction with private risk bearing, the FPC suggested the use of a "formula" price mechanism whereby

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32/ The only difference between the Alcan system before the Federal Power Commission and the Alcan system herein approved is the contemplated expansion of pipeline capacity south of Whitehorse, Yukon, and a pipeline rerouting near Whitehorse to facilitate any future connection of Mackenzie Delta Reserves.

a city gate market value indicator (MVI) price would be established. The wellhead price would be the difference between the transportation cost and the MVI price.

This Decision requires a private assumption of the risk of noncompletion. However, the determination of the wellhead price should be pursuant to the pricing provisions in the pending National Energy Act. Those provisions, along with the financing proposals made herein, will ensure an equitable sharing of project risks and constitute the best method for securing a private financing of the project.

CHAPTER XI - AGREEMENT WITH CANADA

Issues

There are certain potential risks associated with any project involving more than one country. These derive from complications which arise when a large scale construction project is subject to the jurisdiction of two federal governments, Canada and the U.S., and the interests of the two governments are not always identical. The potential risks involved were explored extensively during the FPC proceedings on Alaska gas, and further in the Senate hearings and debates prior to ratification of the Transit Pipeline Treaty with Canada. These debates served to crystallize the most important of these issues.

An example of the divergence of interests of the two countries was the re-routing of the main pipeline through Dawson which was required by the NEB's July 4th Decision. That re-routing was designed from the Canadian perspective to bring a major gas transportation system within reach of their Mackenzie Delta reserves. From the U.S. perspective, the re-routing was a costly alternative to accommodate an uncertain eventuality - construction of the Dempster Line - which might never occur.

During the course of the negotiations, a compromise was worked out on this point which effectively serves the interests of both countries. In return for routing the main line along the original Alcan route, the U.S. agreed to share the costs of extending the Dempster Highway lateral from Dawson to Whitehorse. Whitehorse will be the point at which the lateral pipeline from the Mackenzie Delta gas fields connects to the main line when and if the lateral is built.

Virtually all of the other issues which were raised in the FPC proceedings and the Senate hearings and debates were the subject of lengthy negotiations with the Canadians. The discussion which follows covers the issues of primary Canadian concern in reaching this decision, along with the resolution of those issues which has been achieved through the negotiations.

Taxes and Impact Assistance

The first risk with a trans-Canada system is unanticipated costs arising from potential Canadian taxes and impact assistance. The FPC proceeding considered the risk of taxes imposed by the Canadian provincial governments, and it was concluded that Canadian legislation or compacts would be necessary to bind the Canadian provinces directly to the antidiscriminatory tax provisions of the Treaty.

The Canadian Government has undertaken to negotiate Federal-Provincial agreements with the three western provinces - British Columbia, Alberta and Saskatchewan - to assure their implementation of the Treaty. The Federal Government has obtained public statements from all three provinces endorsing the principles of the treaty, and those statements are annexed and made part of the Agreement. These statements and subsequent Federal - Provincial Agreements, backing up the unequivocal responsibility of the Canadian Government under the Treaty, will provide adequate assurance on this point.

The degree of practical protection afforded by the Treaty was subject to some question in the Yukon Territory, as there are currently no similar pipelines against which to measure possible discriminatory treatment. Therefore, ad valorem (property) taxation in the Yukon was negotiated as part of the Agreement on Principles. The agreed rate of property taxation is essentially comparable to that in Alaska, and will continue for 25 years or until a similar pipeline is built, at which time the Treaty protections will apply. The only contingency which would change the agreed taxation regime is if the State of Alaska changes its property tax regime.

A related issue was the $200 million socioeconomic impact payment recommended by the NEB in its July 4th decision. There are precedents in the United States for socioeconomic impact assistance. Normally, however, compensation for such impacts has been through federal government loans and subsidies. In negotiations with Canadian representatives, it was strongly urged that this payment be structured as a loan from the pipeline company to be repaid through reduction of future property-tax liability. In fact, such an arrangement has been worked out between the Canadian project sponsors and the Canadian government. As a result, cost of service to U.S. consumers will not be affected by this arrangement.

Native Claims

A source of additional concern is the settlement of Canadian native claims. Some parties have questioned whether the cost of the settlement -- the cost was almost $1 billion in the case of Alaska native claims -- would be imposed on consumers of Alaska gas through some type of transit fee or tax. The Canadian Government has publicly stated on a number of occasions that it considers settlement of native claims as an internal Canadian matter

246-448 O - 77 - 16

to be resolved separately from any trans-Canada pipeline consideration. Canada has also undertaken to assure the United States that no charges against the pipeline related to the settlement of such claims will be levied.

Another concern has been that the uncertain status of a Canadian native claims settlement may affect Alcan's ability to secure financing. Lenders might be reluctant to commit funds without firm assurance on the final schedule for completion of the pipeline.

The Agreement on Principles commits both countries to a timetable which is specified in the Agreement. The Agreement also commits both countries to seek legislation as required to remove any delays or impediments to timely and efficient construction. This legislation, particularly when combined with the incentive scheme to reduce cost overruns in Canada, will provide the strongest possible assurances to lenders that both Governments intend for this project to be completed as quickly, and at as low a cost, as possible.

"Canadian Content" Regulations

It has been argued that the "Canadian content" regulations, issued by the NEB to assure that Canadian

firms and workers receive the maximum economic benefits from pipeline projects in Canada, could increase costs. One part of the Agreement specifically addresses this point, and commits each government to the principle that the supply of good and services will be on generally competitive terms. Specific remedies are included in that section of the Agreement of consideration in the event that the competitive terms of supply which are sought by the Agreement are not being met.

Employment

Finally, a trans-Canada project would have fewer employment opportunities for U.S. workers than the El Paso project. It is estimated that during the construction period, El Paso would account for 324,000 man-years of employment in the United States compared to 221,000 for Alcan. In the year of greatest employment, El Paso would have a 121,000 to 84,000 man-year advantage over Alcan.

The El Paso project is also more labor intensive. Such increased employment opportunities, however, show up in a significantly increased cost of service for the El Paso system. Labor costs in Canada are lower than in the United States, and the operating costs of an all-pipeline system through Canada will be significantly lower

than for the El Paso LNG system. Also, the lower cost and higher fuel efficiency of a trans-Canada pipeline make its NNEB substantially higher than that of El Paso.

The important point is that neither project will solve the unemployment problems of either country. Although the difference in man-years of employment between the two projects is large in an absolute sense, it translates into a 0.035 percent difference in the U.S unemployment rate. This difference would be offset by the unemployment impacts on the U.S. of curtailed Canadian gas deliveries in the event that lack of access to the Mackenzie Delta reserves reduced Canada's ability to meet existing export commitments.

* * *

The Agreement on Principles provides assurances on routes, taxation levels, project delays, and other critical matters. A section-by-section analysis is provided below. This Agreement, along with the Transit Pipeline Treaty, protects the project from unfair or discriminatory charges that would otherwise threaten the savings to U.S. consumers. Canada also has an excellent record of living up to its commitments in similar joint agreements with the U.S. In fact, the kind of assurance on time, taxes, routes, tariffs

tariffs and a host of other issues spelled out in the Agreement on Principles probably exceeds the level of commitment that would have been available at this time on any all-American project.

Analysis of the Agreement with the Government of Canada

Paragraph 1: Pipeline Route

This paragraph defines the Pipeline which is the subject of the Agreement as that which will follow the route described in the first Annex to the Agreement, and requires that all necessary action be taken to authorize the construction and operation of the Pipeline consistent with the principles of the Agreement.

Paragraph 2: Expeditious Construction; Timetable

Subparagraph (a) lays out a timetable for commencement of construction and commits both Governments to take measures to complete issuance of all authorizations in time to allow initial operation of the Pipeline by January 1, 1983. The timetable calls for construction beginning in Alaska by January 1, 1980, and main line pipelaying beginning in the Yukon by January 1, 1981. Although heavy pipeline construction activity in the Yukon cannot start before early 1981, preconstruction activities, such as final routing studies

and highway bridge reinforcement for heavy equipment traffic, can proceed prior to that date.

Subparagraph (b) assures that all charges for routine authorizations, such as licenses and certificates, as well as charges for right-of-way, will just be reasonable and nondiscriminatory. Subparagraph (c) commits both Governments to facilitating expeditious construction of the Pipeline consistent with the respective regulatory requirements of the two Governments, such as those in the areas of worker safety, environmental protection, and quality control.

Paragraph 3: Capacity of Pipeline and Availability of Gas

Subparagraph (a) deals with the initial throughput capacity of the Pipeline, requiring that this capacity be sufficient to meet the contractual requirements of shippers when those requirements arise. The intention is that it would initially be sized for 2.4 billion cubic feet per day (bcfd) of gas from Alaska, with provision for up to 1.2 bcfd of gas from Canada's Mackenzie Delta at the time the Dempster Highway lateral pipeline (called "the Dempster Line") is built to connect those reserves. It is expected that this intention will be carried out by installing larger-diameter or thicker-walled pipe south of the interconnection

point near Whitehorse, then adding additional compressor capacity at the time the Dempster Line is constructed. The choice between larger-diameter and thicker-walled pipe will be made at the conclusion of a testing program to assess the safety and reliability of the two alternatives. The testing program is provided for in Paragraph 10.

Subparagraph (a) also provides that authorizations will be granted, subject to regulatory requirements, for the Dempster Line and any further expansions of capacity (such as that which may subsequently be requested to transport additional Alaska gas).

Subparagraph (b) defines and limits arrangement whereby the Pipeline will provide gas service to remote communities, through or near which it passes. Prior to the time when the Dempster Line is in service, the gas provided will be Alaska gas, subject to contemporaneous replacement by equivalent volumes of Canadian gas being made available for export.

There is a limit of $5 million Canadian on capital costs to be incurred by U.S. shippers for provision of this service. Costs outside that limit will be reflected in the cost of service to the communities involved.

Paragraph 4: Financing

Subparagraph (a) states the understanding of both Governments that the project will be privately financed. It is also recognized that both Governments have to assure themselves that the project can be so financed before construction is allowed to begin.

Subparagraph (b) commits both Governments to use a variable rate of return on pipeline company equity capital as an incentive device to avoid cost overruns and to minimize costs consistent with sound pipeline management. Under this device, a higher-than-usual rate of return on pipeline company equity capital is allowed in the cost of service if the company is able to meet or better its estimates of capital costs for the project. Conversely, a lower-than-usual rate of return on equity is included in the cost of service if the project overruns its capital cost estimates. The base capital cost estimates which will be used for administering the variable rate of return device in Canada are set forth in the Agreement as Annex III.

Although the details of the variable rate of return device remain to be worked out by the Federal Power Commission and the Canadian National Energy Board, it will have the effect of insulating the consumer somewhat from the

effect of cost overruns in project construction. If the amount of capital costs reflected in the cost of service is relatively low, then the return-on-equity component of that cost is allowed to be higher than usual. On the other hand, if the total capital costs are higher than estimated, the increased cost of service can be offset by reducing that portion of it which is included for return on pipeline company equity capital. The overall effect on the cost of service is to narrow somewhat the expected range by trading off return to the pipeline company against performance by the company in holding down capital costs. Additional information on the variable rate of return concept is given in the section of the Decision dealing with financing.

Subparagraph (c) states that neither the variable rate of return on equity nor any unusual provisions in the debt instruments concluded in financing the main line will be allowed to interfere with the financing of the Dempster Line.

Paragraph 5: Taxation and Provincial Undertakings

Subparagraph (a) reiterates commitments of the two Governments under the Transit Pipeline Treaty and attaches statements by the Governments of the three western provinces

expressing their agreement with the principles in the Treaty. In addition to guarantees against interruptions in flow, the Treaty covers fees, duties, taxes or other monetary charges, and assures that such charges will be the same for transit pipelines as for similar pipelines located within the jurisdiction of the responsible public authorities within each country.

As there are no similar pipelines in the Yukon Territory, it was desirable to reach an understanding on the taxation regime applicable to the Pipeline in that Territory. Subparagraph (b) lays out the principles of that taxation regime, which is comparable to that in the State of Alaska. Those principles are as follows:

1. The Yukon Property Tax is defined as property taxes and all other direct taxes[33/] which are levied exclusively or virtually exclusively on the Pipeline. (Clause i)
2. Prior to authorization of initial operation of the Pipeline, the Yukon Property Tax will not exceed the following:

33/ Under Canadian law, the Yukon Territorial Government can impose only direct taxes. Indirect taxes can only be levied by the Canadian Federal Government, and are, therefore, governed adequately by the Transit Pipeline Treaty

1980 - $ 5 million Canadian

1981 - $10 million Canadian

1982 - $20 million Canadian

any year after 1982 during which operation of the Pipeline is not yet authorized - $25 million Canadian. (Clause ii)

3. From the first full year that the Pipeline is authorized to open operation through 2008 (or until the Dempster Line is authorized to open, if that occurs earlier), the Yukon Property Tax will not exceed $30 million Canadian, adjusted for inflation after 1983 using the Canadian Gross National Product price deflator (the GNP deflator). (Clause i)

4. The $30 million maximum level of taxation applies to the Pipeline at a throughput of 2.4 bcfd of U.S. gas and 1.2 bcfd of Canadian gas. If the capacity of the Pipeline is increased for U.S. gas prior to the connection of the Dempster Line, the $30 million base figure could be increased by the same proportion as the increase in gross asset values of the Pipeline facilities. (Clause vi)

5. If at the end of 1987 it is found that the per capita revenues received from property taxes, other than the Pipeline, plus grants to local governmental units, have increased during the period 1983 through 1987 at a faster rate than the GNP deflator, the Yukon Property Tax may undergo a one-time adjustment for the year 1987 to raise the permitted maximum to the level it would have been, had it been increasing at the rate of increase of other YTG per capita revenue. (Clause iv)

6. After January 1, 1988, the Yukon Property Tax is permitted to rise either with the GNP deflator or with the rate of increase in YTG per capita revenue (excluding tax on the Pipeline), whichever is greater. (Clause v)

7. If the Alaska property tax rate on pipelines increases between now and 1983 at a rate faster than the Canadian GNP deflator, an adjustment in the permitted $30 million maximum is allowed; and after leave to open the Pipeline in the Yukon is granted, the permissible Yukon property tax may be adjusted to reflect increases of Alaska property

tax on the Pipeline greater than increases otherwise permitted in the Yukon Property Tax. (Clauses vii and viii)

8. Clause ix provides that the Yukon socioeconomic fund costs will not be reflected in cost of service to U.S. shippers. No other special fund having an effect on cost of service will be permitted in the Yukon unless such a fund is required by the State of Alaska.

9. If the Dempster Line is connected, the Yukon Property Tax will be governed by the tax treatment applied to the Dempster Line, under the terms of the Transit Pipeline Treaty (clause iii). In Subparagraph (c) the Canadian Government will endeavor to ensure that tax treatment of the Dempster Line in the Northwest Territory is reasonably comparable to that in the Yukon Territory. (Clause iii and Subparagraph c)

10. If the Dempster Line is not connected, the permissible limit of the Yukon Property Tax will expire on December 31, 2008 (25 years after the date when the Alaska gas is expected to begin

flowing), at which time it will be renegotiated. (Clause iii)

Paragraph 6: Tariffs and Cost Allocation

Subparagraph (a) outlines the general methods of cost allocation for the portions of the Pipeline in Canada. The Pipeline will be divided into zones (Annex II contains the description of the zones) corresponding to segments of the system delineated by any of the following boundaries:

- gas input and takeout points
- changes in Pipeline ownership.[34/]

Cost of service to each shipper in each zone will be determined by allocating the total costs of constructing and operating the Pipeline in that zone among the shippers transporting gas through it in proportion to the volumes of gas[35/] transported for each shipper.

34/ In order to assure full Federal Government jurisdiction over the Pipeline, the Canadian National Energy Board required the sponsoring companies to restructure their corporate form. The pipeline company sponsors are to form a Federally-chartered umbrella company, Foothills Pipe Lines, Ltd., which will own 51 percent of subsidiaries which will construct and operate segments of the Pipeline within the different provinces. The other 49 percent of each subsidiary will be owned by the respective parent companies of Foothills in their traditional business areas.

35/ Volumes of commingled gas streams will be adjusted to reflect the original Btu content of the source gas and such volumes will be used for allocating costs.

Subparagraph (b) describes the cost allocation method for Zone 11 (the extension of the Dempster Line from Dawson to Whitehorse known as the "Dawson Spur") if and when the Dempster Line is constructed. In general, the cost of service for the Dawson Spur is to be shared by Canadian and U.S. shippers. The proportionate sharing is to be linked to the degree of cost overruns sustained in constructing the Canadian segments of the Pipeline. In no event is the share to be paid by U.S. shippers less than the fraction of the U.S. gas transported by the system after Canadian gas has been connected to the system. The cost of service to U.S. shippers will be affected more by reduced cost overruns than by the U.S. share of the cost of service for the Dawson Spur.

For a case with system transportation of 2.4 bcfd of U.S. gas and 1.2 bcfd of Canadian gas, the U.S. shippers' share of the Dawson Spur cost of service would be two-thirds if cost overruns were 45 percent. If cost overruns are reduced from 45 percent, the U.S. shippers' share of the cost of service increases on a straight-line basis, until at an overrun level of 35 percent, the U.S. shippers' share is 100 percent.

If U.S. gas is a larger proportion than two-thirds of the total gas carried in the Pipeline, the minimum proportion of the cost of service on the Dawson Spur to be paid by U.S. shippers is correspondingly higher. If the system is carrying three-quarters U.S. gas, for example, then the minimum proportion of the cost of service on the Daswon Spur which will be paid by U.S. shippers is 75 percent. From that minimum, the U.S. shippers' share of the cost of service increases with reduced cost overruns until their share reaches 100 percent at the 35 percent cost overrun level. The degree of cost overrun between 35 and 45 percent always corresponds to the same U.S. shippers' share of the cost of service on the Dawson Spur; only the minimum U.S. shippers' share varies with the proportion of total gas transported which is U.S. gas.

This cost-sharing arrangement is intended to provide benefits to transportation of Canadian gas which would have been provided by diverting the Pipeline north through Dawson City and along the Klondike Highway as required by the National Energy Board. Had that diversion been implemented, U.S. shippers would have been paying a volumetric proportion of the cost of service of the main line between Dawson and Whitehorse after the Dempster Line was connected, and all of

the cost of service for that segment if the Dempster Line was never connected. Under the agreed arrangement, U.S. shippers will pay a volumetric proportion of the cost of service on a smaller, less expensive pipeline from Dawson to Whitehorse only after the Canadian gas is connected, and will pay nothing for that segment if the Dempster Line is never built. The agreed arrangement provides the same transportation benefits to Canadian gas at lower cost to both Canadian and U.S. shippers.

The agreed arrangement also imposes a ceiling on U.S. liability for the Dawson Spur at 35 percent above filed costs. The Canadians, in turn, can credit savings achieved on the main line system against cost overruns on the Dawson Spur prior to applying the ceiling. The savings that can be credited against the cost overruns on the Dawson Spur may be either of the following:

- a volumetric proportion of savings achieved in segments through which joint volumes will be transported; and
- 100 percent of savings achieved in segments which will carry only U.S. gas.

However, at a minimum, the U.S. shippers' share of the cost of service on the Dawson Spur will be the fraction of the

total gas carried in the Pipeline which is U.S. gas. More detail on the specifics of cost allocation for the Dawson Spur is given in Annex III to the Agreement.

Subparagraph (c) of this Paragraph in general provides for review and subsequent agreement by both Governments on cost allocation methods in the event that volumes of gas to be shipped exceed the efficient transmission capacity of the Pipeline. Subparagraph (d) limits costs for the Dawson Spur allocated to U.S. shippers to those that would be incurred for installation of a 42-inch system, plus those installed within 3 years of the date when the system commences operation. Subparagraph (d) also requires the system installed for the Dawson Spur to be the same as that for the Dempster Line, in order to prevent loading of costs onto the Dawson Spur.

Paragraph 7: Supply of Goods and Services

Subparagraph (a) ensures that contracting for supply of goods and services to the Pipeline will be on generally competitive terms. This provision is intended to prevent cost overruns and time delays due to Canadian source restrictions on procurement for pipeline projects constructed within Canada.

Subparagraph (b) provides a mechanism for presenting grievances when the objectives with regard to competitive terms in Subparagraph (a) are not being met. Subparagraph (b) also specifies possible actions to be taken in the event of a favorable determination on a plaintiff's grievance including:

- renegotiation of contracts, or
- reopening of competitive bidding.

Paragraph 8: Coordination and Consultation

This paragraph provides for appointment by both Governments of a senior official to represent that Government in periodic consultations on progress in implementing this Agreement. The respective senior officials may, in turn, designate additional representatives to work out any particular problems which may arise in the course of constructing and operating the Pipeline.

Paragraph 9: Regulatory Authorities -- Consultation

This paragraph provides for consultation between the respective regulatory authorities in the U.S. and Canada, primarily the U.S. Federal Power Commission and the Canadian National Energy Board. In particular, the two authorities will need to work out matters relating to financing, tariffs, taxation and cost allocation as they relate to determination of the cost of service for the Pipeline.

Paragraph 10: Technical Study Group on Pipe

The two Governments are agreed that a higher-capacity pipeline system than was proposed by the sponsoring companies is to be installed south of the interconnection point for the Dempster Line at Whitehorse, in order to carry joint gas volumes more efficiently. However, there is some reservation, particularly on the part of the Canadian Government and the Canadian pipeline company sponsors, about the technical feasibility of a higher-pressure system, such as had been proposed by the Arctic Gas consortium. Although Canadian Government representatives are agreed on the need for a higher-capacity system, their preference on the grounds of expected safety and reliability is for larger-diameter pipe, which has many of the same advantages in increased efficiency as the higher-pressure system.

Subparagraph (a) establishes a joint technical study group for the purpose of evaluating the relative merits of the larger-diameter and higher-pressure systems which have been suggested, as well as any other combinations of pressure and pipe size which might achieve objectives of increased efficiency. The 48-inch, 1260 pounds per square inch (psi) design which was proposed by the applicant and

will likely be installed from Whitehorse north to the Prudhoe Bay field will also be evaluated by the group. Final decisions based on the results of the testing program will remain the responsibility of the respective regulatory authorities in the two countries.

Subparagraph (b) states that whatever higher-capacity system is chosen will be installed from the interconnection point near Whitehorse to the point near Caroline, Alberta, where the Pipeline bifurcates into a western and an eastern leg.

Paragraph 11: Direct Charges by Public Authorities

Subparagraph (a) provides that either Government can request consultations in the event that any public authority seeks to impose a direct charge on the Pipeline which might be considered properly the responsibility of the sponsoring company, rather than an item which should be included in the cost of service.

Subparagraph (b) identifies generally the types of direct charges by public authorities which will be permitted to be included in the cost of service. Such charges will include only:

- those considered by the appropriate regulatory authority to be just and reasonable on the basis of accepted regulatory practice, and
- those normally imposed on natural gas pipelines in Canada.

A list of examples of direct charges is attached to the Agreement as Annex IV and includes:

- extraordinary highway maintenance due to heavy vehicle traffic,
- airfield and airstrip repairs,
- drainage maintenance,
- erosion control, etc.

Direct charges will be subject to the tests in the appropriate legislation prior to inclusion in the cost of service.

Paragraph 12: Other Costs

This Paragraph provides that no charges will be considered for inclusion in the cost of service other than those:

- imposed by a public authority under the terms of the Agreement or the Transit Pipeline Treaty,
- normally paid by natural gas pipelines in Canada under accepted regulatory practice, or

- caused by Acts of God or other unforeseen circumstances.

Paragraph 13: Compliance with Terms and Conditions

This Paragraph provides that each Government will implement the principles directly applicable to construction, operation and expansion of the Pipeline through imposition of terms and conditions on the authorizations it issues. In the event that a Pipeline owner does not fulfill one or more of the terms and conditions, the Government will not be held responsible for that non-fulfillment, but will take appropriate action to cause the owners to remedy or integrate the adverse consequences of that non-fullfillment.

Paragraph 14: Legislation

This Paragraph commits both Governments to seek expeditiously all legislative authorities which might be required to implement the Agreement and to facilitate timely and efficient construction of the Pipeline. This provision specifically refers to legislation to remove delays to construction of the Pipeline.

Paragraph 15: Entry into Force

This Paragraph provides that the Agreement will become effective upon signature, and will continue in effect for 35

years and thereafter until terminated on 12 months' notice by either Government. The provisions of the Agreement which require legislative action will become effective when the required legislative action has been completed.

At the end of the Agreement there are several Annexes which append specific information or explain a particular feature of the Agreement in more detail.

Annex I: Description of the Route

(Self-explanatory)

Annex II: Zones for the Pipeline in Canada

This Annex specifically identifies the zones for cost allocation under the method described in Paragraph 6. It gives the boundaries of the zones.

Annex III: Cost Allocation in Zone 11

This Annex describes the cost allocation agreement for the Dawson Spur, which was outlined in Paragraph 6, in more detail. In particular, the computation of the ceiling on U.S. shippers' liability for the cost of service on the Dawson Spur is set forth in some detail.

The Annex also contains detailed specification of the filed capital costs for Canadian portions of the system which will be used to determine cost overruns for the

purposes of cost allocation for the Dawson Spur. Possible adjustments of those costs in limited circumstances are also covered.

Annex IV: Direct Charges by Public Authorities

This Annex is a list of typical direct cost items for use with the limitation on direct charges by public authorities in Canada; the limitation is in Paragraph 11 of the Agreement.

Annex V: Statements by the Provincial Governments

Public statements by the Governments of the three western provinces are attached in which they agree to the principles of the Transit Pipeline Treaty. Each also undertakes to work out with the Canadian Government a Federal-Provincial Agreement.

CHAPTER XII - SUMMARY OF COMMENTS RECEIVED

Throughout the period during which an Alaska natural gas transportation system has been under consideration, many comments concerning the decision have been sent to the various Federal agencies involved in the decision process. Comments have come from all parts of the American public, including private citizens, businesses, labor unions, municipalities, legislators and Governors. They ranged from expressions of support for a specific proposal to suggestions of alternative and often innovative methods of building a gas delivery system.

By far, the majority of comments were received within the past few months in response to a Federal Register notice on June 14, 1977, advising the public of Section 6(b) of the Alaska Natural Gas Transportation Act of 1976 which invites comments from Governors, municipalities, and other interested parties. Letters soliciting comments were written to the Governors of all the States, and meetings were held on several occasions with a committee of State Public Utility Commissioners.

The comments received in the period since the FPC's Recommendation to the President have been of two basic

types -- those supporting a specific proposal, and those commenting on certain aspects of the FPC recommendations. Almost all the letters received favored the delivery of the North Slope gas to the lower-48 states. Very few suggested that construction of a delivery system be significantly delayed or that no system be built.

Comments on Specific Projects

Arctic Gas

The supporters of Arctic Gas most often cited Arctic's claims of lower cost of service and fuel use; ability to connect Prudhoe Bay and Mackenzie Delta reserves with one pipeline; and the opportunity to maintain Canadian gas exports once the Mackenzie Delta reserves were connected.

The unfavorable comments generally concerned the environmental impacts of crossing the Arctic National Wildlife Range (ANWR); higher potential for delay and cost overrun due to winter construction, use of snowroads, and regulation by two countries. The unsettled status of the Canadian native land claims was stressed as a factor which would cause delays or preclude construction.

Before the July 4th Canadian NEB decision, the Arctic Gas proposal received support from municipalities and

businesses in the Midwest and California; the Governors of Arkansas, Kansas, Wisconsin, Minnesota, Massachusetts, Ohio, Maryland, Illinois; and many private citizens from all parts of the country. The Governors of California and Montana also supported an overland route.

El Paso

Support for the El Paso proposal was primarily based on the fact that El Paso would lie entirely within the United States. According to its supporters, this fact would result in greater domestic employment, higher tax payments, better security of supply, and regulatory control by one country. Another favorable point for El Paso cited was that it used the existing Alyeska transportation corridor and facilities.

The principal negative comments concerned El Paso's higher cost of service; the location of its LNG plant in active seismic zones; difficulty of siting the regasification plant in Southern California; and the possibility that it would foreclose delivery of additional Canadian gas supplies.

Support for the El Paso proposal came from various state AFL-CIO offices, maritime labor unions, some private citizens, and the Governors of Alaska, New Mexico, Arizona, Texas, Alabama, New York and Washington.

Alcan

Alcan's supporters often cited this proposal as an example of the success of the National Environmental Policy Act (NEPA) because the proposal developed as an alternative which achieved the economies of scale of a pipeline while avoiding the environmentally sensitive ANWR and Arctic regions. Alcan also received support because it generally follows existing transportation corridors. It seemed even greater after the NEB selected the Alcan proposal and stated that construction of a Trans-Canadian pipeline would facilitate maintenance of Canadian gas exports.

The negative comments on Alcan were that it had a less developed hearing record; would incur more delays by being subject to regulation by two countries; would lack adequate pre-construction planning, would require settlement of Canadian Native claims in southern Yukon; and would need additional environmental studies. Concerns were raised about the conditions imposed by the NEB, such as the socioeconomic impact fund and the requirement to increase capacity to carry Canadian gas in the system.

Support for the Alcan proposal has come from the major environmental organizations and the Governors of Wyoming, Nevada, Oregon, Colorado, and Utah.

Comments on Specific FPC Recommendations

Formula Wellhead Pricing

The producers and the State of Alaska strongly opposed the FPC recommendation for "formula pricing" of the wellhead price. They contended that this approach forced the producers to share the risk of the project -- even if they were not investors. This would serve to inhibit further exploration for gas in northern Alaska. They also argued this proposal would reduce the sponsor's incentive to manage the project properly.

Minimum Throughput Requirements

The producers also opposed this recommendation because contending that throughput should be established by the behavioral characteristics of the reservoir and by the State of Alaska.

Widespread Distribution of Gas

The members of the Arctic Gas Consortium strongly opposed this recommendation. They argued that this requirement would be a disincentive for prospective members to join the consortium; would be unfair and discriminatory to companies who could purchase more than the maximum; and would result in discriminatory treatment of Alaskan gas compared with other fuel sources. Alcan, however, supported the widespread distribution requirement.

Western Leg

The FPC recommendation to delay the decision on the Western Leg was opposed by Arctic, Alcan and the State of California. It was argued that this recommendation is inconsistent with the requirements of Alaska Natural Gas Transportation Act. They also felt that new facilities will be required to deliver Alaska gas to the West.

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COMMENTS OF ATLANTIC RICHFIELD COMPANY
TO THE
PRESIDENT OF THE UNITED STATES

Re: El Paso Alaska Company, et al.) Docket No. CP75-96, et al.
Federal Power Commission

June 17, 1977

AGO 913363

AtlanticRichfieldCompany
515 South Flower Street
Los Angeles, California 90071
Telephone 213 486 1738
T. F. Bradshaw
President

June 16, 1977

The President
The White House
Washington, D. C.

Dear Mr. President:

On May 2, 1977, the Federal Power Commission ("Commission") transmitted to you its recommendations concerning the Alaska Natural Gas Transportation System. Atlantic Richfield Company is the owner of substantial reserves of natural gas at Prudhoe Bay and elsewhere in Alaska and naturally has given careful study to the Commission's recommendations.

As set forth in the attached comments and the appendices thereto, Atlantic Richfield disagrees with many of the Commission's recommendations, particularly those relating to gas pricing. Moreover, the Commission's pricing recommendations are inconsistent with your announced Energy Plan.

Atlantic Richfield believes that the national interest in the early delivery of Alaskan gas to the lower 48 states can best be accomplished by affording Alaska and Alaskan producers fair and nondiscriminatory price treatment - no more and no less favorable than that afforded in the lower 48 states. Therefore, on March 31, 1977, Atlantic Richfield Company filed a petition with the Commission seeking a declaration of policy that natural gas produced in the State of Alaska will be entitled to the National Rate for jurisdictional gas sales applicable to "new" natural gas on the date gas first commences to flow in interstate commerce from any area of the State of Alaska to the lower 48 states. The application of the gas pricing policy established in your Energy Plan to Alaskan gas at the time it begins to flow in interstate commerce would accomplish essentially the same purpose.

AGO 913364

The extension of uniform national pricing policies to all Alaskan gas, whether produced from the North Slope, Cook Inlet, the Gulf of Alaska or the interior areas, would grant to that state and its producers fair and equitable treatment and provide the necessary incentives for development of known reserves and exploration for additional reserves.

In sharp contrast, however, the Commission proposes a discriminatory formula applicable only to Prudhoe Bay gas which would (1) fix a so-called minimum "field price" attributing no value whatsoever to Prudhoe Bay gas at the wellhead (only the producers' incremental cost of gathering and conditioning the gas to meet pipeline transmission requirements would be allowed), and (2) determine a maximum "field price" by deducting from its artificially-depressed estimate of city gate "market value" the transportation costs of Alaskan gas. This formula, which would compel the wellhead price of Prudhoe Bay gas to absorb the entire risk and financial burden of potential overruns, whether avoidable or unavoidable, foreshadows zero wellhead revenue. Under such circumstances, it is unlikely that Prudhoe Bay gas reserves would be produced for sale, and it is virtually certain that there would be no further exploration of potential gas reserves in Alaska.

Atlantic Richfield believes that the Commission's proposal for pricing Prudhoe Bay gas is unlawful, discriminatory, and totally inconsistent with the even-handed treatment promised by your Energy Plan. Failure to afford the State of Alaska and Alaskan producers pricing equality can only hinder and delay the full and efficient development and delivery of known and potential Alaskan gas reserves to meet the needs of the nation. Attached are comments explaining more fully Atlantic Richfield's position.

Atlantic Richfield Company stands ready to render any assistance that may be desired concerning these matters.

Very truly yours,

T. F. Bradshaw

COMMENTS OF ATLANTIC RICHFIELD COMPANY CONCERNING FEDERAL POWER COMMISSION RECOMMENDATION TO THE PRESIDENT

INTRODUCTION

Pursuant to Section 5(b)(1) of the Alaska Natural Gas Transportation Act of 1976, 15 U.S.C. § 719, et seq., the Federal Power Commission ("Commission") on May 2, 1977 submitted its "Recommendation to the President" concerning the most appropriate transportation system for the delivery of Alaskan gas to the lower 48 states. Atlantic Richfield Company ("Atlantic Richfield") takes no position upon the selection of a pipeline route other than to observe that the route which is capable of delivering Alaskan natural gas least expensively and most dependably is in everyone's interest. Atlantic Richfield's comments are directed principally to the pricing of Alaskan natural gas--a subject which bears vitally upon the dependability and economic viability of any system which is selected.

Atlantic Richfield believes that deregulation of natural gas would bring about the optimum industry response to the needs of gas consumers. In the absence of deregulation, the State of Alaska and Alaskan producers must be afforded regulatory equality. Throughout the hearings preceding the Commission's Recommendation, Atlantic Richfield urged the Commission to address meaningfully the issue of an Alaskan gas price. The lack of a pricing policy affording Alaskan producers fair and nondiscriminatory price treatment discourages exploratory efforts for additional gas reserves. Nevertheless, the Commission still has not established a coherent policy extending uniform national pricing standards to all Alaskan natural gas.

The concepts advanced on gas pricing in the Recommendation to the President are virtually worthless since they would unlawfully single out the State of Alaska and Prudhoe Bay producers for confiscatory and discriminatory treatment.

First, the Commission would establish a minimum "field price" for Prudhoe Bay gas no higher than the cost incurred by the producers for gathering and conditioning

the gas to pipeline transmission requirements.1/ This "field price" is a misleading term which cannot be compared either with the "wellhead price" ceilings fixed by the Commission for all other interstate gas, or with the proposal for gas pricing embodied in the President's National Energy Plan, which also contemplates a "wellhead price" as its basis. In fact, the Commission's minimum "field price" would dictate a "wellhead price" of zero for Prudhoe Bay gas since it is designed to compensate the producers only for costs incurred by them beyond the wellhead for the benefit of the transmission project sponsors.2/

Second, the Commission would consider establishing a maximum "field price" equal to the difference between an artificially-depressed city gate "market value" and the total transportation costs. The resulting field price, if large cost overruns were incurred, would be reduced to the minimum "field price" described above producing a wellhead price of zero. Worse yet, this approach burdens the price of Prudhoe Bay gas with the additional costs associated with building a pipeline larger than necessary to transport Prudhoe Bay gas alone. This policy assuredly would inhibit exploratory efforts in other frontier areas whether they were in the Arctic or the oceans' depths because it would penalize those companies who first took the significant risks of frontier exploration by making them financially responsible for construction of the means to transport not only their gas but also that gas discovered subsequently by others.

1/ Gathering and conditioning the Alaskan gas will involve the following operations: gathering the gas from a 200 square mile area; compressing of the gas to pressures far above any utilized in any pipeline system in the lower 48 states; complying with extraordinary hydrocarbon and water dew point requirements imposed by the transportation system; reducing the native carbon dioxide to a level three times lower than that normally required; and chilling the gas to below freezing temperatures to enable its transportation in a permafrost environment. The costs of these operations are largely attributable to the transportation

(Footnote continued)

Third, it is impossible for the producers to guarantee the uninterrupted physical delivery of specific volumes of natural gas at all times from the Prudhoe Bay Field. Nevertheless, the Commission's recommendation proposes such a guarantee which if not met will require the producers to assume the debt service on the transportation system. Thus, the risk of service interruption for any reason--even state regulatory controls, natural disasters and force majeure--would be borne by producers if the Commission's proposals were adopted.

Fourth, the Commission's proposed pricing policy relieves the pipeline sponsors of as many of the project risks as possible since all risks of cost overruns in the construction of the system would be borne first by the producers as direct deductions from the price of the gas. Thus, the project sponsors would appear to be absolved of primary financial responsibility for unanticipated cost overruns and indeed even for mismanagement and inefficiency. And, if consumer guarantees were necessary to finance the project, the producers' wellhead price would bear fully the negative impact of the credit which the Commission would give the consumer for making the guarantee. This policy does little to promote fiscal responsibility by the project sponsors.

The suggestion that producer participation in financing the pipeline would somehow enable the producers to prevent or control cost overruns is illogical. The possibility of massive overruns resulting from adverse weather conditions, inflation in labor and material costs, U.S. and Canadian environmental requirements and other force majeure causes would continue to exist regardless of participation

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(Footnote 1 continued)

of the gas (see attachment "A") and will be substantial. The Recommendation estimates these costs may be $0.50 per MMBtu in 1975 dollars.

2/ No substantive value can be placed on the Commission's remark that it might be "found appropriate" to allow recovery of "some joint oil/gas costs." Recommendation at XII-34,35.

in project financing by producers. For these reasons the wellhead price for gas should not be linked to pipeline cost overruns.

I. ALASKAN NATURAL GAS PRICING POLICY SHOULD CONFORM TO NATIONAL STANDARDS

Atlantic Richfield does not propose in these comments to discuss the legality of the Commission's seriously flawed, inherently discriminatory and confiscatory pricing suggestions. Rather, it will emphasize those facets which are most irrational and misdirected, and highlight their inconsistency with this Administration's announced policy "that the price of energy should reflect its true replacement cost," and thereby "give gas producers an adequate incentive for exploration" for additional reserves.3/

In approaching the construction of an Alaska Natural Gas Transportation System and the pricing of Alaskan natural gas in the context of the present energy situation, Atlantic Richfield respectfully suggests that this Administration should seek to achieve at least two fundamental and immediate goals: (1) minimize the unit cost of transporting natural gas from Alaska to the lower 48 states; and (2) encourage full development of known reserves and further exploration for natural gas in Alaska so as to provide the additional gas that is needed to utilize the proposed capacity and insure the reliability of gas supplies for any transportation system.4/

In the face of these substantial goals, the Commission has suggested a pricing policy which would permit the costs of the Alaska Natural Gas Transportation System essentially to dictate the price of Alaskan natural gas, and indeed would

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3/ Address by the President of the United States Transmitting his Proposals for a Comprehensive Energy Plan, April 20, 1977.

4/ A corollary goal would be the establishment of policies in Alaska which will encourage exploration for natural gas in other frontier areas by fair treatment of those undertaking the huge risks involved in venturing into unknown and hostile environments.

contemplate a reduction of the wellhead price of Prudhoe Bay gas to zero before the sponsors suffered a diminution of their profits. The result would be that the unit cost of transporting Alaskan gas would likely be maximized while the incentives to producers to produce proved reserves or locate new gas reserves in Alaska would be minimized or eliminated. Thus, far from furthering these objectives, the Commission's pricing scheme would systematically frustrate the accomplishment of each of them.

II. THERE IS AN URGENT NEED FOR DECLARATION OF A NONDISCRIMINATORY PRICING POLICY FOR ALASKAN NATURAL GAS

Atlantic Richfield submitted to the Federal Power Commission, prior to the issuance of the Recommendation to the President, a petition for a declaration of a pricing policy with respect to Alaskan natural gas. (Attachment B.) Atlantic Richfield urged specifically that, in the absence of deregulation, natural gas produced in Alaska and dedicated to the interstate market be entitled to the then highest national rate for jurisdictional sales applicable to "new" natural gas on the date gas first commences to flow in interstate commerce from any area of the State of Alaska to the lower 48 states. Implementation of such a policy would accord Alaskan gas the same price treatment as is given gas produced in the lower 48 states and would provide the regulatory stability essential for stimulating exploration and development of new Alaskan gas reserves. Atlantic Richfield believes that this petition balances all of the major goals involved in pricing Alaskan gas, and urges its serious consideration.

Alternatively, Atlantic Richfield suggests that should pending legislative proposals falling short of deregulation replace Commission jurisdiction over producer wellhead prices, the principles contained in the President's National Energy Plan, which recognize the need for gas price ceilings to reflect commodity value and replacement costs, must be applied to Alaskan gas. The "new gas" price ceiling which, under pending legislation, would be prescribed by the President at the time Alaskan gas first commenced to flow in interstate commerce would provide the State of Alaska and Alaskan producers equal opportunity and assurance of nondiscriminatory treatment

vis-a-vis other states and producers therein and provide the economic certainty so essential to future frontier exploration.

Any suggestion that the Prudhoe Bay producers will realize excessive profits if their wellhead price is permitted to equal either the nationwide ceiling prescribed by the Commission or the ceiling price for new gas which may be specified in the President's National Energy Plan would be illfounded. First, as the Energy Plan clearly recognizes, the price of gas must reflect its commodity value and provide for its replacement as it is consumed. Income from a successful field is the only ultimate source of funds to pay for unsuccessful exploratory efforts and to replace the gas produced and consumed. Second, the averaging process involved in either cost-based national pricing or the ceiling prices contemplated by the President's Energy Plan is predicated upon a balancing of the results of successful and unsuccessful exploratory and developmental efforts. To single out successful fields for discriminatory price treatment under the guise of preventing "windfall profits" would invalidate the averaging process upon which industry-wide ceiling rates are based.

III. ENCOURAGING EXPLORATION TO LOCATE ADDITIONAL NATURAL GAS RESERVES IN FRONTIER AREAS

The United States is in the grip of a severe natural gas shortage. In every year since 1968 natural gas consumption has exceeded the addition of new reserves. In the face of persistently diminishing natural gas supplies, the development of the substantial potential reserves of natural gas located in remote frontier areas is necessary if the energy needs of the nation are to be satisfied in the foreseeable future.

The full development of known reserves and the exploration and development of additional Alaskan gas reserves are particularly essential in order to (1) reduce the unit costs of transporting gas to the lower 48 states, (2) insure the availability of a reliable supply of gas, and (3) facilitate the financing of the pipeline project. The pricing system proposed by the Commission frustrates each of these objectives by establishing a wellhead price for Prudhoe Bay gas that is absolutely certain to act as a disincentive for gas exploration and development in that area.

Exploration for and development of natural gas reserves in remote frontier areas are extraordinarily expensive and risk-laden undertakings. Responsible corporate management simply does not permit the commitment of significant amounts of capital to natural gas exploratory or development efforts where the government pricing policy does not provide an economic justification for such investments. The pricing policy recommended by the Commission for Prudhoe Bay gas fails to provide wellhead price incentives that would justify producer efforts to develop proved reserves or to find potential reserves of natural gas in the Alaskan region and indeed constitutes a clear signal to all producers that further exploration in Alaska and other remote frontier areas should be avoided.

If the Commission's pricing formula is adopted, producers can expect to receive at best (assuming no cost overruns) a wellhead price far below prices currently permitted for new natural gas or natural gas from the 1975-1976 biennium which is produced from other areas of the United States.5/ The Commission's pricing approach thus results in a clear discrimination against the State of Alaska and Alaskan gas simply because it is produced from a frontier area and thus subject to higher than normal transportation costs. In these circumstances, no responsible corporate decision-maker could support the investment of additional funds in gas development and exploration in Alaska.

The present alternatives for the Alaskan Natural Gas Transportation System involve proposals for construction of large diameter pipelines with capacities for extremely high throughputs of natural gas. However, at present these systems can rely only on the natural gas reserves in the Prudhoe Bay field. These reserves and expected deliverabilities are large, but by themselves, they are not large enough for the most efficient utilization of any of the pipeline systems of the size being considered.

5/ In Opinion No. 770, the Commission determined that the cost of finding and developing new supplies of natural gas to be $1.63 Mcf at the wellhead. The costs of significant producer gathering and conditioning operations are additionally compensated for on an area basis. It is a virtual certainty that in the newest biennium proceeding the Commission must find that these exploration and development costs have risen significantly.

The building of an Alaska Natural Gas Transportation System designed for cheap expansibility is in the national interest because all available estimates indicate the existence of substantial potential gas reserves in Alaska.6/ If found and developed, these additional reserves will be sufficient to justify the construction of a pipeline with a high throughput potential and will serve to lower dramatically the unit costs of transporting gas through such a system. However, if additional exploration for and development of Alaskan gas reserves is not to be encouraged by an adequate wellhead price, as the Commission's policy plainly suggests, then a smaller capacity, lower cost pipeline system is definitely mandated.

Development of additional reserves of Alaskan natural gas will also enhance the financability of the proposed Alaska Natural Gas Transportation System. The financing of a pipeline must be based on the supplies of gas expected to be transported through the pipeline. The security for potential sponsors and investors in the pipeline and their assurance of a return on investment will be based upon the adequacy and reliability of the Alaskan reserves available for transportation through the system. To the extent that such potential sponsors and investors perceive the probability that sufficient additional reserves will be developed to insure utilization of the pipeline at its most efficient capacity for the entire period of its expected life, they will be attracted to invest in the project. The more questionable the availability of sufficient additional reserves, the greater the envisioned risk.

Given the importance of locating additional reserves of Alaskan gas to the viability and success of the Alaska Natural Gas Transportation System, one would expect the Commission to recommend a fair pricing policy, designed to stimulate the exploration needed to locate such additional reserves. Yet the Commission, while recommending the construction of a high capacity pipeline, proposed a pricing policy which would inevitably serve as an overwhelming disincentive for further gas exploration in Alaska. In addition to isolating the Prudhoe Bay producers for discriminatory treatment the Commission's pricing proposals cast doubt upon the economic viability of the Alaska Natural Gas

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6/ The United States Geological Survey found the "undiscovered recoverable resources" of the North Slope to be between 19 TCF - 99 TCF.

Transportation System. Given the critical nature of the natural gas supply situation in the United States, the Federal Power Commission's proposed policy is, to say the least, difficult to comprehend.

IV. MINIMIZING THE COST OF TRANSPORTING ALASKAN NATURAL GAS TO THE LOWER 48

Generally, the two factors which will directly influence the economics of transporting Alaskan natural gas to the lower 48 states are the cost of constructing and operating the pipeline system and the volume of gas transported daily through the system. The Commission's pricing recommendation for Alaskan natural gas impacts negatively upon both of these variables and virtually insures that the total cost of transporting Alaskan gas would be higher than necessary under any rational pricing approach.

In order to keep the costs of construction of this enormous and complex project within the parameters estimated by the sponsors, strict measures of accountability and cost control on the part of the builders and sponsors are necessary. Thus, it is absolutely essential that those parties engaged in the construction of the project operate under a set of financial incentives which reward efficiency and penalize inefficiency, mismanagement, and avoidable cost overruns.

Incredibly, however, the Commission's recommended pricing policy relieves the sponsors of primary financial responsibility for cost overruns and places this burden first upon the wellhead price of Alaskan natural gas. Under the Commission's proposal, as the costs of transporting Alaskan gas increases beyond 100 percent of the sponsor's estimates, the wellhead price decreases to zero and the "field price" is reduced to a minimum price floor based on the recovery of incremental costs only. Only thereafter does the sponsors' 18 percent (18%) rate of return decline with additional cost overruns to a minimum 11 percent (11%) after tax return. Thus the Commission's proposals give the builders of the pipeline a "free ride" until their overruns, even those perhaps resulting from inefficiency and mismanagement, reach such proportions that the wellhead price of the gas has been reduced to zero. Subsequent overruns would reduce the sponsors' rate of return, but never below the guaranteed 11 percent.

Besides representing the epitome of irrational financial accountability, the Commission's proposal would be inequitable because it would force the State of Alaska and Alaskan producers, who have no control over the construction of the pipeline, and therefore no ability to avoid the cost overruns, to absorb the entire burden of the increased cost. Moreover, it is idle to suggest that post-expenditure audits of the overruns would solve the problem. At that point the expenditure would have to be shown clearly to have been imprudent--a showing which under the best of circumstances would be difficult. Here, in a wholly novel construction environment, who is to say that an additional expenditure was imprudent or totally unnecessary.

CONCLUSION

The Commission's proposed pr ing policy clearly discriminates against the State of Al a and the Prudhoe Bay producers. By unmistakable inference, it denies all Alaskan producers - indeed all who would probe for natural gas in remote frontier areas - an equal opportunity to achieve economic rewards. Moreover, although it says it is desirable to do so, the Commission does not propose to rely upon free market forces to determine a price for Alaskan gas. Instead, the Commission would employ an arbitrary and unrealistic city gate value which ignores the cost of almost every other competitive energy source. From that depressed city gate value the Commission would then deduct the highly unpredictable cost of transporting the gas to the lower 48 states to arrive at the ceiling price of gas in Alaska. Such a misguided policy can result only in the dramatic decrease in exploratory efforts to find additional reserves of natural gas.

Alaskan gas priced at the wellhead on the same nationwide basis as gas from other parts of the United States would be readily marketable and competitive with electricity and home heating oil at the city gate.7/ When Alaskan gas is compared with other supplemental supplies of natural gas such as those from synthetic natural gas plants or less dependable foreign

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7/ There is, as the Commission notes in its Recommendation to the President, no real issue as to the marketability in the lower

(Footnote continued)

sources, its economic attractiveness is even more apparent. Moreover, the equal treatment and reasonable price allowed to Alaskan producers under such a nationwide system would permit additional exploration and development in Alaska and elsewhere. Overall such a policy would: (1) lead to the development of additional vitally needed supplies of natural gas, (2) permit the optimum development of known reserves of Alaskan gas for movement through the pipeline system, (3) reduce the unit cost of transporting Alaskan gas to the lower 48 states, (4) increase the reliability of Alaskan gas supplies for the pipeline, and (5) enhance the financibility of the project. If the pricing and cost overrun accountability proposals contained in the recommendations are adopted, these goals are sure to be frustrated.

Finally, Atlantic Richfield wishes to state emphatically that it does not seek a regulated support price for Alaskan gas. Atlantic Richfield is a strong advocate of natural gas deregulation. Permitting free market forces to determine the pricing of natural gas at the wellhead would create an economic atmosphere that would surely provide a fair price for Prudhoe Bay gas and call forth the investment necessary for optimum exploration and development of potential Alaskan gas reserves. However, Atlantic Richfield believes that under present circumstances its approach must be premised on the continuation of regulation and it is on this assumption that Atlantic Richfield requests that Alaskan gas receive the same pricing treatment afforded the rest of the nation's new gas supplies. The predictable result of such an equitable policy will be the fullest development of Alaskan gas supplies that can be achieved absent deregulation.

(Footnote 6 continued)

48 states of Alaskan gas reasonably priced at the wellhead. Attachment "C" hereto, a study of the marketability of Alaskan gas which was submitted to the Commission, updates evidence submitted by Atlantic Richfield to the Presiding Administrative Law Judge.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

El Paso Alaska Company, et al.	Docket Nos. CP 75-96, et al.
Order Providing for Suspension of Procedures Pursuant to the Provisions of the Alaska Natural Gas Transportation Act of 1976	Docket No. RM 77-6

SUPPLEMENTAL SUBMISSION OF
ATLANTIC RICHFIELD COMPANY
CONCERNING CONDITIONING OF
PRUDHOE BAY GAS

During the course of the oral argument, the term "gas conditioning" or "conditioning" was frequently employed by both counsel and members of the Commission. In our view, the use of this shorthand expression should not be allowed to leave the Commission the wholly erroneous impression that, as applied to Prudhoe Bay gas, this term describes a function normally performed as a part of production operations.

The term "conditioning" as used in these proceedings has come to mean (1) compressing the gas to extremely high pipeline inlet pressures, (2) establishing its hydrocarbon and water dew points at unusually stringent levels, (3) chilling the gas to below freezing temperatures to prevent melting the permafrost, and (4) reducing its carbon dioxide content to a level more than 3 times lower than the level ordinarily acceptable for pipeline transmission. These pipeline pressure and quality requirements have (with some variations) been dictated by all three transportation system applicants solely in order to facilitate the transportation of the gas and reduce their costs.

For example, the pressure requirements of all three gas transmission systems are extremely high, ranging up to 1,660 psig. The natural wellhead pressure and Btu content of Prudhoe Bay gas would, under prevailing FPC regulations in the south 48 states, be sufficient to entitle such gas to receive the nationwide ceiling rate. The cost of compression above such natural wellhead pressure, if required to enable the gas to enter the pipeline against existing pipeline pressure, would be borne by the gas purchaser in accordance with current industry practice. The purpose of requiring such high inlet pressures at Prudhoe Bay is not to meet existing pipeline pressure but to provide initial compression for the transmission system. As a result, no inlet compression is required on any of the three proposed transmission systems.

Additionally, the applicants' specifications for Prudhoe Bay gas require a reduction of the carbon dioxide content to 1% or lower as opposed to the normal 3% carbon dioxide content allowed in the south 48 states. Likewise, the hydrocarbon dew point and water dew point requirements are unusually severe in comparison to normal south 48 requirements. The unique requirement of gas chilled to below freezing temperatures permits underground pipeline construction rather than the more expensive elevated pipeline construction.

In essence, therefore, the large majority of the estimated costs of "conditioning" the Prudhoe Bay gas must be attributed to the unique and stringent requirements established by the pipeline applicants, over which the producers have no control. These special requirements have the effect of transferring the costs of providing fuel gas and the facilities necessary to provide initial pipeline compression from the pipeline applicants to the "conditioning plant" owners, and of compelling such owners to provide "chilled" gas of super quality at the pipeline inlet.

For these reasons, Atlantic Richfield is of the view that the costs attributable to compression of Prudhoe Bay gas above its normal wellhead pressures and the chilling and conditioning of the gas to meet the super quality requirements of the pipeline applicants is not a production function but should be properly considered as a part of the cost of transporting the Prudhoe Bay gas. Hence, Atlantic Richfield has taken the position that Prudhoe Bay gas is merchantable

and entitled to the applicable nationwide rate at the "well-head" or the points of separation of oil and gas, and that the cost of the unique compression, chilling and conditioning facilities desired by the gas transporter should be borne by the gas transporter or the gas purchaser.

Respectfully submitted,

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April 18, 1977

AFFIDAVIT

DISTRICT OF COLUMBIA:

EDWARD R. LEAHY, being duly sworn, deposes and says that he is an attorney for Atlantic Richfield Company; that he is authorized to verify and file this document; that he has examined the statements contained in the submittal and that all such statements are true and correct to the best of his knowledge, information and belief.

Edward R. Leahy
EDWARD R. LEAHY

Subscribed and sworn to before me this 18th day of April 1977.

[SEAL].

NOTARY PUBLIC

My Commission Expires: March 14 1982

CERTIFICATE OF SERVICE

I, EDWARD R. LEAHY, hereby certify that I have this 18th day of April 1977, served the foregoing document upon all parties of record in this proceeding which are included on the Restricted Service List in accordance with the requirements of Section 1.17 of the Commission's Rules of Practice and Procedure.

Edward R. Leahy
EDWARD R. LEAHY

Attorney for
Atlantic Richfield Company

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

APPLICATION OF THE NATIONAL RATE TO NATURAL GAS FROM THE STATE OF ALASKA AS OF THE DATE ALASKAN GAS COMMENCES TO FLOW IN INTERSTATE COMMERCE	)	Docket No.

PETITION OF ATLANTIC RICHFIELD COMPANY FOR DECLARATION OF A PRICING POLICY WITH RESPECT TO JURISDICTIONAL ALASKAN NATURAL GAS

COMES NOW, Atlantic Richfield Company ("Atlantic Richfield" or "Petitioner"), pursuant to Section 1.7 of the Rules of Practice and Procedure of the Federal Power Commission ("Commission"), to petition the Commission for a declaration of policy that natural gas produced in the State of Alaska and dedicated to the interstate market will be entitled to the then highest national rate for jurisdictional sales applicable to "new" natural gas on the date gas first commences to flow in interstate commerce from any area of the State of Alaska to the lower 48 states. This policy would apply such national rate to Alaskan gas at the wellhead irrespective of the date drilling of wells commenced or the date of the contract dedicating the gas to the interstate market. In support of its petition, Atlantic Richfield respectfully states:

1. Atlantic Richfield, a Pennsylvania corporation, with its principal place of business at Los Angeles, California, is a producer of natural gas. Atlantic Richfield holds interests in substantial acreage throughout the State of Alaska, and has established approximately 7.8 Tcf of proved reserves in that state.

2. The names and addresses of persons to whom communications with regard to this petition and subsequent proceedings are to be addressed are:

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I.

SUMMARY OF PETITION

This Commission has never announced a pricing policy with respect to Alaskan natural gas. Present proceedings to establish just and reasonable national rates for natural gas specifically exclude Alaskan natural gas from consideration.1/ There exists, therefore, no policy upon which potential producers of Alaskan natural gas can rely to predict what pricing system will be applicable to Alaskan natural gas when its delivery to the lower 48 states becomes possible.

Atlantic Richfield respectfully submits that there is an urgent need for this Commission to formulate the pricing policy that will be applicable to Alaskan natural gas when its delivery to the lower 48 states is initiated. Such a policy must provide the regulatory certainty essential for stimulating

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1/ See, e.g., the Commission's Order in Docket No. RM77-13, amending a prior order instituting a national rate proceeding for 1977-1978 biennium natural gas, which states:

> In the Notice of Proposed Rulemaking instituting the last biennial review which culminated in the issuance of Opinion Nos. 770 and 770-A, the Commission specifically excluded from consideration the question of the just and reasonable rate for Alaskan gas. A similar exclusion applies to the 1977-1978 biennial review. Order at 1.

exploration and development of new Alaskan gas reserves. Accordingly, Atlantic Richfield petitions this Commission to determine promptly that gas from the State of Alaska will be entitled to the highest national rate in effect for "new" natural gas on the date Alaskan gas first commences to flow in interstate commerce to the lower 48 states. Petitioner requests a declaration to the foregoing effect for the reasons set forth below. 2/

II.

THE PUBLIC INTEREST REQUIRES THAT THE COMMISSION ANNOUNCE A FIRM PRICING POLICY WITH RESPECT TO ALASKAN NATURAL GAS

The rapid development of Alaskan reserves and the discovery of new Alaskan reserves are in the interest of the nation as a whole. The lower 48 states have a vital need for Alaskan gas supplies to help alleviate the growing shortage of natural gas. The State of Alaska needs, and as a state has a legal right, to encourage orderly development of its natural gas reserves to enhance its economic growth and create increased opportunities for its citizens.

Despite this growing demand for Alaskan gas, the Commission has never enunciated a pricing policy applicable to Alaskan gas. 3/ Indeed, it has made no effort to establish the environment of regulatory certainty in Alaska which would encourage large scale exploration for and development of Alaskan potential gas reserves.

There is no reasonable basis for continuing to ignore the need to develop a firm pricing policy for Alaskan gas. The lack of such a policy disserves the public interest and discriminates against Alaskan producers and the State of Alaska, both of whom have legitimate interests in the establishment of pricing policies and the accompanying regulatory certainty which can serve as a stimulus for Alaskan gas development.

2/ Atlantic Richfield continues to advocate decontrol of the wellhead price of natural gas as the optimum response to the gas supply problem. It offers the proposal contained in this petition, however, as an appropriate method of meeting the need for a pricing policy under existing conditions.

3/ See, e.g., Opinion No. 699, 51 F.P.C. 2212, 2303 (1974).

Failure to correct this discriminatory policy can only delay the development of Alaskan potential gas reserves, discourage additional exploration for Alaskan gas, hamper the establishment of Alaskan gas transportation systems and inhibit the economic development of Alaska. Clearly the time has come to treat Alaskan gas reserves as the vital part of the nation's gas future that they are.

III.

THERE IS AN URGENT NEED TO ASSURE THE STATE OF ALASKA AND ALASKAN PRODUCERS THAT THE NATIONAL GAS ACT WILL BE EXTENDED TO THAT FRONTIER AREA

A. The Need for Delivery of Alaskan Natural Gas to the Lower 48 and for Additional Alaskan Exploration to Discover More Reserves Has Never Been as Great

The United States is caught in the grip of a severe natural gas shortage. Since 1968, annual natural gas consumption has exceeded the addition of new reserves. In 1975 alone, domestic reserves committed to interstate pipeline systems declined by 12.1 Tcf. 4/ The result of this decline has been enormous curtailment. A Commission staff report issued on January 11, 1977 projected firm delivery curtailments of 1,522 Bcf during the 1976-77 winter--approximately 20 percent higher than curtailments of 1,269 Bcf during the previous winter. 5/ In the face of persistently diminishing conventional natural gas supplies, the Commission staff concluded, in a report

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4/ A study compiled by the staff of the Federal Power Commission, and released on May 20, 1976, stated that known reserves committed to the interstate market totaled 120.5 Tcf at the end of 1974, but had dropped to 108.4 Tcf by December 31, 1975. This marked the eighth consecutive year that gas reserves committed to the interstate market have declined from their peak of 198.1 Tcf at the end of 1967.

5/ The staff report stated that its projections were based upon normal weather conditions and supply-demand factors estimated as of September 1976. The weather during the recent heating season, however, was considerably colder than normal, with record low temperatures being set throughout the country. As a result, curtailments will be increased substantially above the Commission's projections.

issued in November 1976, that supplementary supplies of natural gas, including gas from Alaska, are vital if the natural gas needs of the nation are to be satisfied in the foreseeable future. 6/

B. The Development and Production of Alaskan Natural Gas Must Play a Key Role in Coping With the Deepening Shortage of This Vital Energy Source

In El Paso Alaska Co., et al., Docket Nos. CP75-96, et al., the applicants demonstrated the existence of at least 22.5 Tcf of proved gas reserves in the Prudhoe Bay Field. In the Initial Decision in that same proceeding, the Presiding Administrative Law Judge stated:

> While the conclusion has been reached that initial sales of 2.0 Bcf/d - 2.5 Bcf/d are likely from the Prudhoe Bay Field, the evidence of record suggests that sales appreciably above this level will be available from the North Slope region.
>
> Estimates of potential reserves on the North Slope, other than Prudhoe Bay, have varied considerably. The Division of Geological and Geophysical Surveys (DGGS) of the State of Alaska, in June 1974, stated that "speculative recoverable gas" for the onshore area of the North Slope totaled 41.8 Tcf, while offshore gas potential in the Beaufort and Chukchi Sea provinces equalled 46.5 Tcf. The Potential Gas Committee estimated, in 1973, that the "speculative potential gas supply" on the North Slope totaled 75 Tcf. The United States Geological Survey found, in 1975, the "undiscovered recoverable resources" to be between 19 Tcf - 99 Tcf. Finally, EP-231, again using a weighting methodology, estimates North Slope additions by 1985 at 8.4 Tcf, excluding the Wildlife Range, NPR #4, and the Prudhoe Bay Field.

6/ The Future of Natural Gas: Economic Myths, Regulatory Realities, Bureau of Natural Gas, Federal Power Commission, at 8-9. The study defined supplementary supplies as Alaskan gas, imported LNG, and gas from coal gasification projects.

Initial Decision on Competing Applications for an Alaskan Natural Gas Transportation Project, El Paso Alaska Co., et al., Docket Nos. CP75-96, et al. (February 1, 1977) [hereinafter "Initial Decision"], at 33 (footnotes omitted).

Other studies indicate that even greater amounts of natural gas await further exploration on the North Slope of Alaska. 7/ For example, DeGolyer and MacNaughton termed "reasonable if not conservative" the estimate by the State of Alaska that 114.3 Tcf of potential reserves remain to be developed onshore and offshore from the North Slope. 8/

The foregoing represents only a partial picture. The June 1974 study by the Division of Geological and Geophysical Surveys of the State of Alaska, referred to by the Presiding Administrative Law Judge, concluded that total onshore and offshore areas of Alaska contained natural gas recoverable resources of 469.3 Tcf, including already discovered reserves. 9/

7/ See, e.g., Application of Northwest Alaska Company for Section 3 Authorization, Docket Nos. CP75-257, et al. (February 27, 1975), indicating that the onshore areas of the North Slope contain 67.8 Tcf of potential natural gas reserves.

8/ Third Supplement to Application of Alaskan Arctic Gas Pipeline Company, Docket Nos. CP75-96, et al., supra, Exhibit H at 3. Atlantic Richfield's own estimates differ from those of the State of Alaska. In its answers to Interrogatories in Docket Nos. CP75-96, et al., Atlantic Richfield estimated potential recoverable reserves in the North Slope area to the 300 foot water depth to be 135 Tcf of gas.

9/ U.S. Geological Survey, "Geological Estimates of Undiscovered Recoverable Oil and Gas Resources in the United States," Circular 725 at 4-5 (1975), concludes that undiscovered recoverable natural gas reserves in Alaska will range from 29 to 132 Tcf. The study assumes 1974 price-cost relationships and excludes offshore potential beyond 200 meters of water depth. The study recognizes that changes in these assumptions could lead to substantially larger estimates of undiscovered recoverable gas reserves.

The combination of the need for additional natural gas in the lower 48, and the potential for the development and production of trillions of cubic feet of gas in Alaska, underscores the necessity for (1) providing incentives to locate and develop new reserves in Alaska, and (2) assuring the prompt construction and optimum utilization of Alaskan gas transportation systems to bring this gas to markets in the lower 48. 10/

C. Assurance That the National Rate Will be Applied to Alaskan Gas is Necessary to Promote Further Development of Alaskan Reserves and to Optimize Utilization of Alaskan Gas Transportation Systems

The enunciation of a pricing policy that will apply the national rate to natural gas reserves in Alaska will provide a basis for economic planning and an incentive for those producers willing to undertake further exploration in Alaskan frontier areas.

Development of known reserves and exploration for new sources of natural gas in Alaska are extraordinarily expensive and risky undertakings, requiring huge financial commitments in an inhospitable environment. For Alaskan producers to continue committing significant amounts of exploratory capital, this Commission must determine a pricing policy which can serve as a basis for measuring the efficacy of such investments. Lack of an Alaskan gas regulatory policy precludes management from reliably forecasting the cash flow available from wellhead sales of existing Alaskan gas reserves, and from evaluating additional investments in exploratory gas prospects.

In addition, even though the route selection for an Alaskan gas pipeline is imminent and certification proceedings for an LNG project from south Alaska are underway, 11/

10/ The viability of all pipeline systems would be enhanced by the availability of additional new reserves. Such reserves are needed for expansion, as well as for optimum utilization of the facilities. Moreover, any decline in production from Prudhoe Bay could be absorbed if other reserves in northern Alaska were available.

11/ Pacific Alaska LNG Company, et al., Docket Nos. CP75-140, et al.

the receipt of revenues from interstate gas sales remains years away. Marketing additional discoveries will take even longer. In the absence of a supply-eliciting pricing policy for existing Alaskan gas it makes no sense to commit additional sums to gas exploration in any area of Alaska.

The size of the Prudhoe Bay gas reserves should not be permitted to obscure the absolute necessity of developing additional Alaskan reserves. The unit cost of transportation would be substantially lowered if additional North Slope gas reserves were discovered and developed prior to the completion of an Alaskan gas pipeline. If initial deliveries into the pipeline from the North Slope area could be at a level of 3.0 Bcfd or higher instead of the minimum 2.0 Bcfd presently available from Prudhoe Bay alone, the south 48 states would receive the dual benefits of increased gas supply and lower unit costs. See Initial Decision at 170-172. Prompt issuance of fundamental policy decisions by this Commission with respect to the pricing of Alaskan gas is essential if maximum utilization of Alaskan gas transportation facilities is to be achieved.

The present regulatory climate, which is exclusively within the control of this Commission, inhibits the gas industry from mounting a concerted program of exploring for and developing new Alaskan gas reserves. Although the extent to which future gas reserves in Alaska will be discovered and developed is dependent upon a number of variables, the principal consideration is the policies of this Commission which relate directly to the attractiveness of such activity, indeed to its very existence. As the Presiding Administrative Law Judge said in the Initial Decision, supra, when speaking of the development of the Mackenzie Delta reserves in Canada:

> The long-term energy policies implemented by Canadian authorities, especially with respect to provision of adequate producer price incentives, will ... unquestionably have substantial impact on drilling activity. While one cannot presume to advise what these policies should be, it hardly seems likely that if the Canadian government should approve the construction of a gas transportation system into the Mackenzie Delta on the basis of pending applications, it will fail to provide and maintain the regulatory climate conducive to optimum exploitation of that system. Initial Decision at 43 (emphasis supplied).

As the Presiding Administrative Law Judge also observed, the record in that proceeding demonstrated that recent natural gas price increases in Canada "resulted in a significant increase in exploratory activity." Initial Decision at 43.

Such policies must not be confined to Canada. They are needed in Alaska, and it is mandatory that they be developed by this Commission now. 12/

IV.

NECESSITY FOR A PRESENT BINDING FUTURE POLICY

Exploration for and development of new gas supplies in Alaska and particularly in its North Slope Area are currently inhibited by the Commission's failure to act with regard to pricing Alaskan gas and by the fact that the Commission's current policies with respect to vintaging of lower 48 state gas supply by well spud date would, if applied to Alaska, be grossly unfair and discriminatory to both the State of Alaska and the producers. Since no interstate gas pipeline outlet now exists in Alaska, producers have no current revenue from Alaskan interstate gas sales and hence no current incentive to find and develop additional gas reserves. Additionally, producers are faced with the possibility that the Commission might vintage new discoveries by well commencement date and thereby discriminate against gas produced from early exploratory efforts. It is readily apparent that current Commission vintaging policy would operate as a positive deterrent to exploratory and developmental drilling in Alaska prior to the availability of an interstate pipeline outlet.

12/ Appendix A to Order No. 558-D, issued March 17, 1977, in El Paso Alaska Co., et al., supra, insofar as it purports to deal with the "wellhead price" of Prudhoe Bay gas, is apparently nothing more than an eleventh-hour effort by the Commission to recognize the long-standing problem of the lack of an Alaskan gas price. Atlantic Richfield submits that a brief oral argument in a pipeline certificate proceeding scheduled after the record has closed is a pitifully inadequate forum for consideration of a question of such nationwide significance.

Since no Alaskan gas can be expected to flow in interstate commerce for many years, inclusion of Alaskan data and determination of a national rate for jurisdictional sales within the United States including Alaska in the current proceeding in Docket No. RM77-13 would be premature. It would, however, be most appropriate for this Commission forthwith to issue a declaration of policy as requested herein to determine a firm supply-eliciting pricing policy with respect to Alaskan gas. This would have the dual benefit of achieving regulatory certainty to the full extent possible prior to actual deliveries of Alaska gas and removing the existing apprehension that the penalties presently imposed by spud date vintaging on south 48 state production would be imposed upon Alaskan gas production.

V.

CONCLUSION

The Supreme Court has stated that "the principal purpose" of the Natural Gas Act is "to encourage the orderly development of plentiful supplies of ... natural gas at reasonable prices." National Association for the Advancement of Colored People v. Federal Power Commission, 425 U.S. 662, 669-670 (1976). In the context of the present natural gas shortage, this judicial reference to the development of plentiful supplies represents an unmistakable call to the Commission to pursue all responsible methods of generating additional supplies of natural gas for the interstate market. In order to carry out this responsibility and protect the public interest, the Commission must encourage exploration for new Alaskan gas reserves and facilitate the development and transportation to the lower 48 of present Alaskan reserves.

This petition requests the Commission to meet its obligations under the Natural Gas Act "to encourage the orderly development of plentiful supplies of ... natural gas at reasonable prices." By announcing a policy that initial deliveries of Alaskan natural gas will be accorded the then highest national rate for "new" natural gas when it commences to flow in interstate commerce, the Commission can hasten the development of Alaskan natural gas and its distribution to the United States and can encourage exploration to locate critically needed new Alaskan gas reserves. Petitioner Atlantic Richfield respectfully suggests that now is the time for

the Commission to meet its statutory responsibility to alleviate projected shortages of natural gas in the United States.

WHEREFORE, Petitioner, Atlantic Richfield Company, respectfully requests that the Commission issue a declaration of policy that initial deliveries of jurisdictional natural gas produced in the State of Alaska will be priced at the highest national rate then in effect for "new" natural gas when Alaskan gas first commences to flow in interstate commerce to the lower 48 states, and that such rate shall be applicable to Alaskan gas, irrespective of the date the drilling of wells commenced or the date of the contract dedicating such gas to the interstate market.

Respectfully submitted,

George B. Mickum III

Kenneth R. Dickerson
Edward J. Kremer

Atlantic Richfield Company
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Dallas, Texas 75221

George B. Mickum, III
Edward R. Leahy
W. George Grandison

Steptoe & Johnson
1250 Connecticut Avenue, N.W.
Washington, D.C. 20036

Counsel for Atlantic Richfield

March 31, 1977

VERIFICATION

DISTRICT OF COLUMBIA)

GEORGE B. MICKUM, III, being duly sworn, deposes and says that he is an attorney for Atlantic Richfield Company; that he is authorized to verify and file this document; that he has examined the statements contained in the submittal and that all such statements are true and correct to the best of his knowledge, information and belief.

George B. Mickum, III

Subscribed and sworn to before me this 31st day of March, 1977.

Notary Public

(SEAL) MY COMMISSION EXPIRES: 3/14/82

March 31, 1977

THE CURRENT MARKET VALUE OF PRUDHOE BAY GAS

FPC Order No. 558-D, issued March 17, 1977, sets oral argument over a four day period on exceptions to the Presiding Administrative Law Judge's Initial Decision in Docket Nos. CP75-96, et al., ("Initial Decision"), issued February 1, 1977. On April 6, 1977 oral argument concerns "Financing and Tariffs" and the Commission instructs parties to "address the issues set forth in Appendix A hereto."

Among other things Appendix A requests comments on a "wellhead price" of gas at Prudhoe Bay, "including conditioning",

> "set equal to the higher of
> (i) the difference between market value of the gas at city-gate in lower 48 states and the transportation charges from wellhead to city-gate and
> (ii) a minimum price set to allow recovery of the incremental costs associated with producing and delivering gas ready for shipment."

This study is addressed to the determination of the market value of Prudhoe Bay gas, and does not deal with the cost analysis.

The Market Value Concept

At the outset it should be emphasized that the use of the phrase "wellhead price (including conditioning)" in Appendix A is incorrect because conditioning is a function beyond the wellhead. More precisely, Appendix A refers to a price at the Prudhoe Bay pipeline inlet including gathering as well as conditioning costs. Therefore, the phrase "inlet price" will be used in this study instead of "wellhead price."

The market value of gas at the pipeline inlet is equal to the market value of this gas at the "city-gate" minus the transportation cost from inlet to city-gate. The market value of gas at the city-gate should be measured by reference to the city-gate values of competitive energy forms, such as electricity and fuel oil. The value of competitive energy forms should take into account both price and premium considerations.

The market value of Prudhoe Bay gas should be determined by reference to energy competition in FPC Priority 1 and 2 categories of the market.[1/] This is because the Prudhoe Bay gas is not expected to reach the Lower 48 markets until 1982 at the earliest. In the meanwhile, gas supplies in the Lower 48 continue to decline relative to demand, and gas curtailments continue to increase as a percent of requirements. These curtailments have increasingly cut back the use of gas as a boiler fuel by industrial and electric utility plants.

1/ Priority 1 Category consists of residential and commercial less than 50 Mcf per day. Priority 2 Category consists of large commercial, firm industrial for plant protection, feedstock and process purposes and storage injection. FPC Order No. 467-B.

Because of these trends, the Government is contemplating a more rapid phasing out, if not actual prohibition of gas as a boiler fuel in this country -- those markets represented by FPC Priorities 4-9. Thus, by 1982 most if not all interstate shipments of natural gas, including the Prudhoe Bay supply, will be consumed in the higher FPC Priority categories.[1/]

The residential and commercial sectors of the market are reasonably representative of FPC Priority Categories 1 and 2.[2/] In 1975 the consumption of energy by these sectors was as follows:

1975 National Consumption of Energy in the Residential and Commercial Sectors

	Trillion Btu	Percent
Gas	7,668	50.2
Electricity	3,412	22.4
Distillate Fuel Oil	3,148	20.6
LPG	669	4.4
Residual Fuel Oil	189	1.2
Coal	188	1.2
TOTAL	15,274	100.0

Source: Data published by U.S. Bureau of Mines, Gas Requirements Committee and Edison Electric Institute.

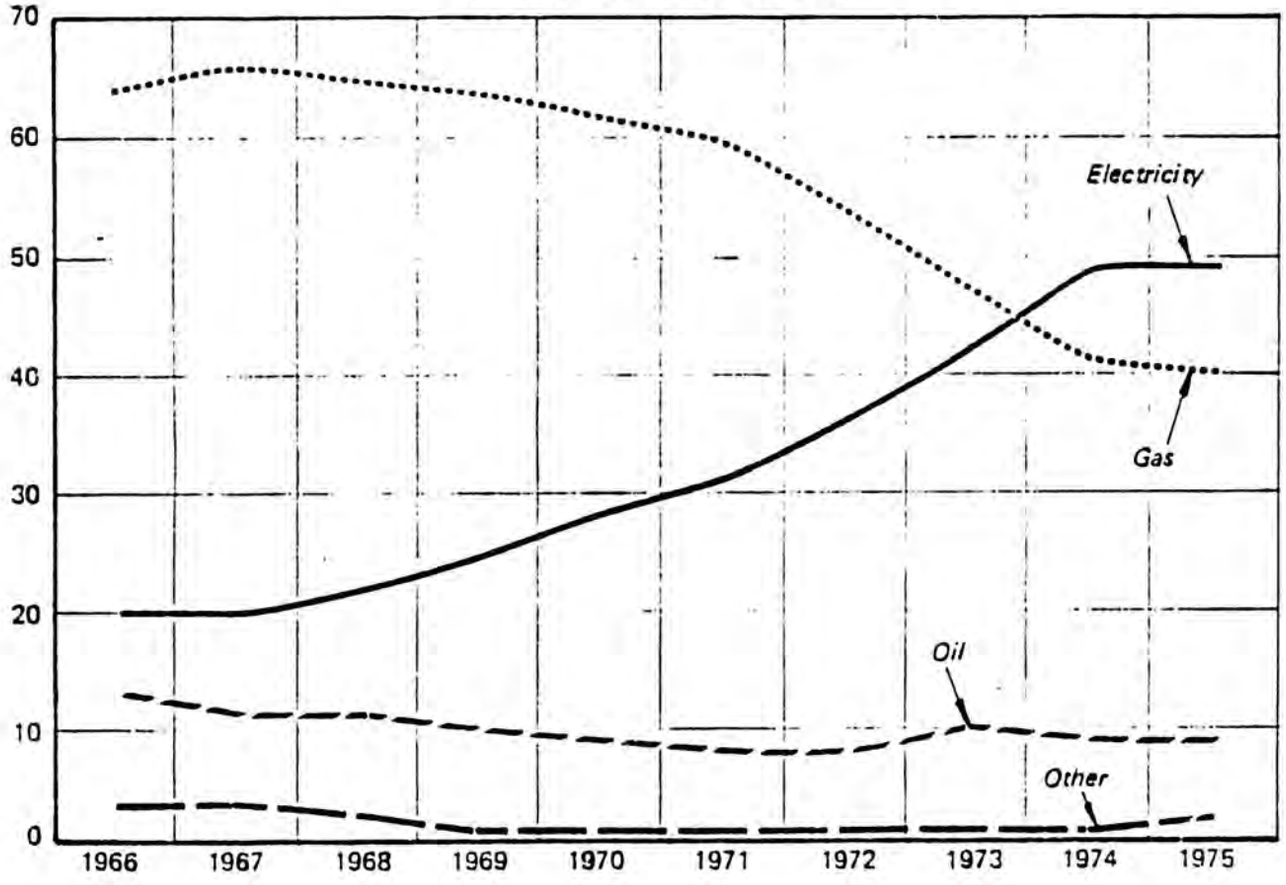
Based on these data, it may be concluded that gas competes with electricity and distillate fuel oil (DFO) in the higher priority markets and this will continue to be true at the time Prudhoe Bay gas is delivered to the Lower 48 States.

1/ In contrast, the FPC market value analysis in Opinion No. 770 (Appendix D) relies on residual fuel oil prices paid by electric utilities for boiler fuel. See Appendix to this study.

2/ The commercial sector is considered sufficiently representative of firm industrial use of energy for feedstock and process purposes.

It is of importance to note on the above table that more Btu's of electric energy are now consumed in these market sectors than DFO. (The consumption of residual fuel oil in the residential and commercial sectors is negligible.) In fact, electricity has made an astounding competitive penetration in the higher priority markets, demonstrated by the following chart:

PERCENT OF NEW HOUSE HEATING MARKET CAPTURED
BY COMPETITIVE ENERGY FORMS
IN THE UNITED STATES



Source: U.S. Bureau of Census Construction Reports.

The chart shows that electricity has made an enormous competitive penetration in house heating since 1967, capturing about half of the market in 1974 and 1975. The same is true in other competitive household uses of energy such as cooking and water heating, and the same is true in the commercial sector. Thus, the major competitor to gas in the higher priority markets is electricity, not DFO.

In the residential and commercial markets the prices of competitive energy forms are "rolled-in" to the customer. The price of all gas streams -- "new" and "old" Lower 48, Canadian, SNG, and, prospectively, Alaska and LNG, are and will be rolled-in at the city-gate by the distributor. Similarly, the prices of "old" and "new" domestic oil and foreign oil are typically rolled-in, and the electric utility rolls-in the price of electricity from all generating plants.

Thus, rolling-in is the "real world" for pricing energy in the residential and commercial sectors.

In contrast, the incremental pricing of energy is not found in the residential and commercial markets. However, the impact of incremental pricing of Prudhoe Bay gas in the Lower 48 will be analyzed in this study, but the results will be brought back into the "real world" of rolled-in pricing.

The Incremental Market Value Analysis

The determination of an incremental market value for Prudhoe Bay gas in the Lower 48 starts by establishing the price of an incremental kilowatt-hour of electricity and the price of an incremental gallon of DFO -- the two

energy forms competing with gas for high priority markets. The incremental kilowatt-hour of electricity would be generated from a new plant. The incremental gallon of DFO would be refined from foreign crude oil or would be imported from a foreign country.

Thus defined, recent prices of competitive energy forms, when measured at the "city-gate" for four large metropolitan areas in the United States, were as follows:

The Incremental City-Gate Price
of Energy Competitive with Gas in the
Residential and Commercial Markets

(¢/MMBtu)

	Electricity*	DFO**
New York City	1,013¢	323¢
Chicago	624	313
Detroit	703	316
Los Angeles	756	290
Average	774¢	311¢

* Average 1975 sales for resale by relevant electric utilities, set out in annual reports to stockholders and to SEC (Form 10K), increased by 20 percent. The incremental cost of generating electricity from a new generating plant is estimated to be 20 percent higher than average rates. Converted at 3,412 Btu per kwh.

** The computed reseller price of DFO refined from imported foreign crude oil, as of February 1977. Source - Platt's Oilgram Price Service, FEA publications. Converted at 138,690 Btu per gallon.

However, the raw incremental prices of electricity and DFO are not a proper basis for determining the market value of gas. There is agreement among energy experts and authorities

that gas commands a premium over fuel oil in the high priority markets. For example, the U.S. Department of the Interior established the premium for gas over oil at 53 to 70 cents per MMBtu in a December 1975 report to the U.S. Congress entitled "Alaskan Natural Gas Transportation Systems."[1/]

Hence, the comparable average value of DFO for the purpose of measuring the incremental market value of Prudhoe Bay gas at the city-gate would be 311¢ per MMBtu for the price component plus an average 61¢ per MMBtu for the premium component, or 372¢ per MMBtu. Even measured on this basis, the value of DFO does not set a competitive ceiling for Prudhoe Bay gas. This is apparent because DFO has not set a competitive ceiling for electricity in either the new or replacement market. Electricity continues to penetrate these markets although the price is about twice the price of DFO.

Thus, all evidence indicates that the strongest competitor to gas in the residential and commercial markets is electricity. The Department of the Interior study did not speak to premiums for electricity. However, because this energy form is capturing 50 percent of the new house heating market, for illustrative purposes, a premium of 61¢ will be assumed, i.e., the same as the Department of Interior found for gas over oil. On this basis, the comparable value of electricity for the purpose of measuring the incremental value of Prudhoe Bay gas at the city-gate would be 774¢ less 61¢ or about 713¢ per MMBtu.

1/ The FPC in Opinion No. 770 found the value of gas at a discount compared with oil. However, Appendix D to Opinion No. 770 points out this discount was based on a historical pricing of gas low enough to compete with coal in boiler fuel markets. This pricing policy, of course, no longer exists. See Appendix to this study.

In summary, the base case for determining the market value of Prudhoe Bay gas should emphasize the incremental competition from electricity for new residential and commercial markets. However, a more conservative base case will be used in this analysis, giving equal weight to electric and DFO prices in accordance with the 1975 consumption of energy in the residential and commercial sectors supra:

Incremental Market Value of Prudhoe Bay Gas

(¢/MMBtu)

	Base Case	Base Case Components	
	Measured by Reference to Electricity and DFO	Measured only by Reference to Electricity	Measured only by Reference to DFO
A. City-Gate Values			
1. Price Component	542¢	774¢	311¢
2. Premium Component	--	-61	+61
3. Market Value of Gas at City-Gate	542¢	713¢	372¢
B. Less Transportation Cost*	160	160	160
C. Market Value at Pipeline Inlet	382¢	553¢	212¢

* The transportation cost was found in the Initial Decision (page 350) to be $1.60, for the Arctic gas proposal.

Before proceeding with the rolled-in market value analysis, it should be noted that the prices of electricity and DFO are forecast to increase from the current period to 1982 when the Prudhoe Bay gas is projected to reach the Lower 48 market.

The Rolled-In Market Value Analysis

As previously explained, the city-gate price of gas, electricity and distillate fuel oil in the real world is an average resulting from the "rolling-in" of various supplies. Utilizing this approach for the four key metropolitan areas, the actual city-gate prices of energy competing with gas for high priority markets were as follows:

The Rolled-In City-Gate Price of Energy Competitive with Gas in the Residential and Commercial Markets

(¢/MMBtu)

	Electricity	DFO
New York City	844¢	267¢
Chicago	520	258
Detroit	586	261
Los Angeles	630	235
Average	645¢	255¢*

* The average terminal reseller posting reported by Platt's Oilgram for the four cities is about the same as the national average price reported by FEA.

As to gas, the price of the Prudhoe Bay supply will be rolled-in at the Lower 48 city-gate with the price of U.S. Southwestern supplies, as well as with the prices of LNG and SNG. A special study projecting these various supplies was made for the four key metropolitan areas. Assuming the field price of "new" Southwestern gas is limited to levels set by FPC Opinion No. 770-A, and the Prudhoe Bay gas is priced at 382¢ per MMBtu at the pipeline inlet (the base case), the rolled-in current price of gas at the Lower 48 city-gate would be 196¢ per MMBtu in 1975/1976 dollars.

It is immediately apparent that the rolled-in city-gate price and therefore the field price of gas from both Southwestern and Alaskan supplies is undervalued relative to competitive energy in the high priority markets. Therefore, the field price of gas in both the Lower 48 and in Alaska could increase to substantially higher levels and remain competitive:

Rolled-In Market Value of Competitive Energy at the City-Gate

(¢/MMBtu)

	Base Case Electricity and DFO Combined
1. Average Rolled-In Price of Electricity and DFO	450¢
2. Premium	--
3. Average Rolled-In Value of Electricity and DFO	450
4. Rolled-In Price of Gas	196*
5. Undervalue of Gas	254¢

* Including Prudhoe Bay gas at the pipeline inlet at 382¢ per MMBtu.

The fact that rolled-in supplies of gas are substantially undervalued relative to competitive energy forms is primarily due to the low field price of "old" flowing gas in the Southwest. Clearly the price of both "old" gas and "new" gas in the Lower 48 could be appreciably increased and still the Lower 48 city-gate price of gas would be underpriced relative to competitive energy. This chronic underpricing of gas in the real world will also assure that Prudhoe Bay gas is marketable, even if the initial transportation costs are substantially higher than 160¢ per MMBtu.

The rolled-in analysis demonstrates that either the illustrated incremental value of Prudhoe Bay gas at the pipeline inlet or the illustrated transportation cost could be increased substantially and the gas would remain marketable.

APPENDIX

FPC COMMODITY VALUE ANALYSIS IN OPINION NO. 770

FPC Opinion No. 770 at pages 115-119 and No. 770-A at pages 112-113 focused on the "commodity value" of gas. In essence the FPC used the same market value concept set out by Appendix A to Order 558-D, i.e., the FPC established a current market value for gas at the city-gate by reference to competitive energy forms, then subtracted transportation cost to establish a field price for Lower 48 production.

While the commodity value concept used by the FPC is a useful contribution to determine a meaningful field price for gas, there are several fundamental errors in the analysis:

(1) The FPC relied on the price of residual fuel oil (RFO) to electric utilities as an energy form "competitive" with natural gas. But, natural gas is a premium energy form which should be conserved for high priority uses supra, and not be used as a boiler fuel where alternative energy sources such as RFO and coal are available. Thus, it is not meaningful to determine the commodity value of natural gas by reference to boiler fuels.[1/]

(2) The FPC gave no consideration to the price of electricity, although this energy form is the principal competitor to gas in the high priority markets.

1/ RFO and coal each accounted for only 1.2 percent of total 1975 energy consumption by the residential and commercial sectors in the United States supra.

(3) The FPC found the value of gas to be 85 percent of the price of fuel oil. The rationale is given at Appendix D (page D-6) to Opinion No. 770:

> "Historically, gas prices have not matched Btu-parity with oil, but have been 15%-25% lower. This is apparently due to the influence of coal as a ready substitute in many fuel-intensive utility and industry applications where gas is used mainly because it has been so cheap."

Clearly the United States has departed the era of gas supplies so plentiful it must be sold cheaply in order to compete with coal and RFO in the utility and industrial boiler fuel markets. Indeed, gas is a premium fuel in the relevant high priority markets and was found by the U.S. Department of Interior study supra to command a premium, not a discount, vis-a-vis oil.

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United States Senate

COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

October 24, 1977

MEMORANDUM

TO: Members, Committee on Energy and Natural Resources

FROM: Henry M. Jackson, Chairman

RE: October 25 Hearing on the President's Recommendation to Designate the Alcan Pipeline Project for Approval

---

On October 12 the Committee received testimony from Dr. Todd Doscher of the University of Southern California that production of natural gas from the Prudhoe Bay field could have a significant adverse effect upon the amount of oil that would be ultimately recovered.

In response to Dr. Doscher's testimony, the Committee has requested the State of Alaska and the three largest Prudhoe Bay producers to testify on his findings at tomorrow's hearing. Dr. Doscher will also testify.

Prior to the hearing I requested the staff to conduct a review of the studies available to the public on the Prudhoe Bay production potential. Four studies of the field were reviewed.

The first, which was done for Arctic Gas, was by DeGolyer-McNaughton. It estimated oil and gas production potential but showed no basis for those estimates.

The second, which was done for the Interior Department, was by Gruy Associates. It was a discounted cash flow analysis predicting the amount of production that would result from various oil and gas prices.

The third, which was done for the State of Alaska, was by Van Poollen and Associates. It used a computer to simulate the field's behavior to predict detailed reservoir behavior.

The fourth, which was done for Northwest Pipeline, Inc. (Alcan), was by Core Laboratories. It was also a computer simulation of the field's behavior.

The staff was assisted in its review by two members of the staff of the General Accounting Office. The GAO staff members who assisted the project are Dr. Tom Woods, a physicist with expertise in petroleum production forecatsing, and Mr. Bob Finney, a petroleum engineer from the GAO's Houston, Texas, field office. Their findings are enclosed for your use.

Questions concerning the hearing should be directed to George Dowd (ext. 4-2564) or to Betsy Moler (ext. 4-0611) of the Committee staff.

FINDINGS

1. We cannot evaluate Operators and D & M due to a paucity of information contained in the reports.

2. While we cannot describe the Operators and the D & M field simulations, we would conclude that of those we could, Gruy, Core and VanPoollen essentially simulate the operations of different fields although all 3 claim to utilize VanPoollen data. We find these anomalies in the following areas.

   a. The water drives in all three simulations are significantly different with the VanPoollen simulation having the weakest aquifer and Gruy the strongest.

   b. Both Gruy and Core only describe the Sadlerochit field and exclude considerations of hydrocarbons located elsewhere. VanPoollen posits a link between the gas cap in the Shublik formation.

   c. Core indicates that for the same field parameters, the existance of an aquifer increases oil recoverability VanPoollen indicates the opposite, although the effect is small.

   d. The production profiles on a yearly basis with and without aquifers are significantly different for Van Poollen and Core.

   e. Similarly oil production profiles with gas sales show that the Sadlerochit field as simulated by VanPoollen does not agree with that as simulated by Core.

   f. We have found the estimates of oil-in-place and gas-in-place to be inconsistent among the studies and in the case of the operator study, internally inconsistent.

   g. We find no consistency, however, between the studies and the published API reserve figures as of 31 December 1976.

3. Despite these differences all 5 studies indicate either a maximum oil recovery of about 8.4 million barrels or 42.8 percent recovery of oil-in-place.

4. Production of gas from Sadlerochit requires gas cap production early on in the productive life. At 2.4 bcf a day, the capacity of the Alcan pipeline, this would require production of oil significantly above the current 1.2 million barrel a day capacity of the TAPS to avoid excessive gas cap production.

5. All studies agree without gas re-injection, and some type of water re-pressuring, there would be significant deterioration in the recovery of oil and gas.

6. We find that none of the studies addressed natural gas liquids which at 1.45 g/l/Mcf of gas and 2.4 bcf per day pipeline throughput results in almost 100,000 barrels a day of n.g.l.

7. We find that the production profiles in the Van Poollen and Core studies are markedly different. (Note: The attached graph shows the amount that oil production is likely to increase or decrease in a given year with 2.0 billion cubic feet of gas sales per day for Van Poollen and 2.4 bcf/d for Core.)

CONCLUSION

At this point we cannot ascertain the overall effect of gas production and sales on the ultimate recovery of oil from the Sadlerochit reservoir.

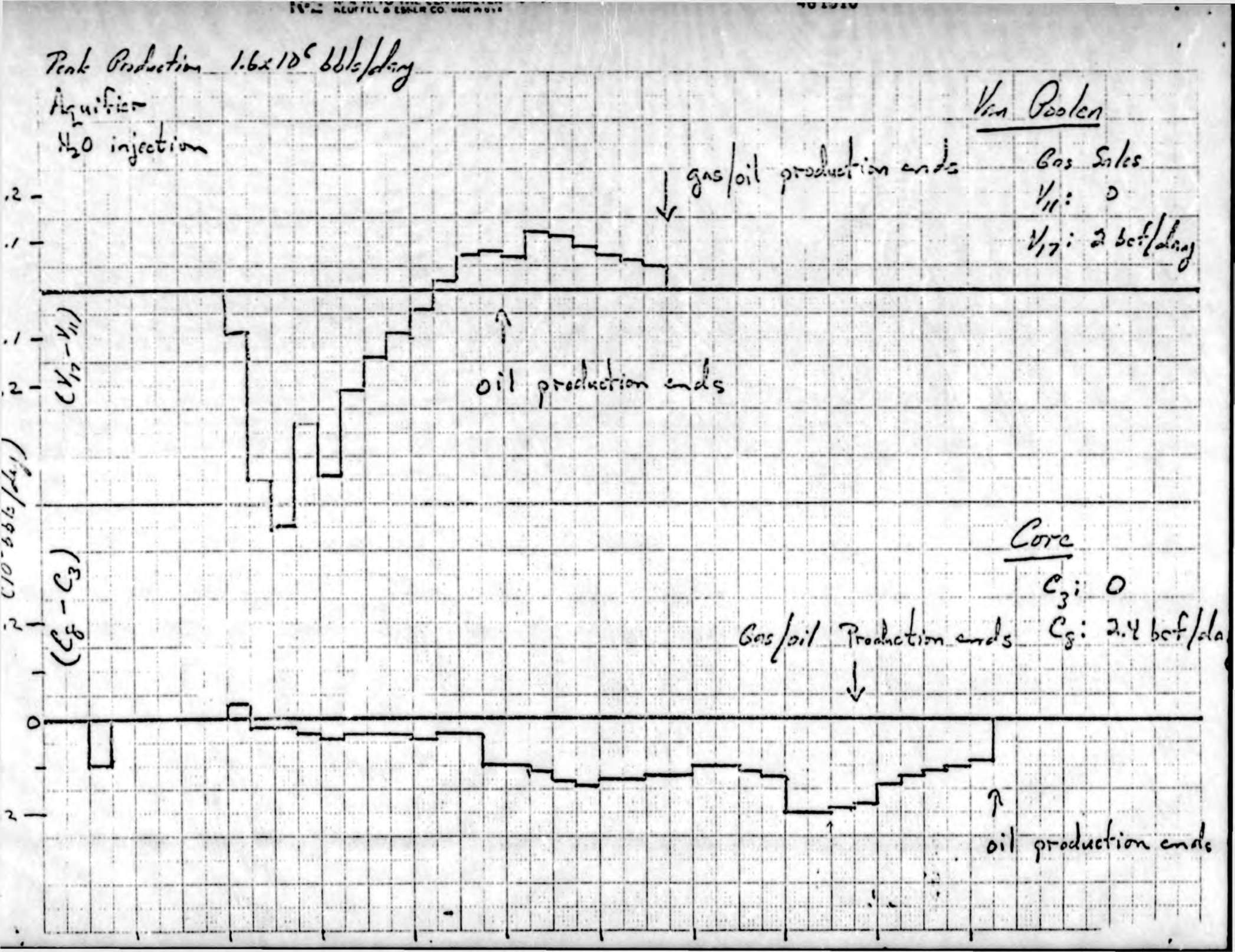
Thomas J. Black, Physicist, GAO

Robert E. Feeney, Petroleum Engineer, GAO

Peak Production 1.6 x 10^6 bbls/day

Aquifier

H_2O injection



STATE OF ALASKA
THE LEGISLATURE
LEGISLATIVE AFFAIRS AGENCY

POUCH Y · STATE CAPITOL
JUNEAU, ALASKA 99811
907-465-3800

October 19, 1977

The Honorable Henry M. Jackson, Chairman
Committee on Energy and Natural Resources
U.S. Senate
Washington, D.C.

Dear Senator Jackson:

Enclosed herewith is a copy of the report by Professors Doscher and Dougherty which you requested in your telegram of October 12th. Senator Chancy Croft, the legislator responsible for the contract under which this draft report was prepared, has authorized its release to you on the condition that it be considered an internal U.S. Senate document and that its use be restricted to senators and senate staff until 12:00 noon Alaska daylight time, October 20, 1977. This will provide Senator Croft time to distribute the report to the appropriate legislators here in Alaska. We trust this condition will not present you with any difficulties.

Please note that this is a draft, albeit a second one, and that it does not necessarily represent the views of the Alaska State Legislature or the Legislative Affairs Agency. We contemplate that the report will be prepared in final form later this month or early in November, and will make a copy available to you at that time.

Warmest regards,

Gregg K. Erickson
Director of Research

Enclosure
cc: The Honorable Chancy Croft
GKE:dh

Todd M. Doescher, Ph.D.
8948 WONDERLAND PARK AVENUE
LOS ANGELES, CALIFORNIA 90046
[213] 654-2565

delivered on 11/28/77

At the time I was requested to appear before you on October 12, I informed you that my professional attention, and that of my colleague, Dr. Elmer Dougherty, Jr., was brought to bear on the Prudhoe Bay Oil Field because we were retained by the Legislative Affairs Agency of the State of Alaska to assess the operating plans that were submitted to the State's Division of Oil and Gas.

You are apparently here concerned with one of the conclusions which we reached in that study. We believe it is necessary for you to assess this one conclusion concerning gas sales within the total framework of our study.

Our overall conclusion is that studies prepared by the operators of the field, and those prepared on behalf of the Division of Oil and Gas as well as those prepared by still other groups have not been juxtaposed, scrutinized and challenged well enough for an unequivocal decision to be reached at this time as to what is the best operating plan for Prudhoe Bay. Certainly not to the extent as I and my colleague would have done had we been given the responsibility to do so.

Of course, a definition must be given to "the best" operating plan. The best may be variously defined as the best for maximizing the immediate flow of royalties and taxes to the state, or for maximizing the profitability of the operators, or for maximizing the recovery of crude oil, or a maximum flow of benefits to the people of Alaska.

Our studies explicitly used these two yardsticks for defining best: the maximum recovery of crude oil, and the maximum flow of benefits to the state. We were retained by the State of Alaska.

It is always a goal of the reservoir engineer to maximize the recovery of crude oil. At this time the need for attaining such a goal is intensified by the fact that our nation's access to supplies of crude oil is sorely limited and the limitation increases daily. The National Petroleum Council's prediction of future supplies of crude oil in the absence of Prudhoe Bay and new discoveries is shown in their Figure 5 of their December 1976 study. America's supplies will have dwindled to less than 1.5 million barrels a day by 1990, and even with Prudhoe Bay will be only 2. million barrels a day. Compare this with the 8 million or so we produced last year and the 20 million barrels we burned each and every day. It will be a stroke of sheer luck to be able to double this rate by successful exploration and enhanced recovery. A Prudhoe Bay discovered every other year would just keep our supplies constant if we could continue to import oil.

We must also look forward to severe limitations with the coming decade of our ability to import crude oil. The oil in the subsurface

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of the mid-East is limited too by nature, and production will surely peak within the decade ahead. Our basic yardstick therefore of assessing whether the proposed operating plans for Prudhoe Bay will maximize the recovery of crude oil is well justified. We concluded that the evidence for the claim that gas sales from Prudhoe Bay would not interfere with maximizing crude oil production is weak. We believe the evidence for reaching such a decision will not be available for several years during which time reservoir surveillance will provide the required data.

It is to be noted that the Prudhoe Bay field is so large that a mere 1 percent difference in recovery efficiency amounts to a volume of oil that is produced from some very large oil fields. So large, in fact, that less than a handful have been discovered in the United States since 1960. Whereas in former times one could be sanguine about sacrificing a percentage point in recovery efficiency for greater convenience, a smaller investment, or somewhat higher profitability, the same standards can no longer be applied.

Further, by conventional technology some twelve billion barrels of crude oil will not be recovered from Prudhoe Bay. It is folly to adopt an operating plan that doesn't consider the possible effect of such a plan on the potential implication of tertiary recovery processes that may succeed in capturing some of that twelve billion barrels of oil that will remain in the largest reservoir ever to have been discovered within the United States.

So much for our first yardstick.

Now for the second: the maximum flow of benefits to the State of Alaska. We concluded that this matter had not been given the attention it merits. We do not believe the sale of gas is in the best interests of the State or the nation; that is, the sale of gas now envisioned.

It will be impossible to sell more than two billion cubic feet of gas a day without seriously hurting the crude oil recovery even using the optimistic analysis of the operators therefor. It will be impossible to envision selling more than this short of the immediate implementation of a water flood that would balance withdrawals of gas and liquids. There are no plans for doing so. A daily sale of two billion cubic feet a day through a pipe line that might well represent an investment of 25 billion dollars, which we have observed in the literature, will require a transportation tariff of some $5 per thousand. This in itself, the transporation cost, is so much greater than current pipe line delivered costs for natural gas, and so much greater than those envisioned by any proponents of deregulation that the well head price of the gas itself will be pushed back to marginal values. The State will reap but a fraction of the value of the gas.

There is also a major question as to whether the gas will be marketable, on the proposed schedule, unless the price of all other gas supplies are raised to its equivalence.

The State would gain much more from their resources by ultimately converting a significant amount of the gas to lqiuid fuels, alcohols,

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and petrochemicals. The State could envision starting gas movements in the present crude oil line within fifteen to twenty years. The Prudhoe Bay reservoir is a short lived reservoir. Within eight years, oil production will start a precipitous decline, when our needs for additional liquid fuels will be verging on the desperate, and within fifteen years its potential will be less than 500,000 barrels a day.

The State could envision a long future of profitable and valuable utilization of its gas resources for over a century, particularly if such use is combined with utilization of its coal resources, should it not consent at this time to gas sales. The nation would be little the worse for not having the Prudhoe Bay gas available for immediate burning. It will amount to less than 5% of current consumption. An equivalent amount of gas could probably be made available from other sources, far cheaper and within the same time framework, if exploration and production of marginal sources were promoted by trivial increases in regulated prices. This would be true for a decade or two, but for longer periods of time you must address more fundamental issues.

I will close by bringing to your attention that it was more than Americans' know-how, more than their vim and vigor, more than their pursuit of free enterprise and freedoms that made America what it is. It was cheap and abundant sources of energy. Without the latter, America would not be America. We no longer have cheap and abundant sources of energy. We no longer have yesterday's potential. I implore you to take this into account when you deliberate on matters concerning the future of our nation.

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Department of
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TESTIMONY OF O. K. GILBRETH, JR.
DIRECTOR, DIVISION OF OIL AND GAS CONSERVATION
DEPARTMENT OF NATURAL RESOURCES, STATE OF ALASKA

BEFORE THE
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C.
OCTOBER 25, 1977

Mr. Chairman, other distinguished Senators, Ladies and Gentlemen. My name is O.K. Gilbreth, Jr. and I am Director of the State of Alaska's Division of Oil and Gas Conservation in the Department of Natural Resources and Chairman of its Oil and Gas Conservation Committee. With me today is Mr. Hoyle Hamilton, our Chief Petroleum Engineer, who is also a member of the Oil and Gas Conservation Committee, Dr. H. K. van Poollen, President of H. K. van Poollen and Associates, who is a consultant for the State, and Robert H. Loeffler, who has been counsel to the State in the gas pipeline proceedings.

My primary responsibility as Director of the State Division of Oil and Gas Conservation is to regulate oil and gas industry operations to prevent the physical waste of oil and gas in the State and to protect the correlative rights of all interests in an oil and gas field. Our goal is to regulate production in a manner which will insure that maximum recovery of hydrocarbons is achieved and physical waste is avoided. At the outset I wish to emphasize that we do not set the rate of production of either oil or natural gas so long as it does not create waste.

EARLIER THIS YEAR THE OPERATORS REQUESTED APPROVAL OF THE OIL AND GAS CONSERVATION COMMITTEE OF THEIR PLAN TO OPERATE THE PRUDHOE BAY FIELD. ON MAY 5, 1977, WE HELD A PUBLIC HEARING ON THIS PLAN, INCLUDING A REVIEW OF THE PROPER INITIAL RATES OF PRODUCTION. AS A RESULT OF THAT HEARING, CONSERVATION ORDER NO. 145 WAS ISSUED BY THE OIL AND GAS CONSERVATION COMMITTEE. THE ORDER CONTAINS MANY REQUIREMENTS TO SECURE DATA DURING START-UP AND THE INITIAL PRODUCTION PERIODS TO AID IN DETERMINING PROPER METHODS OF OPERATION OF THIS RESERVOIR. COPIES OF THE ORDER ARE ATTACHED TO MY PREPARED STATEMENT.

1. THE PLAN OF OPERATIONS: THE PROPOSED PLAN OF OPERATIONS PROVIDES INITIAL PRODUCTION RATES OF 0.6 MILLION BARRELS PER DAY FOR SIX MONTHS, 1.2 MILLION BARRELS PER DAY FOR APPROXIMATELY TWELVE MONTHS AND THEN A RATE OF APPROXIMATELY 1.5 TO 1.6 MILLION BARRELS A DAY UNTIL PRODUCTION DECLINE IS REACHED. THE PLAN PROVIDES FOR GAS PIPELINE DELIVERIES OF 2.0 BCF/D AS SOON AS GAS PIPELINE FACILITIES ARE AVAILABLE AND A CONDITIONING PLANT CAN BE APPROVED AND CONSTRUCTED. THE PLAN ALSO CONTEMPLATES SELECTIVE INJECTION OF PRODUCED WATER INTO THE PRUDHOE OIL POOL WHEN THOSE VOLUMES BECOME SIGNIFICANT. ALTHOUGH A FINAL COMMITTMENT IS NOT MADE, THE PLAN ANTICIPATES THAT WATER INJECTION FROM SOURCES OUTSIDE THE POOL WILL BE INITIATED WITHIN FIVE TO NINE YEARS AFTER THE START OF OIL PRODUCTION.

ORDER NO. 145 TENTATIVELY APPROVES OFFTAKE RATES OF 1.5 MILLION B/D OF OIL AND 2/7 BCF/D OF GAS (WHICH WILL YIELD 2.0 BCF/D FOR SALES) SUBJECT TO REVISION AS PRODUCTION AND RESERVOIR DATA ARE OBTAINED AND ANALYZED.

2. POSSIBLE RATES OF WITHDRAWAL: OUR REPORTS STUDIED GAS WITHDRAWAL RATES OF TWO (2) TO FIVE (5) BILLION CUBIC FEET PER DAY (I.E., GAS SALES OF 1.5 TO 3.75 BCF/DAY), CORRELATED WITH OIL PRODUCTION BETWEEN 1.2 TO 1.8 MILLION BARRELS PER DAY. WE ALSO STUDIED OIL RECOVERY WITH NO GAS SALES.

OUR STUDY SHOWS US THAT THE PRUDHOE BAY RESERVOIR WILL BE RATE SENSITVE. BY THIS WE MEAN THAT THE ULTIMATE OIL RECOVERY FROM THE RESERVOIR WOULD BE AFFECTED BY THE NET WITHDRAWALS FROM THE RESERVOIR AND IN SOME CASES EVEN BY THE RATE OF WITHDRAWAL. IF OIL, GAS AND WATER ARE REMOVED WITHOUT THEIR RESERVOIR VOLUME BEING AT LEAST PARTIALLY REPLACED, A REDUCTION IN OIL RECOVERY WILL RESULT. IF THE RESERVOIR VOIDAGE CAUSED BY PRODUCTION IS REPLACED, THEN RECOVERIES WILL BE INCREASED AND CAN BE MAXIMIZED BY THE VOLUME INJECTED. ACCORDINGLY, WE BELIEVE THAT FLUIDS MUST BE INJECTED INTO THE RESERVOIR TO SUPPLEMENT THE NATURAL RECOVERY MECHANISM AND THAT RESERVOIR PERFORMANCE MUST BE MONITORED CLOSELY AND WITHDRAWALS CONTROLLED TO ACHIEVE THE MAXIMUM OIL RECOVERY. THE LEVEL OF GAS SALES WILL BE DETERMINED BY THE VOLUME OF FLUIDS INJECTED.

IF FLUIDS ARE NOT RETURNED TO THE RESERVOIR, OUR STUDY INDICATES THAT THE GREATER THE GAS SALES RATES, THE GREATER IS THE LOSS IN ULTIMATE OIL RECOVERY. IF GAS SALES

ARE KEPT AT A CONSTANT RATE OF TWO BILLION CUBIC FEET PER DAY, THERE WILL BE AN INCREASE IN OIL RECOVERY WITH WATER INJECTION. AS A PRACTICAL MATTER, IT MAY NOT BE POSSIBLE TO INJECT ENOUGH FLUIDS TO PERMIT SUSTAINED SALES RATES VERY MUCH IN EXCESS OF TWO BILLION CUBIC FEET PER DAY. EARLY START OF WATER INJECTION WILL GIVE A SLIGHTLY HIGHER OIL RECOVERY THAN A DELAY OF SEVERAL YEARS, BUT THE ADVANTAGE IS SLIGHT.

3. Successful Injection Programs: ONCE THE PRUDHOE BAY RESERVOIR IS PRODUCING AT A NORMAL RATE, IT WILL BE NECESSARY TO HAVE AT LEAST TWO AND MAYBE MORE YEARS OF PRODUCTION TO ACHIEVE A DEGREE OF RELIABILITY IN FORECASTING THE BEST FUTURE METHOD OF OPERATION FOR THIS RESERVOIR.

MANY METHODS OF RECOVERY THEORETICALLY SHOW SOME PROMISE TO AID IN THE PRODUCTION OF SUBSTANTIAL AMOUNTS OF ADDITIONAL OIL. MANY OF THESE EXOTIC METHODS HOWEVER HAVE NOT YET BEEN PROVEN IN THE FIELD AND CURRENT ECONOMICS WILL NOT PERMIT THEIR USE. CERTAINLY WITH THE TREMENDOUS VOLUMES AVAILABLE AT PRUDHOE, NEITHER THE STATE NOR THE OPERATORS HAVE TO BE TOLD TO CONSIDER THESE POSSIBLITIES.

WE HAVE REQUIRED THAT OPERATORS SECURE VOLUMINOUS DATA WHICH WILL HELP DEFINE THE RESERVOIR PARAMETERS. AS IS OUR RIGHT AND OUR RESPONSIBILITY, WE WILL EXERCISE CONTINUING JURISDICTION OVER THE OPERATION OF THE FIELD AND WILL REQUIRE THAT THE METHOD ULTIMATELY CHOSEN BY THE OPERATORS BE ONE THAT WILL ACHIEVE THE GREATEST RECOVERIES FROM THE RESERVOIR

CONSISTENT WITH SOUND ENGINEERING AND OPERATING PRACTICES.

4. Most Appropriate Producing Plan: Water injection as contemplated by the operators of the Prudhoe Bay Field has proved to be one of the most reliable techniques for maximizing oil recovery in fields all over the world. This does not mean that other techniques should be ruled out even though they may be currently uneconomic or not technically feasible at this time. One such technique, the injection of CO_2, is being considered.

Our opinion is that proceeding with the approved plan will not result in any irreversible damage to oil recovery. During the first five years of operation, or until the approximate time that a gas line could become operational, we estimate that the decrease in reservoir pressure would amount to approximately ten percent of the original pressure. By that time we will know if and to what degree the decline must be arrested, or if it should be reversed. If, in the future, a better method of operation is indicated, we believe that the maximum recoveries still can be achieved. My prepared statement cites an actual example in Alaska where we have followed this course and achieved excellent recovery. In short, we do not believe that a pressure decline of the magnitude we have described would have any long term detrimental effects on ultimate oil recovery, and we certainly do not agree with Mr. Doscher that there would be losses in the magnitude of billions of barrels.

5. Likely Rate of Gas Production: If the plan of operations as proposed by the operators is followed, with significant water injection, our work indicates that a gas sales rate of two Bcf/D starting in approximately five years could be sustained over the remaining life of the field.

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Let me turn to Mr. Doscher's report. It is important to distinguish between the basic engineering conclusions reached by Mr. Doscher in his report and the broader, more philosophical and policy pronouncements contained in his report. Basically, as a petroleum engineer, I find little dispute with Mr. Doscher when he describes what is still unknown and must be learned as operations continue. Our plan is to learn more and act accordingly. It is on policy matters where I cannot agree with Mr. Doscher's approaches, and my prepared statement gives a clear example of our differences.

I disagree sharply with Mr. Doscher's statement that there will be a loss of two to four billion barrels of oil if the pipeline is approved. Mr. Doscher has not substantiated this figure with any studies and has not furnished technical data on which this opinion is based. To the contrary, our own studies have been substantial and we can reach no such conclusion based on any information available to us, assuming that a water injection program of the kind planned by the operators is timely implemented to supplement reservoir pressure.

AS WE SEE IT, THE BASIC QUESTION IS WHETHER A PIPELINE DECISION SHOULD BE DEFERRED UNTIL MORE IS LEARNED ABOUT THE PERFORMANCE OF THE PRUDHOE BAY RESERVOIR. THE STATE OF ALASKA, BASED ON WHAT WE KNOW TODAY -- I.E., OUR OWN STUDIES, MR. DOSCHER'S TWO DRAFT REPORTS, THE MATERIAL PRESENTED TO US IN OUR REGULATORY CAPACITY, AND OUR OWN PROFESSIONAL JUDGMENT -- BELIEVES THERE IS NO SOUND TECHNICAL REASON TO DELAY, PROVIDED THAT THE OPERATORS ADOPT AND IMPLEMENT A SOURCE WATER INJECTION PROGRAM BY THE TIME GAS SALES START. IF THE OPERATORS DO NOT IMPLEMENT A SOURCE WATER INJECTION PROGRAM, THEN GAS SALES WILL HAVE TO BE LIMITED OR POSTPONED IN ORDER TO AVOID JEOPARDIZING ULTIMATE OIL RECOVERY.

WE AGREE THAT MORE INFORMATION ABOUT THE PERFORMANCE OF THE RESERVOIR IS DESIRABLE. BUT THE STATE'S PLAN ALLOWS FOR THE GATHERING OF THAT INFORMATION WITHOUT JEOPARDIZING THE EARLY CONSTRUCTION OF THE PIPELINE. IT DOES SO WITHOUT SUBSTANTIAL RISK TO THE ULTIMATE RECOVERY OF OIL FROM THE RESERVOIR, AND WITHOUT UNNECESSARY DELAY IN THE BRINGING OF A MAJOR NEW GAS SUPPLY TO LOWER FORTY-EIGHT USERS.

STATEMENT OF

E. G. HOULSTON
BP ALASKA, INC.

BEFORE THE

SENATE COMMITTEE ON

ENERGY AND NATURAL RESOURCES

OCTOBER 25, 1977

TESTIMONY OP E. G. HOULSTON
BP ALASKA/SOHIO

My name is George Houlston. I am the Manager of Reservoir Engineering for BP Alaska. BP Alaska operates in the Prudhoe Bay Field on behalf of The Standard Oil Company of Ohio.

I am here today in response to your request to take testimony concerning recommendations made before this Committee on October 12, by Dr. Todd Doscher. My statement today has been prepared to clarify BP/Sohio's position in regard to the points raised before this Committee.

Many studies on the Prudhoe Bay Field have been performed. Indeed, the claim has been made that this Field has been studied more than any other prior to production. In my opinion the most comprehensive review of the work performed on Prudhoe Bay Field was presented by the Working Interests and the Consultants to the State of Alaska, at the Conservation Hearing held in Anchorage on May 5 and 6. Those proceedings are a matter of public record.

The Prudhoe Bay Field is estimated to contain some 22.9 billion barrels of stock tank oil in place. By far the most significant portion of this in place oil, some 22.2 billion stock tank barrels, is to be found in the Sadlerochit formation. The other .7 billion stock tank barrels are located in the Sag River and Shublik formations which overlie the Sadlerochit. Major geologic

faults appear to partition the reservoir between the Main Area of the Field and the West End or Eileen Area. The Field is thus subdivided by geologic formation and by area.

The Main Area Sadlerochit contains 21.4 billion stock tank barrels, and it is this accumulation which has been the subject of intensive study by the Working Interests in the Field and by other interested parties. It has been estimated that oil reserves of about 8.6 billion stock tank barrels will be recovered from the Main Area Sadlerochit. The estimated oil reserves for the entire field amounts to some 9.4 billion stock tank barrels. These include .5 billion stock tank barrels of condensate recovered from gas cap gas and .3 billion barrels from the Sag River and Shublik formations and the West End Sadlerochit.

Gas cap gas in place in the field amounts to 26.5 trillion cu.ft. at standard surface conditions. A further 17.1 trillion cu.ft. of gas is in place as solution gas. Some 26.5 trillion cu.ft. of hydrocarbon gas are considered to be recoverable and 300-400 million barrels of gas liquids. The heating equivalent of these reserves amounts to about 5 billion barrels of crude oil.

BP Alaska, acting on behalf of Sohio Petroleum, has viewed production from the field as a matter of maximizing total hydrocarbon recoveries. The studies we have conducted have been aimed towards formulating sound reservoir management policies consistent

with that objective. Our studies have concentrated primarily on the Main Area Sadlerochit reservoir. The oil recoveries estimated in reservoir simulation calculations do not include the 800 million barrels of oil and condensate recoverable from other sources in the Field.

The studies we have conducted have included not only reservoir fluid flow considerations but also other factors which influence reservoir performance such as well density, surface facility operating conditions and capacities, gas lifting or pumping of oil wells, and the injection of gas and water. Ultimate hydrocarbon recovery is the outcome of collectively exercising these development options to varying degrees and at appropriate times throughout the life of the Field.

Based on current reservoir information and proven methods of recovery our studies have led us to a plan of operations which incorporates the following major elements:

(i) Production of oil at an average rate of 1.2 MMB/D increasing to 1.5 MMB/D when pipeline capacity is available.

(ii) The re-injection of gas produced in excess of that needed for fuel and sales.

(iii) The delivery of 2 BCF/D of sales gas as soon as a gas pipeline and a plant to condition the gas to specification

can be completed. (Currently estimated to be some time during 1983).

(iv) The drilling of wells on 160-acre spacing or closer if necessitated by reservoir performance.

(v) The re-injection of produced water into the reservoir and the probable supplementing of such water with source water within seven years from the start of oil production (i.e., 1984 or earlier).

(vi) The installation of lower pressure gathering and separation systems and artificial lift facilities.

(vii) A very intensive program of reservoir surveillance and testing to compare forecasted against actual performance on a continuous basis.

By implementing this plan of operations it is anticipated that peak production rates from the Field could be sustained for seven or eight years and deliveries of gas could be held at 2 BCF/D for about 25 years. In all the cases we have studied, oil production declines when gas handling facilities can no longer cope with the gas produced with the oil. It should be possible to manage and operate the reservoir within the framework of this plan to achieve a recovery of about 40% of the original oil in place after 25 years and about 72% of the gas originally in place over 40 years.

After 25 years of oil production our simulation models indicate residual oil saturations in the original oil column which are mainly in the range of 25-45%. Earlier testimony given to this Committee to the effect that residual oil saturations in our simulatio runs were extremely low, approaching zero, can be categorically dismissed as without foundation and in complete contradiction to sworn testimony presented by BP Alaska to the Division of Oil and Gas Conservation, State of Alaska.

Scope may well exist for improving recoveries by applying methods of enhanced recovery, when such methods have been proven in the field. The plan of operations should not diminish the viability of any such prospective schemes. The Working Interests will remain continuously alert to all promising schemes for additional recovery.

In developing the present plan of operations, we investigated many variations in oil offtake, gas sales and water injection. In contrast to some opinions expressed, our studies have shown that the timing of gas sales at a rate of 2 BCF/D affects ultimate oil recovery only slightly. We estimate a possible loss of oil recovery on the order of 1% of the oil in place or just over 200 million barrels over 25 years of oil production. Over the same period, more than twelve times the heating equivalent of the 'lost' oil could be recovered through gas sales. We conclude that the rather

sweeping quality judgment that the sale of gas is detrimental to ultimate oil recovery, is thoroughly misleading when considered out of the context of the level and timing of gas sales, the associated oil offtakes and all the other developments which are planned to promote recovery from the Field.

We have tested our plan of operations against oil offtakes of 1.2 to 1.8 MMB/D and gas sales of 2 BCF/D starting as soon as a gas line and conditioning plant can be completed. Again, from our studies we expect only slight variations in ultimate oil recoveries after 25 years of production.

At oil offtake rates of 1.5 MMB/D, we have studied the effects of gas sales at 2.5 BCF/D commencing as soon as a gas pipeline is available. This resulted in a lower oil recovery of about one and one-quarter per cent after 25 years. Using an earlier reservoir description we also investigated extreme cases of no gas sales and sales of 3.5 BCF/D. In the case of no gas sales, water was still injected though at a lower rate, and recovery obtained was about one and one-half per cent higher than with sales at 2 BCF/D. At gas sales of 3.5 BCF/D recovery fell by about 5% but this run was performed with the same water injection rate as the 2 BCF/D gas sales rate. A more successful outcome would have been possible but was not pursued. We have concluded that gas

sales at 2 BCF/D should not cause concern in regard to ultimate oil recovery. At this stage, any proposal to sell gas at 2.5 BCF/D by 1983 we would approach with caution, and we would actually oppose any scheme to sell gas at 3 BCF/D as early as 1983.

It is recognized that the forecasting of reservoir performance with little or no production history in a field as large as Prudhoe Bay is subject to uncertainty. We have had to rely heavily on our reservoir simulation studies to predict detailed reservoir behavior. However, the experience that has been gained from operating other fields similar to Prudhoe Bay has been specially valuable in assessing the validity of our model predictions. We are confident that our near term assessment of Prudhoe Bay performance is a reasonable one.

Looking to the longer term, in many of the reservoir simulation model runs we have made, the differences in oil recovery arising between hypothetical reservoir management options do not become fully apparent until after about 15-20 years of oil production have taken place. There is every reason to expect, therefore, that there will be time and scope to adapt our plan of operations to ensure that hydrocarbon recoveries are maximized. The intensive reservoir surveillance and testing program which we will be undertaking will provide the control information necessary for those purposes.

The Working Interests in the Prudhoe Bay Field have acquired unusually detailed reservoir information prior to production. This has been very fully utilized and very considerable efforts have been devoted to studying the Field and developing the plan of operations. Although the results of the studies performed by the Working Interests are not the same in numerical detail, all the Working Interests have drawn similar conclusions in regard to how the Field should be produced.

Mr. Chairman, I submit that this consensus view is a sound technical basis to support the sale of Prudhoe Bay gas as soon as a pipeline and conditioning plant can be constructed.

BP ALASKA, INC.
SAN FRANCISCO, CALIFORNIA
October 25, 1977

STATEMENT OF ATLANTIC RICHFIELD COMPANY

BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES, UNITED STATES SENATE

OCTOBER 25, 1977

My name is Howard Koch. I am a graduate of Northwestern University with a PhD. in chemical engineering. Since 1949 I have been employed by Atlantic Richfield Company and am currently Manager of Engineering of Atlantic Richfield Company's North American Producing Division. For the past eight years I have been heavily involved in Atlantic Richfield's efforts to explore and develop the Prudhoe Bay Field in Alaska and I have been responsible for and directed many studies of the reservoir and its performance.

As you know, Atlantic Richfield operates the eastern one-half of the Prudhoe Bay Field and BP Alaska, Inc., operates the western portion. As owner of approximately 1/5 of the crude oil and approximately 1/3 of the natural gas in the field, Atlantic Richfield is deeply concerned with maximizing ultimate recovery of all hydrocarbons producible from the field. We believe that all of the produced substances are extremely valuable and should be made available to U. S. consumers at the earliest practicable date consistent with good reservoir management. We further believe that our development plan which has been approved by the State of Alaska satisfies all of these prerequisites.

The Prudhoe Bay Field, discovered in 1968, is by far the largest oil and gas field producing in the United States.

Its recoverable hydrocarbon reserves have an energy equivalent of over 80 quadrillion BTU's. Because of the significance of this vast energy resource, the major working interest owners, the Alaska Division of Oil and Gas Conservation and others, have independently evaluated plans for production of this field.

Many reports have been written concerning the optimum development of the Prudhoe Bay Field. In October 1976, the working interest owners prepared and submitted a report entitled "Technical Considerations--Prudhoe Bay Unit Operating Plan, North Slope Alaska" to Mr. O. K. Gilbreth, Director, Division of Energy and Minerals Management--State of Alaska. 1/ This report contained a summary of the work conducted by Atlantic Richfield as well as BP Alaska, Inc.; Exxon, U.S.A.; and The Standard Oil Company (Ohio). The major conclusions in this report concerning plans for production of the Prudhoe Bay Field are consistent with the conclusions contained in H. K. Van Poollen studies conducted for the State of Alaska. Specifically, these reports concluded that the optimum producing plan for the Prudhoe Bay Field includes the early sale of natural gas.

We wish to outline for you today the major objectives we strived to achieve in developing our plans for producing the

1/ See Exhibit A - "Technical Considerations, Prudhoe Bay Unit Operating Plan - North Slope Alaska".

Prudhoe Bay Field and to comment upon Dr. Doscher's remarks before this committee. One of our key objectives is the development of both the oil and gas reserves as efficiently as possible.

The proved hydrocarbon reserves at Prudhoe Bay represent approximately 30% of the Nation's liquid reserves and 12% of the Nation's natural gas reserves. For this reason, another prime objective in the development of our operating plan for the field included conservation of the total energy resource. Therefore, as required by State Law and as directed by our own management, we plan to produce the reservoir in a manner consistent with sound engineering practices designed to achieve maximum economic recovery of oil and gas and to prevent waste.

State Law requires that the proposed plan of production protects correlative rights; i.e., that each working interest owner is afforded an opportunity to produce, without waste, its just and equitable share of the oil and gas. The working interest owners and the State have agreed that the production plan, including the early sale of gas from the field, will provide for this protection.

Finally, our plans for producing the field should be as flexible as possible so that we can react promptly to anomalies in reservoir behavior to assure efficient recovery of oil and gas from the field.

To achieve these aforementioned basic objectives, i.e., timely development, conservation of resources, protection of correlative rights and flexibility to adapt to observed performance, we have combined our reservoir studies with engineering judgement gained through worldwide experience, to formulate our present reservoir management plan.

We developed the production plan by studying the effects of alternative development plans, through the use of mathematical reservoir models. Through the use of these sophisticated reservoir engineering tools, it is possible to study various aspects of field performance including such things as oil and gas production rates, gas and water injection rates, infill drilling, tubular equipment selection, artificial lift alternatives, gathering system pressures and reservoir description. The evaluation of reservoir description and its effect on our operating plan decisions is perhaps the most powerful advantage to using these mathematical models.

A question has been raised concerning the reliability of a reservoir model in the absence of production history. Although it is true that the availability of production history can provide a useful check of a study and a basis for modification, Atlantic Richfield has a high degree of confidence in its reservoir model predictions, especially when these models

are used to compare different methods of reservoir management. Two reasons exist for this high degree of confidence. First, because of the long period of time between discovery and commencement of deliveries to TAPS, the operators have drilled wells over a rather large area of the reservoir. As a result of this, we have secured unusually detailed reservoir descriptive information and have compiled specialized studies including geologic history, rock data, fluid sample data and log data. These data were used to determine in-place volumes of oil and gas as well as for the determination of reservoir performance. Rarely is such quality and quantity of reservoir data available prior to any sustained production from a field. A portion of these data pertaining to individual well performance, has been verified through the use of individual well models in matching actual drawdown and buildup tests performed in the field. Although a limited amount of data under sustained production is now available, actual well performance matches our predictions.

Second, confidence in our reservoir model predictions has been gained through sensitivity testing. In sensitivity testing our objective was to identify those reservoir parameters having the greatest effect on ultimate recovery and define those parameters to the fullest extent possible. Our application of this approach and the subsequent followup work, both field

and laboratory, has given us an extra degree of confidence in our forecast of Prudhoe Bay performance. Although some adjustments may be made in the model as production history is accumulated, our current forecasts are adequate to demonstrate the viability of our current operating plan.

I would like to briefly outline the major elements as well as explain the expected general performance of the field under our operating plan. This plan anticipates crude oil deliveries to TAPS of 1.5 million BOPD when pipeline capacity is available.

Injection facilities were installed for the reinjection of all produced gas in excess of that needed for field and pipeline fuel to conserve gas for future sales and to comply with the State of Alaska's nonflaring order. Current gas injection capacity of 1.2 billion cubic feet per day (BCFD) will be expanded to handle up to 2.0 BCFD by mid-1979.

Gas pipeline deliveries of 2.0 BCFD can be commenced as soon as a gas transmission system can be completed. Testimony before the Congress concludes that the most likely date that gas can be delivered into a pipeline system will be 1983. Our reservoir model studies have shown us that the field can be managed so that gas deliveries at that time will be non-injurious to the reservoir.

Current water production volumes are very small and are being injected into the shallower Tertiary/Cretaceous sands. When this produced volume becomes significant it will be reinjected into the portions of the Sadlerochit reservoir exhibiting low natural depletion recovery. It is anticipated that this operation will commence in 1981. Through optimum redistribution of the produced water, the benefits of the natural water influx will be maximized. We plan to supplement this produced water injection with additional volumes of water from an outside source when our current estimates of recovery benefits can be verified along with the substantiation of its economic viability.

Some of the reservoir performance characteristics which were repeatedly revealed in our model studies are:

1. A small volume of natural water influx. This anticipated volume will be substantially less than that required to fully maintain reservoir pressure. Poor aquifer response is expected because we have noticed a degradation of rock properties in the aquifer.
2. Although all the natural recovery mechanisms (gravity drainage, gas cap expansion, solution gas drive and natural water influx) will be operating, the gravity drainage mechanism will be dominant and lead to

efficient fieldwide recoveries.

3. The expansion of the gas cap is dramatic in the first several years of production. It not only moves in a vertical direction at the rate of about 25 feet per year, but it also moves horizontally along the top of the formation and underneath continuous shale barriers. This horizontal movement can occur over several miles and is a result of the rather low formation dip (1 to 2 degrees). This gas cap expansion in the early years will expose a large percentage of the wells to a free gas saturation.
4. The expansion of the gas cap will result in a large volume of gas cap gas being produced through the oil wells. This means that a rather large volume of gas will be reinjected in the absence of a gas pipeline.
5. The advance of the gas-oil contact, to a large degree, controls the onset of oil production decline. Since the expansion of the gas cap is largely a function of oil zone withdrawals, we have seen in

our models that the timing of anticipated gas sales has little or no impact on the point of oil decline.

6. We do not anticipate any oil migration into the original gas cap as a result of gas cap shrinkage because of the substantial voidage accumulated by the oil rim prior to gas sales, and because of the smaller cap voidage rate in the early years of gas sales.

I would now like to specifically discuss some of our reservoir model results and how they have led to our plan of operation for the Prudhoe Bay Field. Although a considerable effort has been expended over the last eight years by my company in determining various aspects of producing the field, I would like to emphasize only two areas of interest: gas sales and source water injection.

There are two major considerations when evaluating the timing of gas sales. Those are:

Is there a market for the gas now? (The Prudhoe Bay natural gas and gas liquids reserves (to be discussed in detail hereafter) amount to 26 trillion cubic feet and 400 million barrels respectively, the energy equivalent of approximately 4.7 billion barrels of crude oil, or over 1/2 of the crude oil reserves.)

In the opinion of experts appearing before the Congress there is no doubt that there is a market for this gas now, and delivery should commence as soon as a gas pipeline system is completed.

The next consideration is: What effect does the timing of gas sales have on ultimate recovery of hydrocarbons? (If you will remember, conservation was one of our major objectives in determining the optimum plan of operation for the field.)

In evaluating the effects of gas sales timing on crude oil reserves, reservoir model studies were made with different timing assumptions for the commencement of gas sales. From the studies, we found that the ultimate crude oil recovery could increase in the order of 1% of the original oil-in-place if gas sales were deferred from 1982 to 1992 and if no additional measures were taken to offset the loss. This finding represents the maximum impact that gas sales timing could have on ultimate crude oil recovery. To focus on this potential 1% loss only would be a mistake, for it would disregard other hydrocarbons in the reservoir that are as valuable as oil.

To fully evaluate the effects of early gas sales, we must also consider natural gas liquid recovery. These natural gas liquids will be removed in the conditioning of the field gas to meet gas pipeline specifications. We estimate that approximately 400 million barrels of these natural gas liquids can be removed. The volume of these liquids that can be delivered to the consumer through TAPS, however, is dependent upon a number of variables including oil throughput rate. If gas is sold early in the life of the field while the oil pipeline is at capacity, more of these liquids can be transported with the oil. If, on the other hand, gas sales are delayed until a point of low oil throughput rate, some of these liquids will be reinjected into the reservoir and probably not recovered.

Permit me to summarize the conservation aspects of gas sales timing. Potential adverse effects on crude oil recovery amount to approximately 1% of the original oil-in-place if gas sales timing is varied from 1982 to 1992. By way of comparison, this is less than 1/20 of the loss estimated by Dr. Doscher. We believe that such a potential loss in recovery would be offset in actual field operations by varying the number and

location of producing wells, the areal distribution of oil offtake rates and the locations and volumes of water injection, and further be offset by the shipment of natural gas liquids with crude oil in TAPS during the early stage of field production. We estimate that the loss in natural gas liquids would amount to approximately 125 million barrels for a delay in sales from 1982 to 1992, a loss not considered by Dr. Doscher in his review. With a three year deferral of gas sales as proposed by Dr. Doscher the loss in natural gas liquids could be about 45 million barrels.

Potential reduction in oil recovery from any reservoir due to the early sale of gas has been a subject of considerable discussions in the field of petroleum reservoir engineering. There is one general conclusion that can be drawn concerning this early gas sale: i.e., the withdrawal of associated gas can cause a reduction in oil recovery if nothing is done to replace the energy. Beyond that, however, no other conclusions should be drawn. This potential reduction can only be estimated through a thorough analysis of the drive mechanisms that are present in a particular reservoir. One excellent method in accomplishing this is through the use of mathematical reservoir models.

In our analysis, the effect of gas sales at Prudhoe Bay was small for the following reasons:

1. The dominant recovery mechanism is gravity drainage. Gas in such a drive mechanism does not act as an expulsive force to drive the oil out of the pore spaces. Instead, the gas merely expands to fill the empty pore spaces as the oil drains out.
2. Prudhoe Bay crude is both a low shrinkage and relatively low viscosity oil.
3. Even with the earliest anticipated gas sales date (1983) approximately 30% of the ultimate oil reserves will have been recovered.
4. The normal dangers of gas cap shrinkage will not be a problem at Prudhoe Bay, due to the expansion of the gas cap in the early years of production combined with a rather modest cap voidage rate immediately after sales commence.

It has been stated to this Committee that the producers have calculated small gas sale effects due to low residual oil saturations left behind the invading gas cap. In our studies, these residual saturations range from 20 to 30%. We submit not only that such saturations are reasonable, but we also believe that an analysis of gas sale effects is not strongly dependent upon these saturations.

Turning now to water injection for Prudhoe Bay, a much more complex problem. Gas sales effects are mainly related to pressure-volume relationships and can be easily evaluated with fluid properties and in-place volume considerations. An optimized waterflood, on the other hand, will require more study including the location of water injection wells and injection rates. These optimum volumes and locations can best be determined through the analysis of actual field production history.

Our current estimate of incremental waterflood recovery is about 4% of the original oil-in-place. This incremental recovery benefit was forecasted with an injection program assumed to commence in 1984 with daily injection of 2 million barrels of water. Preliminary design studies are currently underway so that implementation time can be substantially reduced once a decision is made to waterflood the reservoir.

Laboratory work has been done by our Research Department in evaluating carbon dioxide as a possible means of tertiary recovery for Prudhoe Bay. Essentially, we found that miscibility pressure is considerably in excess of initial reservoir pressure. Although some additional work has been done with liquid petroleum gas enrichment of the CO2 to lower miscibility pressures, reservoir characteristics of the Sadlerochit reservoir may limit its use to the shaly portions of the formation. Although no firm estimates of incremental recovery benefits have

been made by my company, it is our opinion that these benefits would be smaller than those attributed to conventional water flooding. Since it appears that CO2 has some possibility for enhanced recovery in North Slope reservoirs, continuation of our studies is planned.

To summarize, Atlantic Richfield believes that the optimum production plan for the Prudhoe Bay Field includes early gas sales combined with a source water injection program. We have proposed and the State of Alaska has approved a gas sales rate of 2.0 BCFD beginning as soon as a gas transportation system is completed. We (and the State of Alaska) have found that gas deliveries of this volume will be non-injurious to the reservoir. Gas deliveries in excess of 2.0 BCFD must be approved by the State of Alaska. In addition, we feel that supplemental source water injection is certainly a means of increasing ultimate oil recovery. If our current estimates of incremental crude oil recovery benefits are substantiated along with the economic viability of the project, we anticipate that a source water injection program will be commenced as early as 1984. Accumulation of actual field production history will be invaluable in selecting the optimum volume as well as the optimum locations for this water. Again, approval of such an injection program will lie in the hands of the State of Alaska.

You have requested that we estimate the gas delivery rates over the life of the field. If gas pipeline deliveries are commenced in 1983, we believe that the field will be capable of delivering gas at a rate of at least 2.0 BCFD for approximately 25 years.

I appreciate having an opportunity to appear before your committee today. Thank you.

EXHIBIT A

TECHNICAL CONSIDERATIONS,

PRUDHOE BAY UNIT OPERATING PLAN

NORTH SLOPE ALASKA

BP ALASKA INC.
P. O. Box 4-1379
Anchorage, AK 99509

ATLANTIC RICHFIELD COMPANY
P. O. Box 360
Anchorage, AK 99510

October 20, 1976

Mr. O. K. Gilbreth, Jr., Director
Division of Energy and Minerals Management
Department of Natural Resources
3001 Porcupine Drive
Anchorage, AK 99504

Dear Mr. Gilbreth:

During the Prudhoe Bay Unit review with the State of Alaska, Department of Natural Resources on August 18, 1976, in Anchorage, a draft Unit Agreement was presented by the working interest owners for your early review. Included in the Unit Agreement was a recommended plan of operations which was discussed at the meeting with the understanding that further technical review of the basis for the recommended plan of operations would be provided. In response to your request, the attached report of comprehensive technical studies has been prepared by the field major interest owners, A.R.Co., BP, Exxon and Sohio. The "Technical Considerations, Prudhoe Bay Unit Operating Plan" report is submitted for your early review in advance of a formal application for Unit approval.

The recommended operating plan, which is supported by the attached report is, of course, based on the assumption that current unit negotiations are successful and that one oil rim participating area and one gas cap participating area are formed within the Permo-Triassic reservoir. In the unlikely event current unit negotiations are unsuccessful or modified significantly, revision to the recommended operating plan may be required.

The studies conducted by the major interest owners and described in the attached report have considered a range of possible production schedules, as well as a number of different reservoir management options. These studies include both subsurface and surface aspects of oil and gas production and have led to an overall reservoir management plan for the optimum development of the total energy resource in the Prudhoe Bay Field under unitized operations.

The recommended operating plan is geared to producing the Prudhoe Bay Field in a timely manner consistent with good conservation and engineering practices while protecting the correlative rights of individual owners in both the gas cap and oil rim participating areas. The State of Alaska can be assured that the working interest owners, joining together within the Unit, will fully utilize their expertise to manage the field to obtain maximum economic recovery of oil and gas.

Following your review of the attached report, we are available, at your convenience, to meet with you for further discussion of the recommended operating plan for the proposed Prudhoe Bay Unit.

Respectfully submitted,

BP ALASKA INC.

K R Keep

Kenneth R. Keep
Vice President & General Manager

ATLANTIC RICHFIELD COMPANY

O G Simpson
For

Howard A. Slack
Vice President & Resident Manager

/vaf

Attachment

TECHNICAL CONSIDERATIONS

PRUDHOE BAY UNIT OPERATING PLAN

NORTH SLOPE - ALASKA

TABLE OF CONTENTS

	Page
INTRODUCTION	1
OVERVIEW	3
RESERVOIR DESCRIPTION	9
Geologic Structure and Lithologic Units	9
In-Place Hydrocarbon Volumes	12
Reservoir Rock Properties	13
Fluid Properties	16
Aquifer Description	17
Saturation Functions	18
RESERVOIR STUDIES	20
Models	21
Operating Conditions	22
General Reservoir Performance	24
RESULTS OF RESERVOIR MODEL STUDIES	27
Recovery Estimates	28
Sensitivity Studies	30
RESERVOIR SURVEILLANCE AND TESTING PLANS	39
WATERFLOOD PLANNING STUDY	42
CONCLUSIONS	45

INTRODUCTION

On August 18, 1976, a draft of the proposed Prudhoe Bay Unit Agreement was presented to the Department of Natural Resources by the working interest owners. This was done in accordance with the Department's regulations which provide for submission of the draft form for preliminary consideration prior to agreement by the parties. Exhibit "E" of the proposed Agreement summarized a recommended plan of operations for the Unit. This report has been prepared by the major interest owners (A.R.Co., BP, Exxon, and Sohio) to provide the Department with the detailed technical basis for the recommended plan and will provide the operating plan data requested by the Department. The report is submitted for the Department's review in advance of a formal application for Unit approval. The subject Unit is currently being negotiated and the proposed plan is based on successfully concluding those negotiations.

This is a report of comprehensive technical studies which have been conducted independently over the past several years by the major working interest owners to develop long range operating plans. Major objectives considered in developing the operating plan for the Prudhoe Bay Field were (1) to achieve maximum economic recovery of oil and gas resources consistent with good conservation practices, (2) to develop energy resources as expeditiously as possible, and (3) to protect correlative rights. To fulfill these objectives, it is necessary to consider reservoir performance, efficient utilization of field facility and pipeline capacities, economic factors, and operational considerations such as mechanical feasibility and implementation schedules.

The recommended operating plan provides for the timely development of the total energy resource in the Prudhoe Bay Field consistent with good conservation and engineering practices and the recognition of the correlative rights of the owners in both the Gas Cap and Oil Rim participating areas in the proposed Unit. Over the life of the Field, these plans will undergo continual evaluation and will be modified as necessary, based on observed reservoir performance, to achieve the maximum economic recovery of oil and gas from the Prudhoe Bay Field.

OVERVIEW

Both short and long-term operating plans have been developed for the Prudhoe Bay Field. Short-term plans for oil and gas production from the Main Area Sadlerochit reservoir are as follows:

1. Oil production will begin in mid-1977 at a rate of 600 MB/D. The rate will increase to about 1.2 MMB/D by the end of 1977, assuming pipeline capacity is available.
2. Produced gas in excess of the quantity needed for local fuel requirements will be injected into the gas cap until a gas pipeline and gas conditioning plant are approved and constructed, currently estimated to be 4-1/2 to 5 years after start of oil production. Reinjection of produced gas will not adversely affect ultimate oil recovery.
3. Gas pipeline deliveries of 2.0 Bcf/D dry gas will begin as soon as a gas pipeline and gas conditioning plant are approved and constructed. The gas conditioning plant will be needed to bring the gas to pipeline quality including carbon dioxide removal, extraction of gas liquids for hydrocarbon dew point control, dehydration, and compression and cooling to pipeline pressure and temperature. Both the pipeline and conditioning plant require long lead times and large capital commitments. For example, preliminary estimates made several years ago indicate the gas conditioning plant will require 4-6 years for design, fabrication, and construction and will cost approximately $1 billion (1975 $). State approval of the gas offtake plan is needed now to insure that FPC certification, final design,

financing, and construction of the pipeline can proceed on schedule.

Main Area Sadlerochit reservoir performance characteristics expected with these planned offtake rates include (1) early expansion of the gas cap, (2) limited water influx from the aquifer, (3) coning of gas and water, (4) efficient natural gravity drainage depletion in areas with a thick oil column and good vertical permeability, (5) substantially less efficient natural depletion in areas where gravity drainage is ineffective, and (6) potential for improving performance in low natural recovery areas by selective injection of water.

To develop long range operating plans for the Prudhoe Bay Field, detailed reservoir studies have been conducted by the major interest owners (A.R.Co., BP, and Exxon) based on the substantial volume of Prudhoe Bay reservoir descriptive data which have been obtained and analyzed over the past seven years.

Sensitivity studies have also been made to insure that major operating plan decisions are practical over a reasonable range of reservoir properties. The results of these studies, combined with engineering judgment developed from experience in other fields have led to development of long-range reservoir management plans. Over the life of the field the plan will undergo continual evaluation, and, based on observed performance, will be modified as necessary to achieve the maximum economic recovery of oil and gas.

A long-range operating plan has been developed as follows:

Oil Offtake Rates

An increase in production to 1.5 to 1.6 MMB/D is planned when pipeline capacity is available. Field facilities designed for a sustained oil offtake rate of 1.5 to 1.6 MMB/D will be completed during 1978 and 1979.

It is anticipated that the 1.5 to 1.6 MMB/D average oil offtake rate can be maintained for approximately eight years by additional development drilling, resulting in efficient utilization of facility capacity. Such development of the field is expected to include 500 or more wells on 160-acre spacing within the 100-foot oil thickness contour. Production support can also be obtained through the installation of low pressure production and artificial lift systems or further infill drilling between some 160-acre spaced wells.

Studies of the sensitivity of reservoir performance to oil offtake rates in the range of 1.2 to 1.8 MMB/D indicate there is no significant effect of oil rate on the ultimate recovery of oil or gas. To sustain annual average offtake rates of 1.5 to 1.6 MMB/D, field facilities have been designed for a maximum capacity of 1.8 MMB/D. Consequently, some flexibility may exist to produce the field at higher rates when field and pipeline capacity are available.

Gas Offtake Rates

Gas pipeline deliveries of 2.0 Bcf/D are planned at the earliest date a pipeline can be approved and constructed, estimated to be 4-1/2 to 5 years after the start of oil production. Such gas deliveries are clearly a part of the optimum field operating plan. Studies have shown that the field can be operated so that planned gas deliveries will not affect ultimate oil recovery. The planned delivery rate of 2.0 Bcf/D is a conservative volume which can clearly be supported by the reservoir

and initial gas pipeline deliveries of up to 2.5 Bcf/D may be justified, depending upon field performance data and availability of pipeline capacity.

Planned gas pipeline deliveries will substantially increase domestic energy supplies. For instance, through year 2000, pipeline deliveries of 2.0 Bcf/D, beginning 5 years after the start of oil production, add the energy equivalent of 2 billion barrels of oil to the nation's energy supply. In addition, such gas deliveries reduce fuel consumption, eliminate unnecessary costs for compression, injection, and "double production" of gas, and provide a measure of correlative rights protection for the Oil Rim and Gas Cap participating area owners.

Water Injection Plans

Produced water injection into the Sadlerochit reservoir is planned when the volumes become significant. Initially, water production will be minimal and disposal will be by injection into the shallow Cretaceous sands. When water production becomes significant, plans are to selectively inject into areas of the reservoir which experience low primary oil recovery to achieve maximum additional oil recovery benefits. Projections indicate that produced water injection will increase primary recovery by as much as 2% of the original oil-in-place (OOIP).

Initially, there will be field capacity to inject up to 200 MB/D of produced water and additional capacity will be provided as needed. Without source water injection, produced water rates could be as high as 500 MB/D with ultimate injection of some 4 billion barrels of water.

Produced water injection will be supplemented with the injection of extraneous source water when the additional recovery predictions of 3 to 7% of OOIP from such water injection are verified and the economic viability of the over $1 billion project is ascertained. Reservoir performance and

testing data are particularly important to determine the proper water injection locations and volumes. Consequently, final commitment to source water injection cannot be made at this time, although it is planned and will be implemented if current predictions are verified.

In terms of additional oil recovery, the major benefit of water injection is improved sweep efficiency. Consequently, the timing of source water injection is not very critical to ultimate oil recovery. It is more important that the water be injected in the proper volumes and at the proper locations to obtain optimum field performance. If a source waterflood is initiated with insufficient production data, it could be improperly designed. For example, if there are areal differences in aquifer response (which is likely in a field with such a large areal extent), water could be injected intc an area which may experience substantial local aquifer influx. The likelihood of such potential errors in both volume and location can be reduced with production history and test data.

A comprehensive reservoir surveillance and testing program will insure that necessary reservoir information is obtained at the earliest possible date. Although water injection plans cannot be finalized at this time, preliminary design studies are proceeding to reduce the lead time to approximately 3 years for implementation once the final decision to inject source water is made.

Summary

The operating plan described herein provides the flexibility necessary to adapt, as required, to information obtained from field performance to allow the maximum economic recovery of oil and gas. Studies indicate that it will be possible to manage the field to recover approximately 40%

of the original oil-in-place (OOIP) and 75% to 80% of the original gas-in-place (OGIP) in the Main Area Sadlerochit reservoir of the Prudhoe Bay Field.

RESERVOIR DESCRIPTION

Circumstances over the last seven years have permitted the working interest owners to secure unusually detailed reservoir descriptive information prior to the commencement of production. Highly specialized studies and analyses of geologic history, core data, fluid sample data, and log data have been made to determine in-place hydrocarbons for ownership determination and to refine estimates of reservoir parameters which influence reservoir performance. Production performance and test data will allow further refinement of the key data interpretations, particularly the vertical to horizontal permeability ratios, relative permeability, the effect of shale barriers, and the effectiveness of the aquifer.

The reservoir description presented in this section covers the range of data interpretations developed independently by the major interest owners. Generally, the individual interpretations of reservoir descriptions are in close agreement. There were differences in the manner in which individual companies translated the reservoir description into reservoir simulation models. While the performance predictions from the models are not identical, the studies lead to the same conclusions regarding major provisions of the field operating plan.

A. Geologic Structure and Lithologic Units

Figure 1 is a structure map on top of the Sadlerochit sand which was prepared by the Proposed Prudhoe Bay Unit Geological Subcommittee. Limits of the hydrocarbon accumulation in the Sadlerochit reservoir are defined by faults, truncation of the reservoir rock and the oil-water contact. Faulting provides the northern limit

while the gentle south-dipping flank is relatively uncomplicated with the oil-water contact providing the limit. The east flank of the Sadlerochit reservoir is truncated by the Lower Cretaceous unconformity. Complex northwest-southeast trending fault systems establish the productive limits in the northwest portion of the Main Area. Immediately to the west of the Main Area is the Eileen Area which is fault bounded to the southwest with a generally northeast-dipping flank.

In the Main Area Sadlerochit, the gas-oil contact occurs at a subsea elevation of 8578 feet; while in the Eileen Area, two small gas caps are defined in separate fault blocks. The gas-oil contacts for the eastern and western fault blocks are at 8792 and 8770 feet subsea, respectively. The water-oil contact is an irregular surface and is slightly tilted, ranging from about 9050 feet subsea in the eastern portion of the Main Area to a subsea elevation of slightly above 8950 feet in the Eileen Area.

Figure 2 is a typical log from a well which completely penetrates the Sadlerochit formation. This log contains all of the Sadlerochit subdivisions defined by the Proposed Prudhoe Bay Unit Geological Subcommittee and exhibits the log characteristics which were used to make the subdivisions. Zone 1 represents a transition facies of interbedded sandstones and shales between the underlying marine shales and the overlying more massive fluvial sands. This zone is further subdivided, as shown, into Sub-Zones 1A and 1B. Sub-zone 1A is the more shaly of the two subdivisions as indicated on the Gamma Ray log response.

Zone 2 is a series of more massive sandstones interbedded with fairly significant shales. These shales become more massive and continuous offstructure and into the aquifer, as would be expected with the depositional source being from the north. The lithology is predominately sandstone with increasing amounts of conglomerate toward the top of the zone. The three major continuous shales within this zone, as shown on Figure 2, occur at or near the top of Zone 1, in the lower third of Zone 2, and in the upper half of Zone 2. Although no agreed nomenclature has been adopted, for purposes of this report these shales have been designated A, B, and C, respectively.

Zone 3 is a conglomeratic interval which is present over most of the field but thins to the west, south, and east until it eventually disappears beyond the productive limits of the field. This zone represents the highest energy level of the southward flowing streams and contains essentially no shale. Zone 3 is easily identified by its lower porosity reflected on the sonic log with its top and base defined by an 85 microsecond cut-off.

The uppermost subdivision of the Sadlerochit, Zone 4, is a more homogeneous sandstone facies with minor discontinuous shales or mudstones. It represents a lower energy fluvial environment. The final major shale (D), which appears to be continuous over a significant portion of the Sadlerochit productive area occurs at the base of Zone 4 or near the top of Zone 3. The top of the Sadlerochit is marked by an unconformity and is picked on a correlative Gamma Ray peak underlain normally by a pyritic streak evidenced by a low response on the resistivity logs and a high reading on the density log.

As will be shown later in the report, the geologic description, particularly the identification of extensive shales which are important to reservoir performance and the selection of reservoir management plans, and the lithologic zonation have been used extensively in Prudhoe Bay modeling studies.

B. In-Place Hydrocarbon Volumes

The hydrocarbon-in-place volumes for the Permo-Triassic reservoirs (Sag River, Shublik, and Sadlerochit formations) in the Main and Eileen (West End) Areas were determined through a joint technical study by the Proposed Prudhoe Bay Unit Reservoir Engineering Subcommittee. The results of this study are summarized in Figure 3. Oil rim and gas cap gas-in-place volumes for the Permo-Triassic are 31.2 billion reservoir barrels and 26.6 trillion standard cubic feet, respectively.

The Main Area Sadlerochit contains over 93% of the oil-in-place, with the Eileen Area Sadlerochit, the Sag River, and the Shublik totaling less than 7%. Reservoir simulation studies have concentrated primarily on the Main Area Sadlerochit because it represents such a large portion of the oil-in-place. It is likely that development of the Eileen Area Sadlerochit, the Sag River, and the Shublik will follow full development of the Main Area.

A heavy oil/tar zone occurs throughout the Main Area Sadlerochit just above the water and contains much poorer quality crude than the "light oil" column above it. This zone contains 1.9 billion reservoir barrels of hydrocarbons and represents about 6.5% of the Main Area Sadlerochit oil rim volume.

C. Reservoir Rock Properties

Core data were utilized extensively in development of the rock properties used in the reservoir models of the Main Area Sadlerochit formation. As indicated in Figure 4, 33 wells have been cored in the Main Area and 8 wells in the Eileen Area, for a total of over 9000 samples. Areal distribution of the data is good and will continue to improve as key wells are cored throughout the development drilling phase.

All core samples have undergone routine lab analysis for porosity using the summation of fluids technique. Horizontal and vertical permeabilities were measured using air and reservoir fluids. Special tests were also conducted on selected samples for determination of relative permeability and capillary pressure relationships.

1. Porosity

Relationships between core and log data were developed to extrapolate the core data fieldwide. Three porosity logs (sonic, neutron, and density) are available on each well, but the sonic log was found to be preferable for calculating porosity in the Sadlerochit. Porosity-transit time relationships were established for each lithology and fluid type. With the relationships established, average porosity was determined for the net pay in each lithology in each well on a foot-by-foot basis.

The Gamma Ray log was used to exclude all shale or non-pay intervals. Isoporosity maps were developed for each lithology. Each map indicated some degree of downstructure degradation in porosity, consistent with sediment deposition from a northern

source. Figure 5 indicates the range of porosity for each lithology in the Main Area Sadlerochit.

2. Horizontal Permeability

Core data were also utilized to develop permeability-porosity relationships for zones exhibiting similar characteristics. The foot-by-foot permeabilities calculated from logs using the porosity-permeability relationships were averaged by zone and then zonal isopermeability maps were developed. Permeability data from pressure buildup tests were also considered.

Figure 5 indicates the range of permeability of each zone of the Main Area Sadlerochit. The permeability range varies from a high of greater than 1000 md in the conglomeratic Zone 3 to about 100 md in Zone 1. All zones exhibit varying degrees of downstructure permeability degradation.

3. Vertical Permeability

Effective vertical permeability in the reservoir cannot be obtained directly from the core data due to reductions caused by small discontinuous shales. These shales cannot be correlated from well-to-well and their areal extent cannot, therefore, be exactly defined. Since vertical permeability is expected to have a significant impact on recovery, considerable effort was devoted to its evaluation. A statistical analysis of shale frequency was made from logs, and the areal extent of the shales was estimated from studies of modern day braided streams. Based on the data developed in these studies, a 28,500 grid

block 3-D model was used to estimate their effect on vertical flow. Major correlatable shales also have a significant effect on vertical permeability as will be discussed later.

The range of Kv/Kh ratios used in the model studies is shown in Figure 5. Additional drilling, field testing, and reservoir performance data will be needed to verify this key parameter.

4. Correlatable Shales

Major shales, which are correlatable between wells, also occur within the Sadlerochit section (Figure 2). These shales were deposited in a bay environment as opposed to the braided stream environment of the minor, non-correlatable shales. Where possible, these shales were mapped and included in reservoir models as zero vertical permeability boundaries. For example, Figure 6 is a map showing the areal extent of the "D" shale over the Sadlerochit productive area.

These correlatable shales will have a significant effect on gas-oil and water-oil contact movement. In addition to their influence on gross fluid movement in the reservoir, these shales will dramatically affect the gas and water coning behavior of individual wells. Model studies show that continuous shales could provide injection control and thereby, improve waterflood performance in specific areas of the field. However, a complication could arise in that faults could allow communication across these shales.

D. Fluid Properties

Initial reservoir pressure in the Main Area ranges from 4335 psia at the gas-oil contact to about 4480 psia at the water-oil contact. Reservoir temperature varies both vertically and areally. At 8800 feet subsea, temperature varies from about 185°F in the northeast part of the field to 240°F in the Eileen Area. At these initial conditions, oil gravity in the "light oil" column of the Main Area averages about 27°API, varying from 30°API at the gas-oil contact to about 26°API at the top of the heavy oil/tar zone. The oil formation volume factor averages 1.36 RB/STB and varies from about 1.3 to 1.4 RB/STB while oil viscosity averages about 0.8 centipoise and varies from 0.5 to 1.2 centipoise. Solution gas-oil ratio averages about 750 SCF/STB, varying from about 650 to 900 SCF/STB between the gas-oil contact and the heavy oil/tar zone in the Main Area.

A gas cap gas condensate yield of about 35 barrels per million cubic feet of separator outlet gas is expected initially from the separator facilities located at the flow stations (gathering centers). In addition, it is expected that once gas sales begin, 10-15 barrels of gas liquids per million cubic feet of separator outlet gas will be extracted at the gas sales conditioning plant to make the gas acceptable for delivery into the gas pipeline.

Gas pipeline specifications are not currently known and final specifications may increase or decrease the volume of liquids which must be extracted from the gas to prevent condensation in the pipeline. Regardless of the final gas conditioning requirements, all liquids extracted will be used without waste; either to displace fuel gas or be transported through the oil pipeline.

Fluid properties of the heavy oil/tar interval are also important considerations. This interval, located just above the water throughout the Main Area, is distinctly different from the "light oil" column above it. An isopach of the zone (Figure 7) shows that the interval varies in thickness from 20 to 60 feet, being generally thinner in the southeastern third of the field. Well tests confined to this interval experienced only small amounts of fluid entry with oil gravities of less than 15°API. Analyses of cores from this zone indicate a low effective permeability to brine (approximately 1 millidarcy). Model studies indicate that the presence of the heavy oil/tar zone will offer some impedance to water influx although the effect on ultimate influx is expected to be relatively minor. The heavy oil/tar zone could have a more significant impact on peripheral water injection plans because of reduced injectivity. Reservoir performance and testing information will be necessary for final evaulation of the impact of the heavy oil/tar zone.

E. Aquifer Description

Figure 8 shows the aquifer properties, volume, and location of wells from which logs and core data were available. A total of 26 wells have been drilled in the Sadlerochit aquifer with core data obtained from 10 of these wells. Although the aquifer covers a large area, net sand thickness and quality appear to degrade rapidly moving away from the oil column. As shown by the inset of Figure 8 only about 35% of the aquifer volume is in rock with permeability of greater than 10 md.

The rapid degradation of rock properties in the Sadlerochit aquifer is expected to result in only limited water influx. Production history will provide necessary information to accurately quantify aquifer performance.

F. Saturation Functions

The range in the basic relative permeability curves used by the companies in their respective reservoir studies is shown in Figures 9 and 10. These curves are based on detailed laboratory analyses using several different techniques. Oil-water relative permeability data were obtained from waterflood tests run on core plugs and composite cores, some at reservoir conditions using reservoir fluids. Some oil-water relative permeability centrifuge tests were also run. Similar tests were used to obtain gas-oil relative permeability data.

Three-phase relative permeability values were determined from two-phase laboratory data by use of empirically derived probability models. In some of the simulation studies, history-dependent saturation functions developed from laboratory data have been used. Initial conditions in such models are established with drainage saturation functions and continue to use the drainage functions until there is a decrease in the non-wetting phase saturation. Once that occurs, hysteresis scanning curves are used to describe the transition to the imbibition functions.

Although extensive, sophisticated laboratory analyses have been conducted, final confirmation of relative permeability effects will depend upon data from field production performance and special well tests. Such information is needed for accurate assessment of water-

oil displacement efficiency which is of critical importance in planning water injection programs.

RESERVOIR STUDIES

Extensive studies have been performed independently over the years by the owners in the Prudhoe Bay Field. The results of these studies represent a consensus assessment of the productive capabilities of the Main Area Sadlerochit reservoir and are supported by experience in producing similar types of fields throughout the world.

Reservoir performance studies have been integrated with downhole and surface facility considerations. Such factors affect production performance and ultimate reserves and are important aspects in the development of a sound, comprehensive plan of operation for the field.

The operational factors which have been considered are mechanically feasible for Prudhoe Bay operations and are typical considerations in the operation of other fields. Such factors include well density, field pressure systems, artificial lift, gas reinjection, facility capacity for handling produced water and gas, well workovers, and optimum water injection locations and volumes.

Costs of such operational factors are important in developing an operating plan to insure that it is economically feasible. Since the same production performance objectives might be accomplished with more than one of the operational alternatives, comparative costs are important to insure optimized operations. Lead times for the design, construction, and installation of field facilities are also important aspects of field management considered in developing the operating plan.

Where uncertainties exist, both in operational considerations and in the reservoir description, studies have been conducted to evaluate the sensitivity of ultimate oil and gas recovery for a reasonable range of

uncertainty. The sensitivity studies have led to the development of a plan of operation which has the necessary flexibility to allow for a positive reaction to observed performance.

The following subsections describe the reservoir models used in the studies, the operating boundary conditions applied in the models and the general reservoir performance characteristics observed in the models.

A. Models

Major interest owners have compared and exchanged results of independent two-dimensional, three-phase cross-sectional model studies of the Main Area Sadlerochit. While results are not identical, the overall conclusions drawn regarding the field operating plan are the same. The fact that independent reservoir description and simulation efforts led to the same operating plan provides further confidence in the overall conclusions.

Two-dimensional, three-phase cross-sectional models were employed for the basic studies of long-range reservoir performance and the evaluation of overall reservoir management options, although the application of other models was necessary, particularly individual well models for studying coning and completion intervals. Cross-sectional models were selected because they adequately take into account: (1) the significant changes in rock properties which occur vertically and with position on structure, (2) vertical flow and gravity segregation which tends to dominate in a thick sand with fairly good vertical permeability, (3) gas cap expansion and water influx, and (4) the important influences of oil column thickness and fluid contact movement on the behavior of wells at different structural positions.

The cross-section models utilized by the three companies contained 14 or 15 vertical layers and 67 to 90 grid blocks horizontally. Separate studies were made with more finely gridded models to confirm that this grid definition reduced numerical error to within acceptable limits. Reservoir properties assigned were based on each company's interpretation of the basic reservoir data described previously and were within the ranges shown in the Reservoir Description section of this report. As might be expected with independent studies of this nature, there are many differences in the model descriptions. Despite these differences, the results and conclusions from the studies are very similar.

Numerous additional models have been utilized to compliment and verify the cross-sectional studies of the Sadlerochit reservoir. Two-dimensional areal models were used for aquifer sensitivity studies. Radial models describing typical wells have been utilized to study gas and water coning behavior and identify optimum completion intervals. Finely gridded two and three-dimensional model studies of portions of the reservoir have been made to confirm the large block models and evaluate displacement mechanisms in localized areas. Fieldwide three-dimensional, three-phase models have been used to analyze areal variations in reservoir performance and to confirm results of the cross-sectional models.

B. Operating Conditions

Well rates in the models were controlled by the productivity index of the completion interval as calculated from producing block thickness, rock permeability, and relative permeability values based on fluid saturations in the producing blocks. Damage ratios from

1.5 to 3.5 were based on interpretation of the production tests in the field. Well capacities considered the effects of wellbore hydraulics for the flow conditions predicted by the simulator and the planned tubular equipment. Artificial lift (both gas lift and pumping) was included when additional capacity was needed to sustain the target oil producing rate.

Completion intervals were chosen in conjunction with coning model studies. Generally, initial standoffs from the gas-oil contact were 150 to 200 feet while 50 to 100 feet standoff from the water-oil contact was maintained. Initial oil rates averaged about 10,000-12,000 B/D, but varied widely. Recompletions were allowed under various conditions, such as when an adequate production increase could be obtained, or when some present water-oil ratio (WOR), gas-oil ratio (GOR) or field facility capacity was reached.

The models considered approximately 500 wells developed on 160-acre spacing within the 100' oil thickness contour. In a number of cases, some infill 80-acre development wells are included.

Prior to gas sales, gas production volumes were limited to the injection capability of about 1.8 to 2.0 Bcf/D, plus field fuel requirements. During gas sales, gas production volumes included pipeline delivery volumes plus fuel, shrinkage and carbon dioxide (CO_2) removal. Because of these factors, a 2.0 Bcf/D pipeline delivery level requires production of 2.7 to 2.8 Bcf/D of raw gas.

A peak oil rate of 1.5 MMB/D and gas pipeline deliveries of 2.0 Bcf/D after 4-1/2 to 5 years of oil production were generally assumed, although higher oil and gas offtakes were evaluated. Water injection rate, timing, and location were varied in attempting to optimize the reservoir management plans studied.

C. General Reservoir Performance

Conclusions regarding reservoir performance characteristics, as defined by cross-sectional, coning, and other model studies, are:

1. Natural water influx is expected to be substantially less than required to fully maintain reservoir pressure. The modest contribution of the aquifer is due primarily to the degradation of rock properties that occurs with distance from the field.

   Sensitivity studies have been run to evaluate the effectiveness of the aquifer by assuming variations in the expected size, permeability, rock and water compressibility, and transmissibility across faults in the west area of the field. Over a reasonable range of values, water influx is relatively low.

2. The natural depletion mechanisms are gravity drainage, gas cap expansion, solution gas drive and water influx. The influence of gravity drainage is especially important in those areas with a thick oil column and good vertical permeability.

3. During early years of production, the gas cap expands rapidly, moving vertically into the oil rim at a rate of about 25 feet per year and advancing thousands of feet horizontally to override much of the oil zone at the top of the sand and under massive, continuous shale breaks. This early expansion of the gas cap eliminates concern that depletion of the gas cap during oil production might

result in a reduction in recoverable oil due to gas cap shrinkage.

4. Although completion intervals will be designed to take maximum advantage of shale protection and standoff distances from the original contacts, gas and water coning will eventually occur.

5. It is expected that significant volumes of gas cap gas will be produced through oil wells. If this gas is not delivered to a pipeline, it will be necessary to reinject an estimated 15-20 Tcf of gas into the gas cap. Although the return of such gas is not detrimental to reservoir performance, compression and injection of this volume of gas would require approximately 600-800 Bcf of fuel gas, or the energy equivalent of more than 100 MM barrels of oil. Moreover, the extraction of liquids required to condition the gas for pipeline delivery will provide for an additional 10 MM barrels per year of gas liquids.

6. The onset of oil production decline is largely controlled by the advance of the gas-oil contact. Increasing gas-oil ratios ultimately result in the gas handling capability being exceeded at which point oil production must be restricted. Since the advance of the gas-oil contact is related primarily to net oil zone withdrawals, gas sales timing does not significantly affect oil production decline. Source water injection does offer potential to delay oil decline by retarding advance of the gas-oil contact.

7. Model studies indicate that, taking into account the effect of coning, the 1.5 to 1.6 MMB/D oil rate can be sustained for about eight years.

8. The examination of a wide range of assumptions regarding oil and gas offtake rates leads to the conclusion that the reservoir can be managed to recover approximately 40% OOIP and 75% to 80% OGIP.

RESULTS OF RESERVOIR MODEL STUDIES

During the past several years of studying the Sadlerochit reservoir, each company has experienced an evolution in model development. Studies with early models considered a broad spectrum of reservoir management plans, while recent work has focused on the more reasonable alternatives. These studies have investigated the effects of varying both reservoir properties and operational factors on production peformance.

As discussed earlier in the report, there are uncertainties which relate to reservoir description, such as vertical-to-horizontal permeability ratio, shale continuity, and relative permeability which have an impact on ultimate recovery and on decisions relating to reservoir management options. Studies have been made to evaluate the potential impact of these factors on the plan of operation.

Factors related to field development and operations also affect production performance and ultimate recovery. For the Prudhoe Bay Field, such factors include the return of produced gas and water to the reservoir, source water injection, well density, gathering system pressures, artifical lift facilities, and the capacity of facilities for handling oil, water, and gas production. Simulation model studies have also been made to evaluate the effect of these operational factors on overall reservoir performance. Comparisions between cases have typically been made through changing one or two of the more significant factors at a time.

These sensitivity studies have made it possible to develop sound operating guidelines for the Prudhoe Bay Field which will provide necessary flexibility to modify the operational factors as reservoir properties are better understood. Such studies, combined with experience in other

fields, result in confidence that optimum oil and gas recovery can be attained in the field even though the reservoir description may be different than the current interpretation. The considerable areal extent of the field will likely require that operations be optimized in a number of different ways to best suit local conditions. For instance, water injection may prove to be highly desirable in selective areas where natural depletion recovery is low, but much less desirable in areas with very efficient oil recovery through gravity drainage.

A. Recovery Estimates

The following paragraphs describe the estimated ultimate oil and gas recovery from the Main Area Sadlerochit reservoir at Prudhoe Bay under the oil and gas offtake conditions of a peak oil rate of 1.5 MMB/D and a gas pipeline delivery rate of 2.0 Bcf/D commencing 4-1/2 to 5 years after the start of oil production along with various water injection alternatives.

Due to the favorable reservoir rock properties which provide for good gravity drainage, the natural recovery mechanism (without return of produced water) at Prudhoe Bay will be efficient with oil recovery predicted by the companies ranging from 32% to 35% of OOIP. It is estimated that this oil recovery will be achieved over a period of 25 to 30 years. Ultimate gas recovery is expected to be in the range of 75% to 80% of total gas-in-place and will be recovered over a period of about 35 years.

Studies have indicated substantial benefits of injecting produced water into the Sadlerochit reservoir. Such water injection could involve rates as high as 500 MB/D and ultimate injection of up

to 4 billion barrels. By selectively injecting this water to obtain maximum benefits, ultimate oil recovery may be increased as much as 2% OOIP. The range of recovery predicted by the companies for this plan is from 33% to 36% OOIP. The current operating plan calls for the injection of produced water into the Sadlerochit when volumes become significant.

Model studies indicate further potential for increasing ultimate oil recovery to a level of 39% to 40% OOIP by implementing a properly designed source water injection program within about five to nine years after the start of oil production. Selection of the optimum locations and volumes to be injected will be the key to the success of a source water injection program. Two or more years of production performance history and testing data will be necessary to select optimum locations and volumes and to confirm the additional recovery potential of 3 to 7% OOIP before the final decision is made to commit approximately one billion dollars for source water injection facilities. It will then take a minimum of three years to develop the final design, fabricate, and install the first stage of the source water injection system. As will be shown later, sensitivity studies indicate that ultimate oil recovery is not very sensitive to the timing of injection startup in the 5 to 9-year period. The studies indicate that it is possible to inject at higher rates and "catch up" with the later injection programs. Based on these projections, the current operating plan for the field includes source water injection programs to be implemented when performance and testing information confirm the need and allow selection of optimum locations and volumes of source water injection.

B. Sensitivity Studies

Numerous case studies were analyzed by the companies to evaluate the sensitivity of reservoir performance to operational factors which can be controlled, such as offtake rates, well density, and water injection. In evaluating the sensitivity of reservoir performance to these factors, potential variations in reservoir properties were also considered. Results of these sensitivity studies can be summarized as follows:

1. Oil Offtake Studies

Sensitivity studies to oil offtake rate in the range of 1.2 to 1.8 MMB/D indicate no significant effect of oil rate on the ultimate recovery of oil or gas.

2. Gas Offtake Studies

Model results have shown that the timing of 2.0 Bcf/D of gas pipeline deliveries does not significantly affect ultimate oil recovery under sound reservoir management plans. The sensitivity of oil recovery to the timing of gas offtake was investigated by delaying gas deliveries until 8-1/2 to 10 years after the start of oil production. Studies have shown that the minor potential reduction in ultimate oil recovery resulting from the earlier gas sales can be offset in the field by modifying one or more operating options, such as the number and location of wells, gathering system pressures, the volume and location of water injection, and the capacity of facilities for handling gas and water.

Assuming available pipeline capacity, increases in gas deliveries above 2.0 Bcf/D may be considered depending upon future reservoir studies and reservoir performance. Model studies have shown that the gas delivery rate can be increased from 2.0 Bcf/D to 2.5 Bcf/D without affecting ultimate oil recovery if appropriate modifications are made to the reservoir management plan. These studies were conducted without economic analysis and justification for gas sales rates above 2.0 Bcf/D will depend upon actual production performance and economic considerations.

3. Well Density Studies

The current operating plan anticipates approximately 500 wells on 160-acre spacing inside the 100-foot oil thickness contour line. Studies indicate potential for enhancing production performance by infill drilling between 160-acre spaced wells in selected parts of the reservoir, but such decisions will depend upon reservoir performance.

4. Water Injection - Rate and Timing

Water injection case studies indicate potential for increasing ultimate oil recovery to a level of 39% to 40% OOIP by implementing a well designed source water injection plan. As indicated previously, the earliest feasible implementation date for a source water injection project is approximately five years after the start of oil production. However, such timing may not provide adequate opportunity to analyze production performance. Therefore, studies

have been made with water injection commencing seven to nine years after start of oil production. Results of these studies indicate ultimate oil recovery is not very sensitive to the timing of injection startup and that the later injection programs result in the same recovery if the rate of injection is increased.

The key to a successful source water injection program will be the selection of the optimum locations and volumes to be injected, which may vary from one area of the field to another, depending on local reservoir conditions. For instance, shale continuity, the effectiveness of injection into or below the heavy/oil tar zone, aquifer response, and natural depletion performance may influence desired injection locations. The major benefit in terms of additional oil recovery derived from water injection in the Sadlerochit reservoir is improved conformance or sweep efficiency. Additional recovery results primarily from water displacement in areas of the reservoir which experience inefficient recovery under the natural depletion process. Because of the complex and diverse nature of the field, selection of the optimum well locations will require field production performance and testing data.

Eight typical water injection sensitivity studies which demonstrate these effects are summarized in Figure 11. A single model (reservoir description) was used in these studies. All operational factors and offtake rates were held constant except for the indicated variations in the gas delivery and water injection programs. Produced water

was returned to the reservoir in all cases. Cases 1 through 4 resulted in the recovery of approximately 39% OOIP with water injection timing varying from 5 to 9 years after beginning oil production. Injection rates for these four cases varied between 1.7 and 2.6 MMB/D. Cases 5 through 8 recovered approximately 40% OOIP with water injection timing varying from 5 to 7 years after beginning oil production. In Cases 5 through 8, injection rates varied between 2.0 and 3.5 MMB/D.

The difference in ultimate oil recovery among these cases is relatively small compared to the difference in the volumes of water injected. Increasing volumes of water injection yield diminishing benefits in terms of incremental oil recovery. Larger injection volumes also require more fuel, additional handling of produced water, and greater volumes of gas-lift gas. The results also indicate that the timing of gas pipeline deliveries does not significantly affect ultimate oil recovery.

The methods finally used in operating the Prudhoe Bay Field will depend on the overall economics which consider the optimum recovery of all hydrocarbons, fuel requirements, the relative cost for different operating procedures, and incremental benefits of the alternative secondary recovery programs.

The individual cases can be summarized as follows:

Cases Recovering 39% OOIP

Case 1:

The water injection program for this case involved startup after five years of oil production. The peak injection rate was 1.7 MMB/D with cumulative injection totaling 8.5 billion barrels through 20 years of oil production. Water was injected into areas which experience poor recovery under natural depletion and where shales can be utilized to control the water in the reservoir. Initially, source water was confined to the shaly areas in the lower one-half of the oil column and the natural gravity drainage mechanism was allowed to continue updip. After adequate gas invasion (7 years), injection was commenced updip behind the gas front in those areas where the "D" shale is continuous and can be utilized to confine the injection to Zone 4.

Case 2:

Source water injection was initiated after seven years of oil production in the same locations as in Case 1. By increasing the peak injection rate to 2.0 MMB/D, the same ultimate oil recovery was obtained as in the earlier water injection case. The source water injection locations utilized in Cases 1 and 2 are the most efficient that could be developed for the model. Even so, comparison with a natural depletion case with produced water injection indicates that for each incremental barrel of oil recovered,

it is necessary to inject approximately 15 barrels of water.

Case 3:

In this case, source water injection was deferred until nine years after the start of oil production and the peak injection rate was increased to 2.5 MMB/D. Oil production had declined from the peak rate of 1.5 MMB/D prior to the start of source water injection. Although injection was concentrated in the shaly areas, some was injected in the flank in a peripheral pattern. While some rate acceleration benefits of water injection were sacrificed, the deferral of source water injection startup did not affect ultimate oil recovery.

Case 4:

Gas pipeline deliveries were initiated at 2.5 Bcf/D after five years of oil production. The water injection plan in the oil zone, which was started after seven years of oil production, was identical to the water injection plan in Case 2. In addition, water was injected into the gas cap beginning five years after the start of oil production. This case, with higher gas offtake rate, resulted in the same ultimate oil recovery as Case 2.

Cases Recovering 40% OOIP

Case 5:

Gas pipeline deliveries were deferred until 10 years after the start of oil production. Oil zone water injection was initiated after seven years of oil production at the

same volumes and locations as in Case 2. Although the five-year delay in gas deliveries slightly improved ultimate oil recovery, Cases 6, 7 and 8 demonstrate that other water injection programs achieve the same oil recovery with gas deliveries commencing after 5 years of oil production. Moreover, as described previously, deferral of gas pipeline deliveries increases fuel requirements for reinjection and substantially decreases the total energy supply from the field during the early years.

Case 6:

This case reflects an early, large water injection program. Source water injection was initiated after five years of oil production at the peak rate of 3 MMB/D. Because the gas cap had not advanced sufficiently by this time, it was not feasible to inject updip in the oil zone above continuous shales. Such injection would have caused significant volumes of oil to be driven into the original gas cap. To avoid this, the water was injected into the gas cap, the shaly areas in the lower one-half of the oil column, and in the flank of the oil column in a peripheral pattern.

Case 7:

Water injection into the gas cap was initiated as in Case 6 after five years, but injection into the oil zone was deferred until seven years after the start of oil production to allow additional advance of the GOC so that a portion of the water could be injected updip in the oil

column. The improved efficiency with this water injection plan offset the earlier start of water injection in Case 5. The importance of the location of injection is expected to be even more pronounced in the field where there are significant variations and complexities which cannot be considered in a simulation model.

Case 8:

In this case, source water injection was started after seven years and built to a peak rate of 3.5 MMB/D. Because this volume was larger than could be confined to only the more efficient areas, it was necessary to inject in the unconfined flank of the oil column and in the gas cap. In total, increasing the injection rate from 2.0 MMB/D in Case 2 to 3.5 MMB/D in Case 8 increased oil recovery by less than 1% OOIP. On an incremental basis, it was necessary to inject more than 35 barrels of water for each additional barrel of oil recovered. This demonstrates that the benefits derived from water injection diminish with increasing volumes because the additional water must be injected into areas of the reservoir which respond less favorably to water displacement.

In summary, these water injection sensitivities demonstrate that (1) ultimate oil recovery levels can be maintained with timing of source water injection varying from 5 to 9 years after the start of oil production with modifications to the water injection program, (2) injecting source water in the optimum locations and at the proper

volumes may be more important than the timing of injection startup, (3) the benefits of source water injection diminish with increasing volumes of injection, and (4) adjustments to the water injection program is one method of compensating for potentially adverse effects of the timing or volume of gas pipeline deliveries ranging from 2.0 Bcf/D to 2.5 Bcf/D. These studies, as well as experience in other reservoirs, indicate that it is prudent to evaluate reservoir performance and the results of field testing before making final source water injection decisions.

RESERVOIR SURVEILLANCE AND TESTING PLANS

As discussed in the previous section on simulator study results, operating guidelines have been formulated with sufficient flexibility to accomodate variations in reservoir performance from that predicted. The key to optimizing the reservoir management plan and recognizing deviations from predicted performance is a thorough program of reservoir surveillance and testing. Surveillance activities will include monitoring pressures and gas-oil and oil-water contact movements, and observing the performance of individual wells.

In addition to the regulatory requirements for initial static pressures in all wells and regular pressure surveys in key wells, it is planned that pressures in the gas cap and aquifer will be monitored. Selected wells may also be completed prior to their connection to producing facilities to provide virtually continuous pressure observations within the oil column and gas cap during the early stages of production.

Cased hole neutron logs will likely provide the best indication of gas-oil contact movements, although other tools will be run to provide confirmation. A comprehensive cased-hole baseline logging program is currently being developed.

Water-oil contact movements will be monitored with pulsed-neutron baseline logs (e.g., TDT-K and carbon-oxygen logs) run in selected wells. The gamma ray log has also proven successful in locating water in certain instances and the gamma ray will be run routinely during the completion of each well. Open-hole logs will provide additional spot checks on contact movements for a number of years as development wells continue to be drilled in the field.

The information obtained from the pressure and contact surveys will be analyzed to evaluate such parameters as shale continuity, displacement efficiencies, and aquifer response.

Comprehensive well test procedures are planned, including measurements of productivity index (PI), gas-oil ratio (GOR), and water-oil ratio (WOR) and regular samples of both produced oil and separator gases.

Special interference, pulse, and vertical permeability tests will be conducted to provide information such as effective vertical permeability and the extent of communication across faults and shale intervals.

Production logging will be intensive shortly after startup to monitor the flow distribution of fluids entering the wells and to provide information regarding the continuity between sand members. For these purposes, flowmeters and possibly noise logs and/or radioactive tracers will be run. In problem wells, other surveys might also be necessary, e.g., flowing temperature, gradiomanometer, etc.

Within two years after the start of production, it is planned that water injectivity tests be performed in selected locations. The objectives of such tests would be to (1) determine the injectivity into various subzones under sustained injection conditions to determine the number and location of injection wells and (2) to determine from such tests whether water displacement characteristics in the reservoir confirm present laboratory information obtained from cores. It is considered impractical to make detailed plans for a large-scale waterflood without obtaining such vital information.

Reservoir simulation modeling will also be an integral part of the overall reservoir surveillance program. As production data are gathered, history matching will be utilized to update the models. Projections of

future performance will allow continuing evaluation of various operating alternatives.

WATERFLOOD PLANNING

Once adequate reservoir performance information is available to allow evaluation of the desirability and optimum plan for a source water injection program, about three years are required to develop the final design, fabricate, and install the system. Although three years is a tight schedule to install the first increment of a source water injection system at Prudhoe Bay, it is achievable based on recent experience gained in installing production facilities. Production facilities for 1.2 MMB/D of oil will have been completed in approximately 3-1/2 years from the beginning of detail design work. During this period construction expertise has been gained and extensive support facilities have been constructed, all of which will be used in future Prudhoe Bay construction projects, including source water injection systems.

In order to keep construction lead time to a minimum, a detailed Waterflood Planning Study has been initiated which will provide necessary information concerning water source, water treating requirements, potential water freezing problems, environmental considerations, and equipment and material requirements. Based on Arctic construction experience and worldwide waterflood experience, technology exists to solve anticipated Prudhoe Bay waterflood problems, however, numerous optimization studies are necessary to assure the economic viability of the project.

One phase of the Waterflood Planning Study that has already received considerable effort is water treating requirements, including filtration, deaeration, and chemical treatment. The major intent of this preliminary study is to obtain water samples from the Arctic Ocean at Prudhoe Bay on a seasonal basis. In March and June, 1976, an extensive sampling program

was conducted. The March sampling was taken during conditions of thick ice and minimum turbidity while the June sampling occurred during the time of maximum river run-off. The results of both of these sampling programs indicate the Arctic water to be of good quality. Dissolved solids and biological studies indicate rapid settling rates and essentially sterile conditions. Oxygen content of the water is low and deaeration may only be necessary during periods of rapid river run-off. Overall, results indicate that the Arctic Ocean can be used and is the most likely source of injection water.

The Cretaceous water sands which overlie the Sadlerochit reservoir at Prudhoe Bay have also been considered as a potential source. However, these sands are poorly consolidated and developing them as a water supply would likely require the drilling of a large number of wells, special sand control completion techniques, and the use of high-volume submersible pumps. While these early indications suggest that the Cretaceous may not provide an adequate long-term, high-volume supply of injection water, these sands may be useful as a source of injection water for localized areas.

Studies conducted over the past several years have indicated that source water injection is mechanically feasible at Prudhoe Bay. However, water injection rates, location, and total volumes appear to be as important to the overall success of a water injection project as the mechanical optimization requirements. Consequently, the reservoir and mechanical aspects of the project must be evaluated concurrently. The preliminary Waterflood Planning Study currently in progress should be completed in mid-1978 at which time more detailed design studies can begin. These studies will continue concurrent with the gathering and analysis of field

performance history which is necessary before a final decision to inject source water can be made.

CONCLUSIONS

1. The proposed Prudhoe Bay Unit operating plan provides for sustained oil offtake rates of 1.5 to 1.6 MMB/D after 1978, assuming available oil pipeline capacity, and gas pipeline deliveries of 2.0 Bcf/D as soon as gas pipeline facilities and a conditioning plant can be approved and constructed (4-1/2 to 5 years after the start of oil production). This plan provides for expeditious and economic development of the total energy resource at Prudhoe Bay consistent with good oil and gas conservation practices. Approval of the gas offtake plan is needed now to insure that gas pipeline and conditioning plant projects can proceed on schedule.

2. The planned oil offtake rate is supported by sensitivity studies which indicate that in the range of 1.2 to 1.8 MMB/D, oil rate has no significant effect on the ultimate recovery of oil or gas.

3. The planned gas pipeline sales from Prudhoe Bay, when begun, will immediately increase current energy to the consumers and current income to the owners, eliminate fuel requirements and unnecessary costs for injecting produced gas, and provide for a measure of protection for the correlative rights of owners in the Oil Rim and Gas Cap participating areas of the proposed Prudhoe Bay Unit. With appropriate reservoir management, the planned gas offtake rates will have little or no effect on ultimate oil recovery.

A gas conditioning plant is required to remove carbon dioxide, extract excess gas liquids, dehydrate, and cool the gas to meet pipeline specifications. The final design of gas conditioning facilities will depend upon gas pipeline pressure and specifications. Gas liquids extracted during conditioning will either be blended with the crude and condensate for transportation through the oil pipeline or utilized as fuel.

4. Injection of produced water into certain areas of the Sadlerochit reservoir with poor natural depletion performance will be beneficial to ultimate oil recovery. The current plan is to selectively inject produced water into the Sadlerochit reservoir when water production volumes become significant.

5. Potential exists for additional oil recovery by the implementation of a well designed source water injection program. Within reasonable limits, the timing of source water injection startup is not as critical as injecting proper volumes of water at the optimum locations. Reservoir surveillance and testing information obtained during the first few years of production will provide information necessary to confirm the desirability and define the optimum plan for source water injection. Preliminary design studies currently underway will shorten the implementation time once final decisions can be made. Although final commitment cannot be made at this time, the current plan anticipates that source water injection will be initiated within five to nine years after the start of oil production.

6. Studies indicate that depending on overall economic considerations, oil recovery of about 40% OOIP (8.5 billion barrels) can be achieved from the Main Area Sadlerochit reservoir for a reasonable range of operating conditions and reservoir descriptions. These reserves do not include additional production from the Eileen Area, other Permo-Triassic formations or gas liquids. An expected ultimate gas recovery of approximately 75% of the total gas-in-place in the field results in dry gas reserves of about 26 trillion cubic feet (after removal of gas liquids and non-hydrocarbons).

FIGURE 1

STRUCTURE MAP
TOP OF SADLEROCHIT SAND

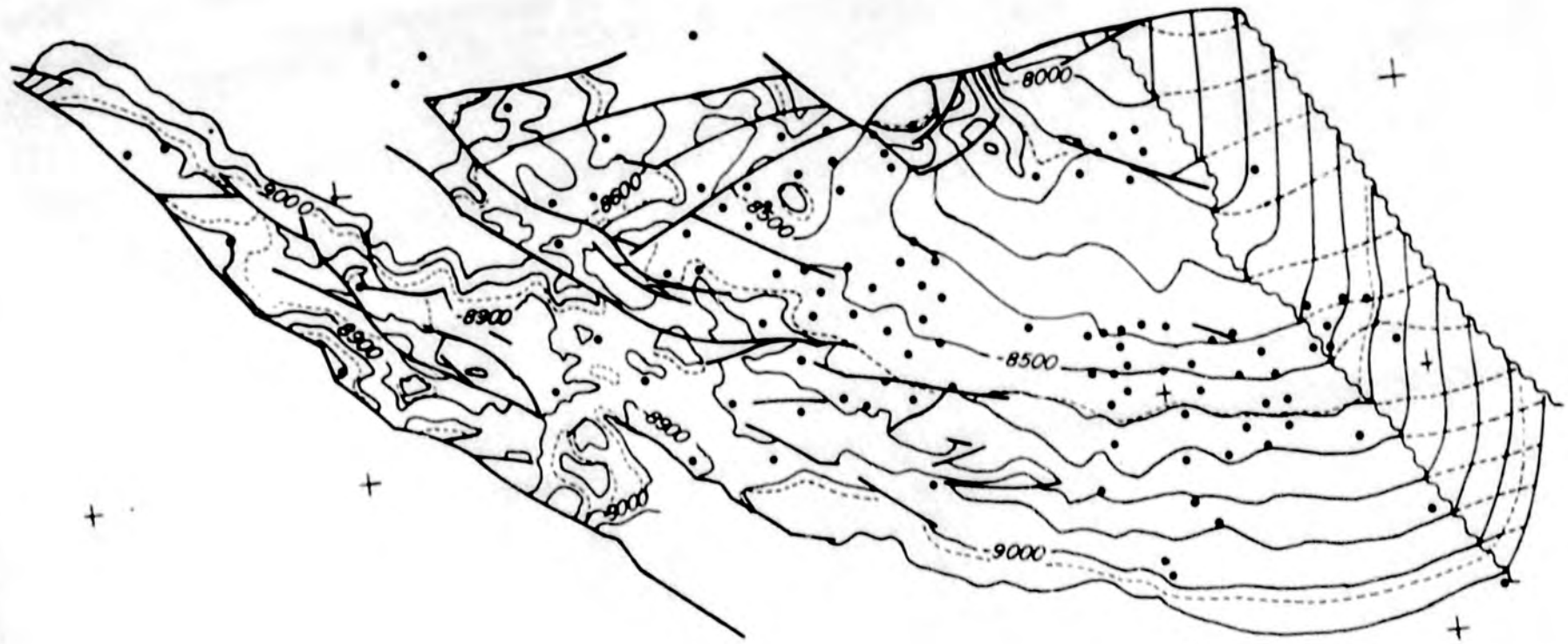


FIGURE 2

PRUDHOE BAY
SADLEROCHIT FORMATION

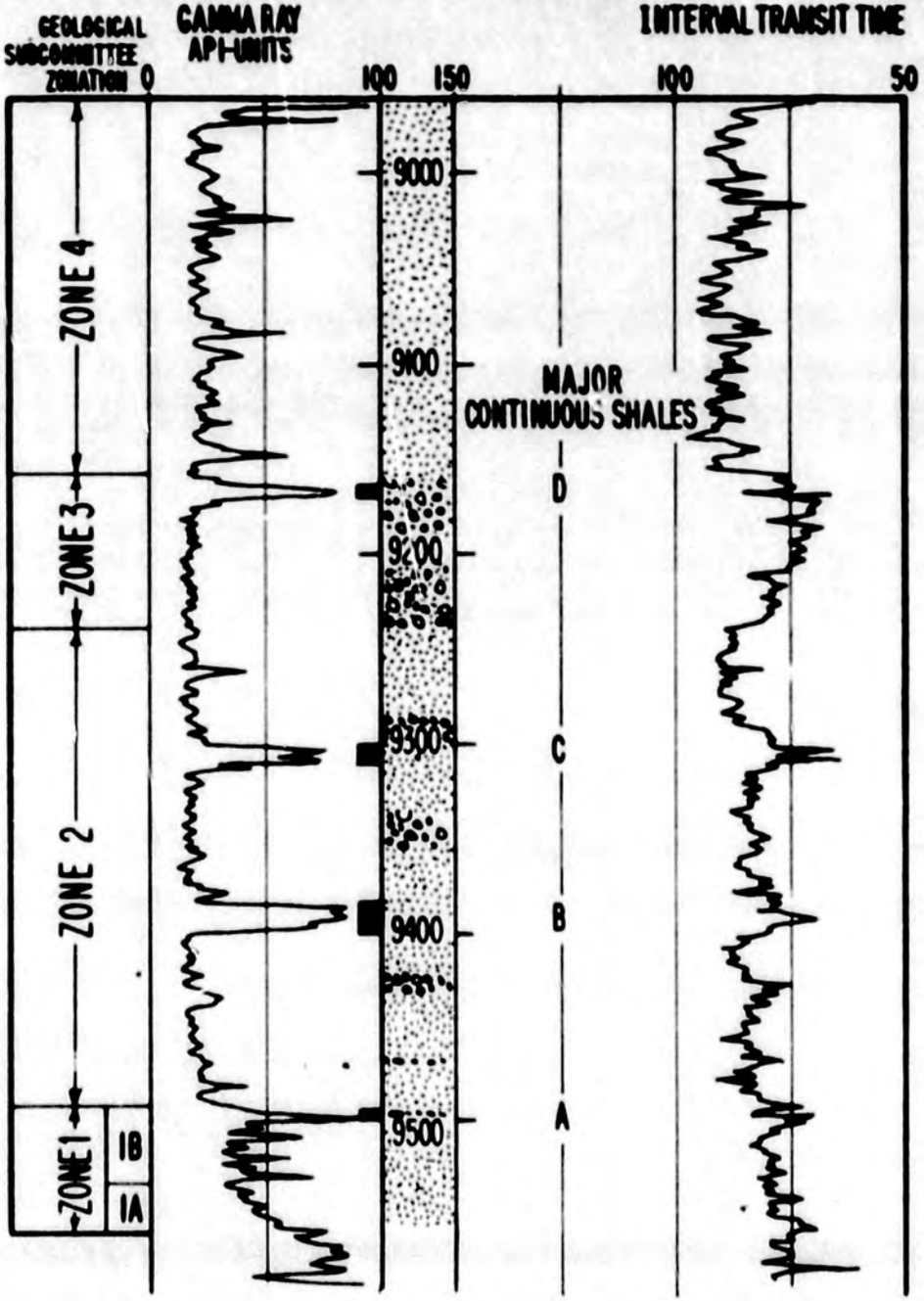


FIGURE 3

PRUDHOE BAY FIELD

3955

IN-PLACE HYDROCARBON VOLUMES

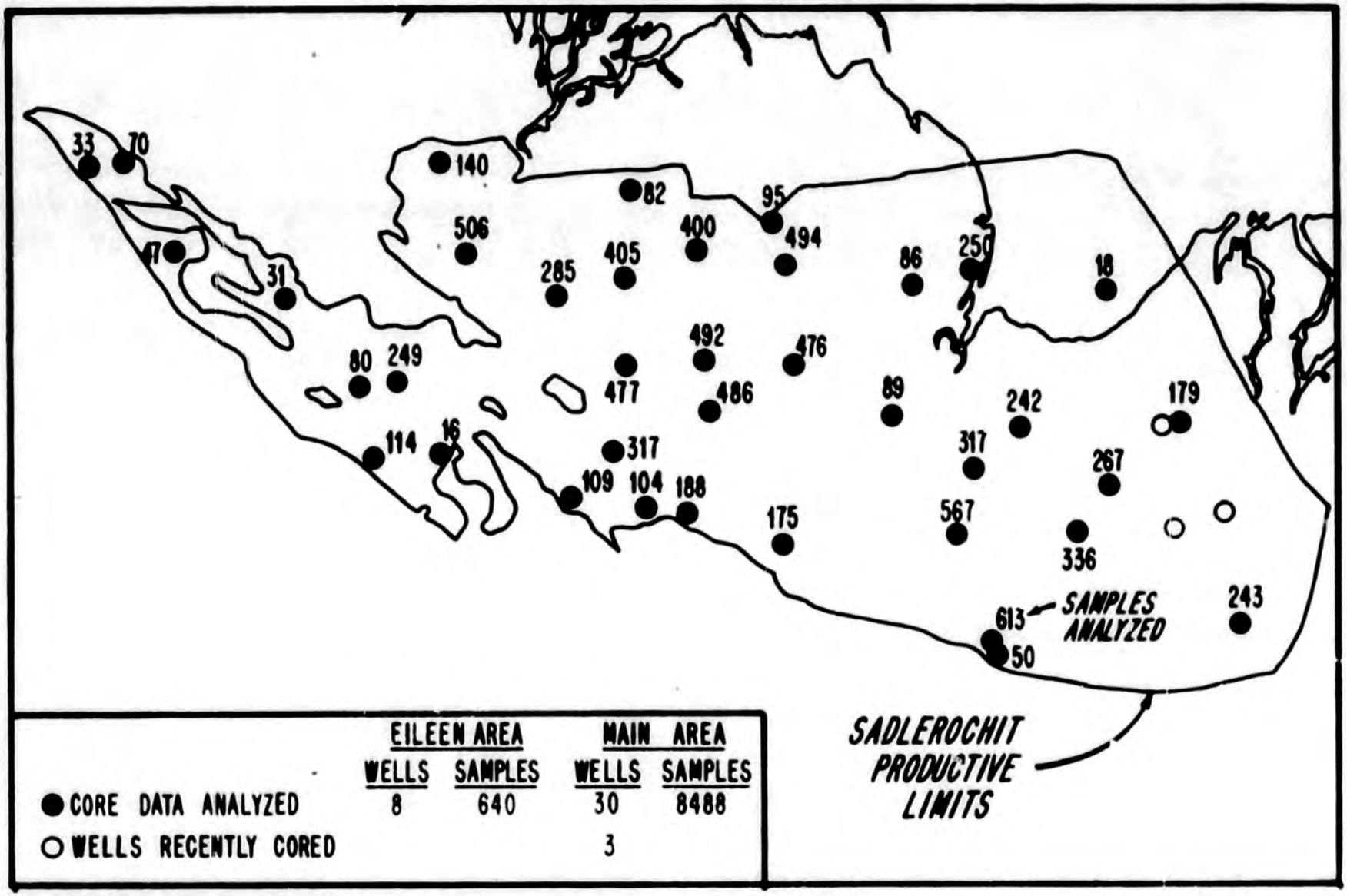
SAG RIVER, SHUBLIK & SADLEROCHIT FORMATIONS

	MAIN AREA			EILEEN AREA			TOTAL
	SAG	SHUB	SADL.	SAG	SHUB	SADL.	
GAS CAP (TSCF):	3.6	0.1	22.4	0.2	—	0.3	26.6
OIL ZONE (MMMRB):							
LIGHT OIL	0.8	0.1	27.2	0.1	<0.1	1.1	29.3
HEAVY OIL/TAR	—	—	1.9	—	—	—	1.9
TOTAL	0.8	0.1	29.1	0.1	<0.1	1.1	31.2

FIGURE 4

PRUDHOE BAY FIELD
CORE DATA & ANALYSIS
SADLEROCHIT RESERVOIR

3945-A



	EILEEN AREA		MAIN AREA	
	WELLS	SAMPLES	WELLS	SAMPLES
● CORE DATA ANALYZED	8	640	30	8488
○ WELLS RECENTLY CORED			3	

FIGURE 5

PRUDHOE BAY
SADLEROCHIT FORMATION

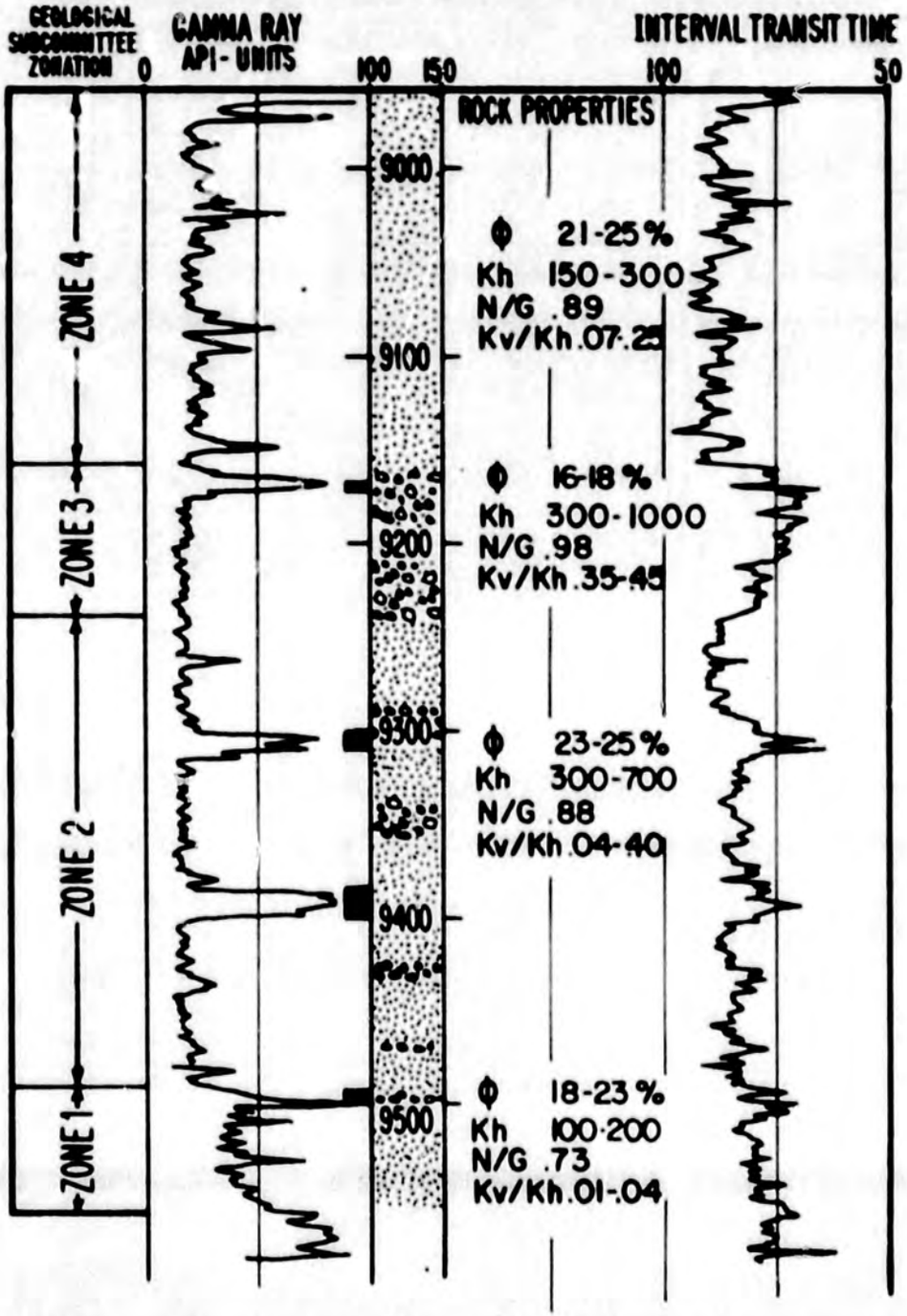


FIGURE 6
PRUDHOE BAY AREA

3949-D

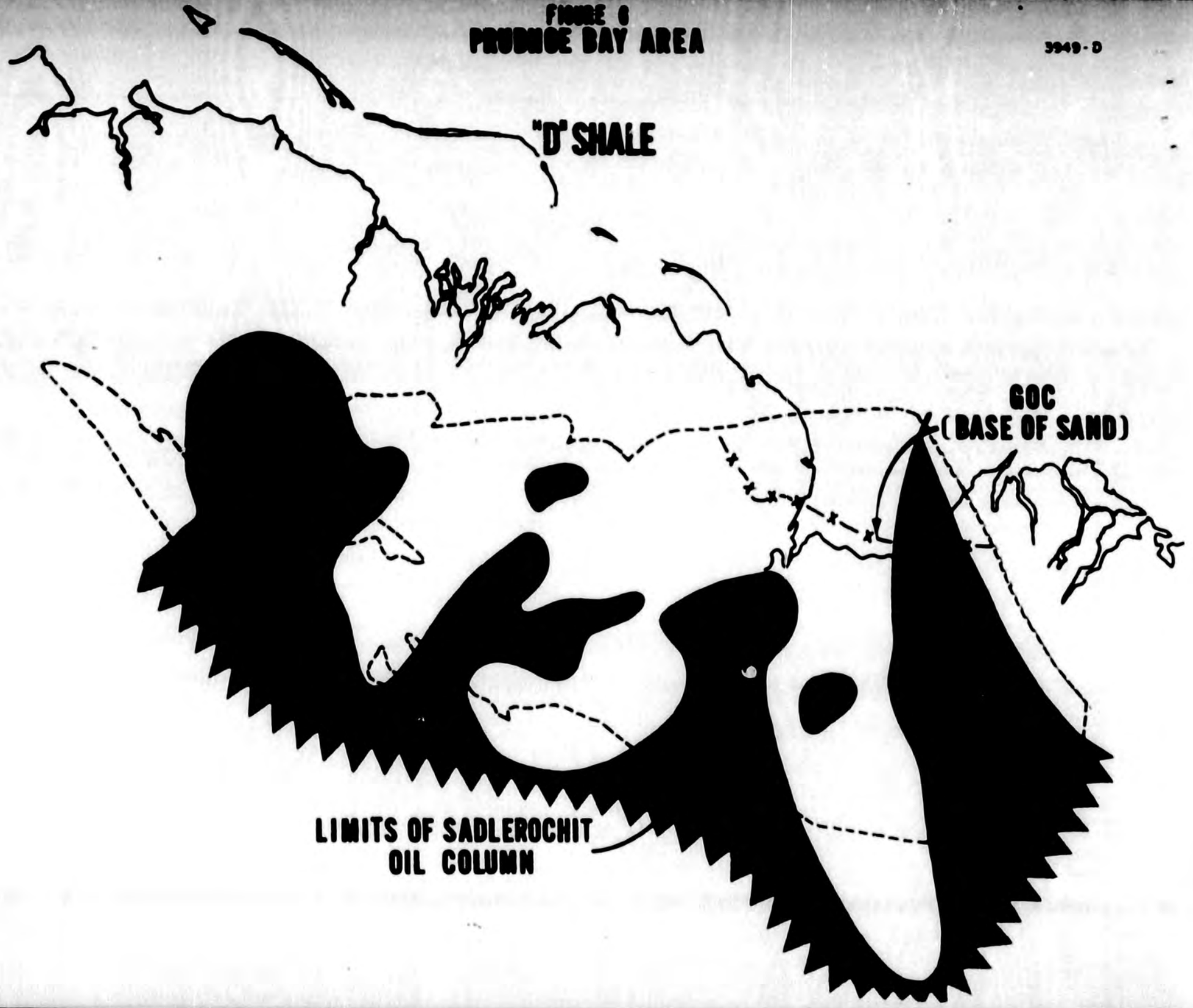


FIGURE 7

HEAVY OIL - TAR ISOPACH

C.I. = 20

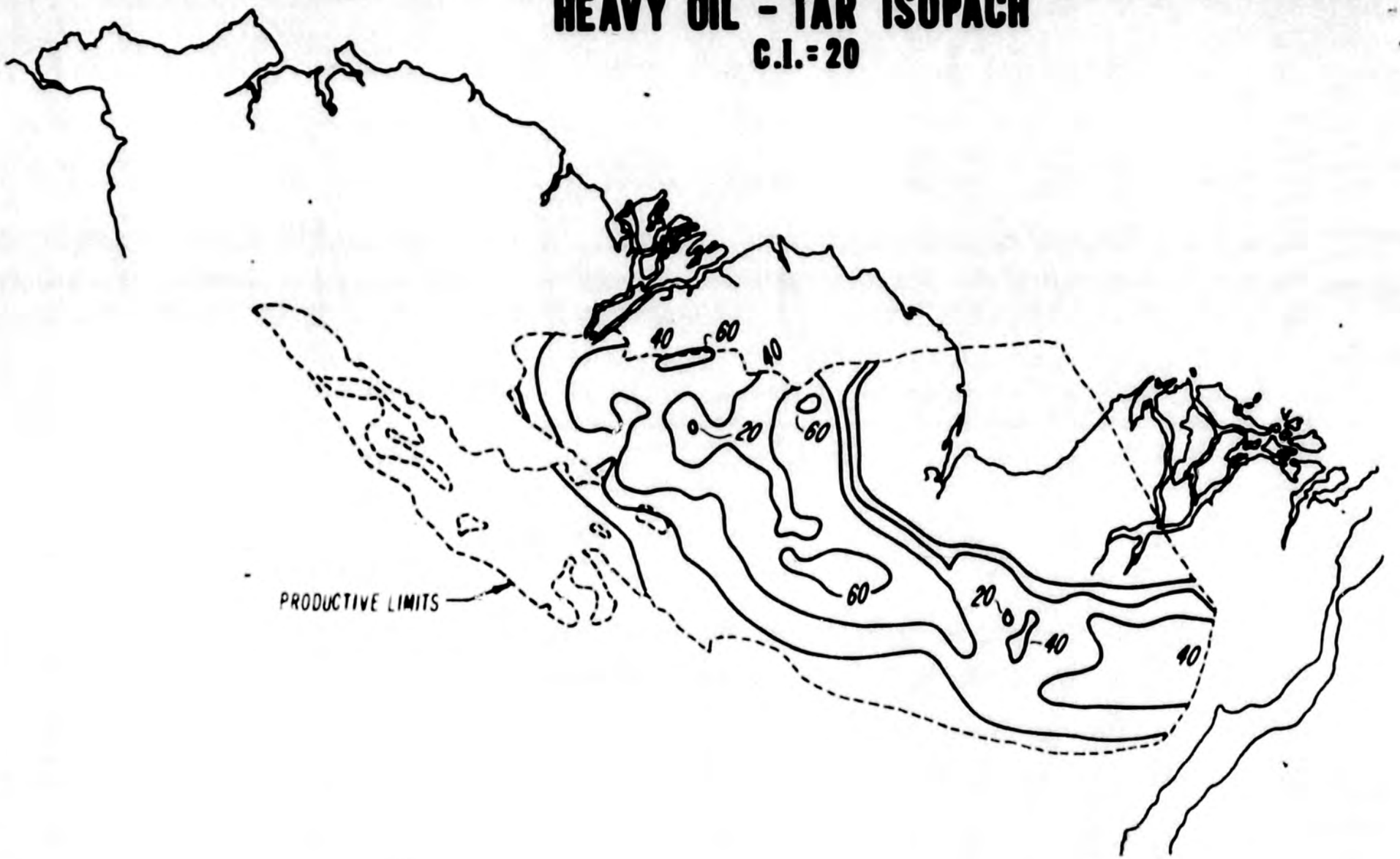
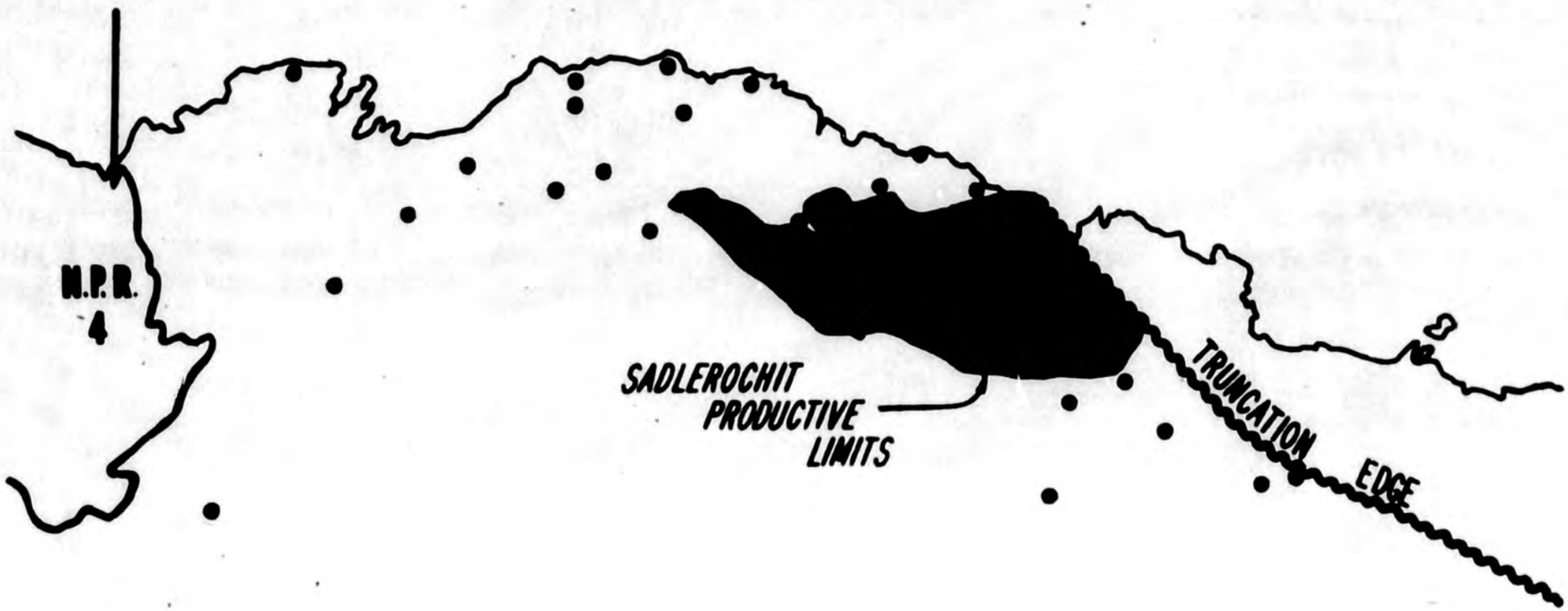


FIGURE 8

PRUDHOE BAY FIELD
AQUIFER DESCRIPTION
SADLEROCHIT RESERVOIR



DIST. FROM OWC (mi)	AVG. PROPERTIES		AQUIFER VOL. (Billion RB)
	Φ (%)	K (md)	
1.	20.6	225	36
5	18.1	80	163
10	15.3	25	308
15	13.5	12	400
25	11.4	5	705
50	9.1	2	1150

FIGURE 9

SADLEROCHIT WATER-OIL IMBIBITION RELATIVE PERMEABILITY

(20% CONNATE WATER SATURATION)

3952

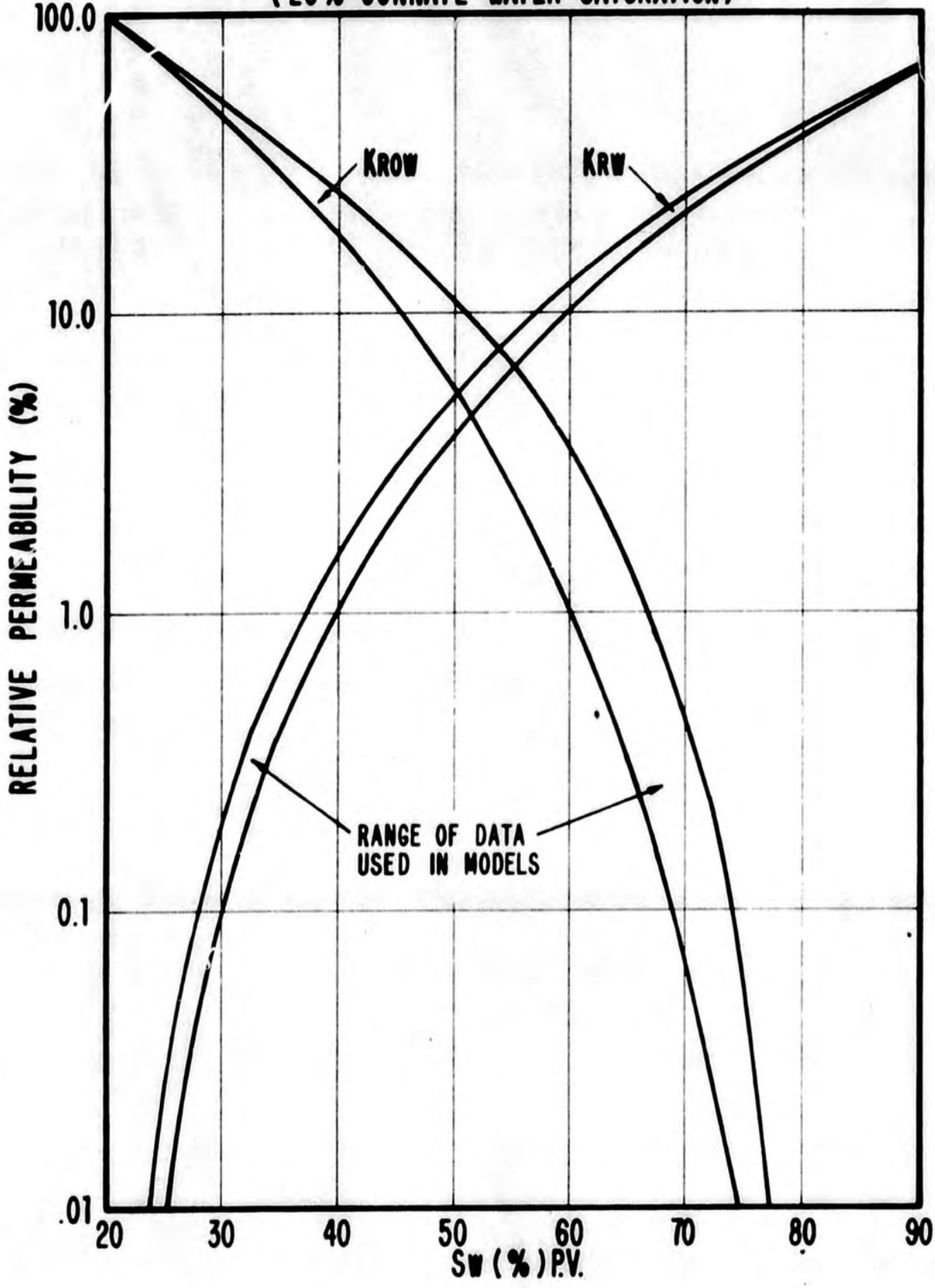


FIGURE 10

SADLEROCHIT GAS - OIL DRAINAGE RELATIVE PERMEABILITY

(20% CONNATE WATER SATURATION)

3953

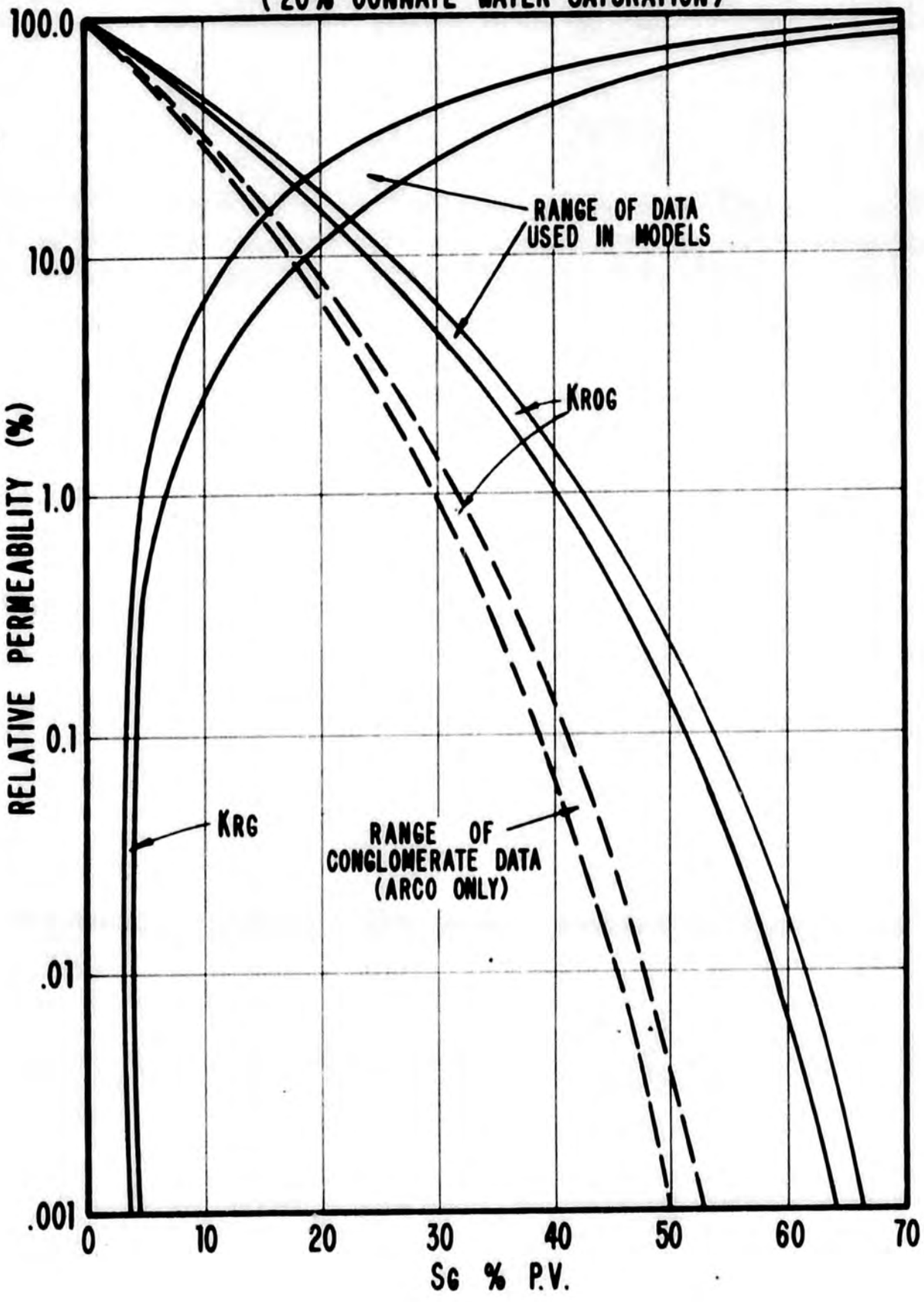


FIGURE 11

WATER INJECTION CASE STUDIES
MAIN AREA SADLEROCHIT RESERVOIR
PRUDHOE BAY FIELD, NORTH SLOPE, ALASKA

Case No.	Water Injection Program			Gas Pipeline Deliveries	
	Startup (Yrs. of Prod'n)	Peak Rate (MMB/D)	Total Injection thru 20 years (MMMB)	Start (Yrs. of Prod'n)	Rate (Bcf/D)
	CASE STUDIES RECOVERING APPROXIMATELY 39% OOIP:				
1.	5	1.7	8.5	5	2.0
2.	7	2.0	8.6	5	2.0
3.	9	2.5	10.0	5	2.0
4.	7/5	2.6	11.8	5	2.5
	CASE STUDIES RECOVERING APPROXIMATELY 40% OOIP:				
5.	7	2.0	8.6	10	2.5
6.	5	3.0	12.4	5	2.0
7.	7/5	3.0	12.2	5	2.0
8.	7	3.5	15.6	5	2.0

DIRECT TESTIMONY BEFORE THE
SENATE COMMITTEE ON ENERGY
AND NATURAL RESOURCES
OCTOBER 25, 1977

Mr. Chairman, Committee Members, I am Dr. Terry Koonce, Alaska Operations Manager for the Western Division of Exxon Company, U.S.A. Prior to assignments in Exxon's Production Department, I spent 10 years with Exxon's production research affiliate. For more than half of this time I was directly involved in and managed reservoir research and engineering studies for Exxon's worldwide operating affiliates. I appreciate the opportunity to appear before this Committee and to testify on a subject so vital to the Nation's energy supply.

Introduction

Exxon believes strongly that it is in the common best interest of the Nation and all concerned, including the producers, to maximize recovery of both oil and gas at Prudhoe Bay and elsewhere. We firmly believe that the plan of operation developed for the Prudhoe Bay Field is sound and that the estimated oil recovery of 40 percent will be achieved.

Exxon's experience in other fields supports this relatively high recovery efficiency. While we do not operate the Prudhoe Bay Field, we have a substantial working interest in the oil and gas and are assisting the operators with the technical skills necessary to maintain an operating plan that maximizes recovery.

Data Base

Exxon participated in drilling the discovery well in 1968; since that time, massive amounts of data have been collected and thoroughly analyzed to develop the best possible description of the Prudhoe Bay Field. Exxon, in conjunction with its research affiliate, has independently analyzed rock and fluid properties. Reservoir rock properties have been determined from more than 10,000 samples from over 40 wells and confirmed by approximately 50 production pressure tests. Fluid distribution in the reservoir is based on the rock samples and over 70,000 feet of well logs from 175 wells. Fluid properties have been derived from over 40 samples of the oil and gas in the reservoir. Displacement efficiencies have been determined from extensive lab tests, many of which were conducted at reservoir temperature and pressure conditions using actual reservoir rock and fluids.

Using this data base, we have been actively involved in conducting independent reservoir performance studies necessary for development of a field operating plan. We have taken into account comparisons with other producing fields and have employed proven reservoir engineering technology, including the use of the most advanced models and simulator techniques available. Exxon alone has devoted about 50 man-years and 700 hours of computing time to Prudhoe Bay reservoir studies.

Operating Plan

Our studies support the operating plan for the Prudhoe Bay Field which includes:

First, an annual average oil offtake rate of 1.5 million barrels per day when oil pipeline capacity is available. Our studies have shown essentially the same oil recovery for oil offtake rates ranging from 1.2 to 1.8 million barrels per day. At the planned offtake rate, oil production is projected to decline after 1987 at a normal rate of about 14 percent per year.

Second, the plan includes gas pipeline deliveries of 2.0 billion cubic feet per day as soon as a gas transmission system can be completed. It is estimated that this gas delivery can be sustained for 20 to 25 years before declining.

Third, low pressure and artificial lift systems are planned when needed to maintain productive capacity, and

Fourth, injection of produced water into the reservoir is planned as soon as those volumes become significant, now estimated to be within 2 to 4 years. Additionally, injection of water from a source external to the reservoir can begin within about 7 years when additional oil recovery benefits are confirmed and the optimum injection locations and volumes are determined. This timing is adequate to achieve maximum benefits of waterflooding.

The detailed studies supporting this plan were presented to the State of Alaska Division of Oil and Gas Conservation and their consultant during the course of technical meetings requested by the Division in 1975 and 1976 and were summarized at the public pool rules hearing in Anchorage on May 5 and 6, 1977.

Surveillance

We are confident that the approved operating plan has sufficient flexibility to accommodate variations in reservoir performance from that predicted. The key to recognizing these variations and optimizing the operating plan is a thorough program of reservoir surveillance and testing. Such surveillance activities include monitoring pressures, gas-oil contact movement, oil-water contact movement, and individual well performance. These activities have been approved by the State of Alaska Division of Oil and Gas Conservation and are incorporated in the field rules.

Tertiary Recovery

In the course of our reservoir performance studies, the possible application of tertiary recovery programs has also been considered. Exxon maintains a considerable research effort devoted to developing viable tertiary recovery techniques, but we know of no such techniques that would be applicable at Prudhoe Bay on a fieldwide basis. The industry has many field tests of tertiary processes underway in more mature fields in the lower 48. As such research and development continues, we will examine the potential use of tertiary recovery methods in the Prudhoe Bay Field.

Doscher Testimony

I would like to comment briefly now on Dr. Doscher's testimony. In June and July of this year, reservoir engineers from Exxon, as well as BP and ARCO, met twice with Dr. Doscher. The purpose of the meetings was to allow him to review the studies which served as the basis for the operating plan approved by the State of Alaska. At the close of those discussions, Dr. Doscher took no exception to the approved operating plan for the field, which includes gas sales. We are not aware of any independent analyses that he had conducted at that time or has conducted since that time. Consequently, we do not understand how, based on existing studies, he could have reached the conclusions he stated before this Committee on October 12.

As we previously testified before the State of Alaska, our studies show that there is sufficient operational flexibility to make gas sales of 2.0 billion cubic feet per day without adversely affecting ultimate oil recovery.

Simulation studies conducted independently by the field operators and numerous consultants for the State of Alaska, the Department of Interior, and gas pipeline applicants also support the preferred plan of operation for the field including early gas sales.

It is unfortunate that confusion has arisen in the proceedings of this Committee in spite of such overwhelming evidence. In Exxon's view the Committee should move forward in its consideration of the gas pipeline with confidence that Prudhoe Bay gas can be produced without adversely affecting oil recovery.

Conclusions

In conclusion, the approved operating plan for the Prudhoe Bay Field meets the major objectives we feel are important.

First, it provides for the timely development of the total Prudhoe Bay energy resource, both oil and gas. The earliest possible development of Prudhoe Bay gas is extremely important since it represents 12 percent of proven domestic gas reserves. The Department of Interior and Federal Power Commission have stated that Prudhoe Bay gas is competitive with alternative energy sources and its development has a positive net national economic benefit.

Second, the reservoir will be managed to achieve the maximum recovery of both oil and gas, consistent with sound engineering practices.

Third, the plan provides the flexibility necessary to respond to actual reservoir performance so as to maintain efficient recovery of oil and gas from the field.

In view of the critical need for domestic energy supplies, Exxon believes the prompt and efficient development of Prudhoe Bay oil and gas resources is in the common best interest of the producers, the State of Alaska, and the Nation.

STATEMENT OF

E. G. HOULSTON
BP ALASKA, INC.

BEFORE THE

SENATE COMMITTEE ON

ENERGY AND NATURAL RESOURCES

OCTOBER 25, 1977

TESTIMONY OF E. G. HOULSTON
BP ALASKA/SOHIO

My name is George Houlston. I am the Manager of Reservoir Engineering for BP Alaska. BP Alaska operates in the Prudhoe Bay Field on behalf of The Standard Oil Company of Ohio.

I am here today in response to your request to take testimony concerning recommendations made before this Committee on October 12, by Dr. Todd Doscher. My statement today has been prepared to clarify BP/Sohio's position in regard to the points raised before this Committee.

Many studies on the Prudhoe Bay Field have been performed. Indeed, the claim has been made that this Field has been studied more than any other prior to production. In my opinion the most comprehensive review of the work performed on Prudhoe Bay Field was presented by the Working Interests and the Consultants to the State of Alaska, at the Conservation Hearing held in Anchorage on May 5 and 6. Those proceedings are a matter of public record.

The Prudhoe Bay Field is estimated to contain some 22.9 billion barrels of stock tank oil in place. By far the most significant portion of this in place oil, some 22.2 billion stock tank barrels, is to be found in the Sadlerochit formation. The other .7 billion stock tank barrels are located in the Sag River and Shublik formations which overlie the Sadlerochit. Major geologic

faults appear to partition the reservoir between the Main Area of the Field and the West End or Eileen Area. The Field is thus subdivided by geologic formation and by area.

The Main Area Sadlerochit contains 21.4 billion stock tank barrels, and it is this accumulation which has been the subject of intensive study by the Working Interests in the Field and by other interested parties. It has been estimated that oil reserves of about 8.6 billion stock tank barrels will be recovered from the Main Area Sadlerochit. The estimated oil reserves for the entire field amounts to some 9.4 billion stock tank barrels. These include .5 billion stock tank barrels of condensate recovered from gas cap gas and .3 billion barrels from the Sag River and Shublik formations and the West End Sadlerochit.

Gas cap gas in place in the field amounts to 26.5 trillion cu.ft. at standard surface conditions. A further 17.1 trillion cu.ft. of gas is in place as solution gas. Some 26.5 trillion cu.ft. of hydrocarbon gas are considered to be recoverable and 300-400 million barrels of gas liquids. The heating equivalent of these reserves amounts to about 5 billion barrels of crude oil.

BP Alaska, acting on behalf of Sohio Petroleum, has viewed production from the field as a matter of maximizing total hydrocarbon recoveries. The studies we have conducted have been aimed towards formulating sound reservoir management policies consistent

with that objective. Our studies have concentrated primarily on the Main Area Sadlerochit reservoir. The oil recoveries estimated in reservoir simulation calculations do not include the 800 million barrels of oil and condensate recoverable from other sources in the Field.

The studies we have conducted have included not only reservoir fluid flow considerations but also other factors which influence reservoir performance such as well density, surface facility operating conditions and capacities, gas lifting or pumping of oil wells, and the injection of gas and water. Ultimate hydrocarbon recovery is the outcome of collectively exercising these development options to varying degrees and at appropriate times throughout the life of the Field.

Based on current reservoir information and proven methods of recovery our studies have led us to a plan of operations which incorporates the following major elements:

(i) Production of oil at an average rate of 1.2 MMB/D increasing to 1.5 MMB/D when pipeline capacity is available.

(ii) The re-injection of gas produced in excess of that needed for fuel and sales.

(iii) The delivery of 2 BCF/D of sales gas as soon as a gas pipeline and a plant to condition the gas to specification

can be completed. (Currently estimated to be some time during 1983).

(iv) The drilling of wells on 160-acre spacing or closer if necessitated by reservoir performance.

(v) The re-injection of produced water into the reservoir and the probable supplementing of such water with source water within seven years from the start of oil production (i.e., 1984 or earlier).

(vi) The installation of lower pressure gathering and separation systems and artificial lift facilities.

(vii) A very intensive program of reservoir surveillance and testing to compare forecasted against actual performance on a continuous basis.

By implementing this plan of operations it is anticipated that peak production rates from the Field could be sustained for seven or eight years and deliveries of gas could be held at 2 BCF/D for about 25 years. In all the cases we have studied, oil production declines when gas handling facilities can no longer cope with the gas produced with the oil. It should be possible to manage and operate the reservoir within the framework of this plan to achieve a recovery of about 40% of the original oil in place after 25 years and about 72% of the gas originally in place over 40 years.

After 25 years of oil production our simulation models indicate residual oil saturations in the original oil column which are mainly in the range of 25-45%. Earlier testimony given to this Committee to the effect that residual oil saturations in our simulatio runs were extremely low, approaching zero, can be categorically dismissed as without foundation and in complete contradiction to sworn testimony presented by BP Alaska to the Division of Oil and Gas Conservation, State of Alaska.

Scope may well exist for improving recoveries by applying methods of enhanced recovery, when such methods have been proven in the field. The plan of operations should not diminish the viability of any such prospective schemes. The Working Interests will remain continuously alert to all promising schemes for additional recovery.

In developing the present plan of operations, we investigated many variations in oil offtake, gas sales and water injection. In contrast to some opinions expressed, our studies have shown that the timing of gas sales at a rate of 2 BCF/D affects ultimate oil recovery only slightly. We estimate a possible loss of oil recovery on the order of 1% of the oil in place or just over 200 million barrels over 25 years of oil production. Over the same period, more than twelve times the heating equivalent of the 'lost' oil could be recovered through gas sales. We conclude that the rather

sweeping quality judgment that the sale of gas is detrimental to ultimate oil recovery, is thoroughly misleading when considered out of the context of the level and timing of gas sales, the associated oil offtakes and all the other developments which are planned to promote recovery from the Field.

We have tested our plan of operations against oil offtakes of 1.2 to 1.8 MMB/D and gas sales of 2 BCF/D starting as soon as a gas line and conditioning plant can be completed. Again, from our studies we expect only slight variations in ultimate oil recoveries after 25 years of production.

At oil offtake rates of 1.5 MMB/D, we have studied the effects of gas sales at 2.5 BCF/D commencing as soon as a gas pipeline is available. This resulted in a lower oil recovery of about one and one-quarter per cent after 25 years. Using an earlier reservoir description we also investigated extreme cases of no gas sales and sales of 3.5 BCF/D. In the case of no gas sales, water was still injected though at a lower rate, and recovery obtained was about one and one-half per cent higher than with sales at 2 BCF/D. At gas sales of 3.5 BCF/D recovery fell by about 5% but this run was performed with the same water injection rate as the 2 BCF/D gas sales rate. A more successful outcome would have been possible but was not pursued. We have concluded that gas

sales at 2 BCF/D should not cause concern in regard to ultimate oil recovery. At this stage, any proposal to sell gas at 2.5 BCF/D by 1983 we would approach with caution, and we would actually oppose any scheme to sell gas at 3 BCF/D as early as 1983.

It is recognized that the forecasting of reservoir performance with little or no production history in a field as large as Prudhoe Bay is subject to uncertainty. We have had to rely heavily on our reservoir simulation studies to predict detailed reservoir behavior. However, the experience that has been gained from operating other fields similar to Prudhoe Bay has been specially valuable in assessing the validity of our model predictions. We are confident that our near term assessment of Prudhoe Bay performance is a reasonable one.

Looking to the longer term, in many of the reservoir simulation model runs we have made, the differences in oil recovery arising between hypothetical reservoir management options do not become fully apparent until after about 15-20 years of oil production have taken place. There is every reason to expect, therefore, that there will be time and scope to adapt our plan of operations to ensure that hydrocarbon recoveries are maximized. The intensive reservoir surveillance and testing program which we will be undertaking will provide the control information necessary for those purposes.

The Working Interests in the Prudhoe Bay Field have acquired unusually detailed reservoir information prior to production. This has been very fully utilized and very considerable efforts have been devoted to studying the Field and developing the plan of operations. Although the results of the studies performed by the Working Interests are not the same in numerical detail, all the Working Interests have drawn similar conclusions in regard to how the Field should be produced.

Mr. Chairman, I submit that this consensus view is a sound technical basis to support the sale of Prudhoe Bay gas as soon as a pipeline and conditioning plant can be constructed.

BP ALASKA, INC.
SAN FRANCISCO, CALIFORNIA
October 25, 1977

TESTIMONY OF O. K. GILBRETH, JR.
DIRECTOR, DIVISION OF OIL AND GAS CONSERVATION
DEPARTMENT OF NATURAL RESOURCES, STATE OF ALASKA

BEFORE THE
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C.
OCTOBER 25, 1977

Mr. Chairman, other distinguished Senators, Ladies and Gentlemen. My name is O. K. Gilbreth, Jr. and I am Director of the State of Alaska'a Division of Oil and Gas Conservation in the Department of Natural Resources and Chairman of its Oil and Gas Conservation Committee. Our office is located at 3001 Porcupine Drive, Anchorage, Alaska 99501. With me today is Mr. Hoyle Hamilton, our Chief Petroleum Engineer, who is also a member of the Oil and Gas Conservation Committee, Dr. H. K. van Poollen, President of H. K. van Poollen and Associates who is a consultant for the State, and Robert H. Loeffler, who has been counsel to the State in the gas pipeline proceedings.

My primary responsibility as Director of the State Division of Oil and Gas Conservation is to regulate oil and gas industry operations to prevent the physical waste of oil and gas in the State and to protect the correlative rights of all interests in an oil and gas field. Our goal is to regulate production in a manner which will insure that maximum recovery of hydrocarbons is achieved and physical waste is avoided.

I presented testimony to the Federal Power Commission during its hearing on the Alaska gas pipeline similar to the testimony I am presenting here today. I also accompanied the State's Commissioner of Natural Resources when he presented testimony on the subject of production rates from the Prudhoe Bay Field before the Senate Interior and Insular Affairs Committee in February, 1976.

First, I will address briefly a history of the field and the State's preparation for exercising its regulatory responsibilities with respect to the field, next I will respond to the five questions your Committee addressed to us, and finally I will comment upon several points made by Professor Todd Doscher in his testimony to this Committee and in his report for the State of Alaska's Legislative Affairs Agency.

After the Prudhoe Bay Field was discovered, our assessment of the reservoir content, size, configuration and fluid properties suggested to us that the reservoir probably would be rate sensitive and that the rate of gas withdrawal might affect oil recovery. For that reason, in 1972 we recommended to the legislature that the State undertake an independent reservoir study of the Prudhoe Oil Pool using reservoir models to simulate the reservoir performance of the Pool. Funds were appropriated for that purpose and the State hired the firm of H. K. van Poollen and Associates of Littleton, Colorado to assist in this analysis. The van Poollen firm was selected because it is one of the foremost firms in the Nation specializing in petroleum engineering and reservoir

simulation.

Generally, State personnel did the geological and mapping work and some of the basic reservoir engineering. The van Poollen organization performed a large part of the reservoir analysis and made the simulation runs which predict reservoir performance. Our Chief Petroleum Engineer, Mr. Hamilton, has supervised this work and maintained overall control of the project since inception. During the five years of this study, the State has spent approximately one-half million dollars in addition to several thousand manhours on accumulating and analyzing the reservoir data.

Because of the vast size of the Prudhoe Bay Field, it was realized early in the development of the field that it would be very difficult to protect correlative rights in the reservoir under conventional operations. Consequently the parties holding interests in the field joined to form a unit, as authorized by State law, so that the reservoir could be operated in an efficient and economical manner. In essence, this is achieved by operating the field as a single large lease with two operators, Atlantic Richfield Company and BP Alaska, Inc. The unit agreement, to which the State is a party by virtue of its status as an owner of a royalty interest in the field, was approved and signed by the State in May of this year and became effective retroactively to April 1. In agreeing to the Unit Agreement the State was acting in its proprietary capacity as lessor of the field and as owner of a royalty interest in the field.

Earlier this year the operators also requested approval of the Oil and Gas Conservation Committee of their plan to operate the Prudhoe Bay Field. On May 5, 1977, a public hearing was held by the Alaska Oil and Gas Conservation Committee to determine the acceptability of the operators' plans, to determine the proper initial rates of production for the reservoir and to adopt field rules regarding operation of the Prudhoe Oil Pool. As a result of that hearing Conservation Order No. 145 was issued by the Oil and Gas Conservation Committee. A copy of that order is attached to this testimony as Exhibit 1. The order contains many requirements to secure data during start-up and the initial production periods to aid in determining proper methods of operation of this reservoir.

The order requires that the operators obtain many bottom hole pressures in the early years of production and the securing of other data to aid in the surveillance of the gas/oil and water/oil contact movements. These requirements are designed to ensure that adequate information is obtained during the early life of this reservoir and to permit future operations to be undertaken in a manner to achieve the greatest ultimate recoveries.

Large volume production from this field started on June 20, 1977, but due to problems at Pump Station 8 the anticipated rates of production have not yet been realized. Data are already being gathered however to aid in matching computer predictions to actual field performance data.

With this as a background, we turn to the five questions that we understand the Committee would like to have addressed in our presentation.

1. Existing reports and data pertaining to producers plans for operating the field.

In October of 1976 the operators filed with the State their proposed plan of operations. Basically they plan to develop the reservoir on 160-acre spacing with initial production rates of 0.6 million barrels per day for six months, 1.2 million barrels per day for approximately twelve months and then increasing the rate to approximately 1.5 to 1.6 million barrels a day until production decline is reached. The plan provides for gas pipeline deliveries of 2.0 Bcf/D as soon as gas pipeline facilities are available and a conditioning plant can be approved and constructed. The plan also contemplates selective injection of produced water into the Prudhoe Oil Pool when those volumes become significant. Although a final committment cannot be made yet because of the need to gain operating experience with this Pool, the plan anticipates that water injection from sources outside the Pool will be initiated within five to nine years after the start of oil production.

Our study shows us that the Prudhoe Bay reservoir will be rate sensitive. By this we mean that the

ultimate oil recovery from the reservoir would be affected by the net withdrawals from the reservoir and in some cases even by the rate of withdrawal. If oil, gas and water are removed without their reservoir volume being at least partially replaced, a reduction in oil recovery will result. If the reservoir voidage caused by production is replaced, then recoveries will be increased and can be maximized by the volume injected. Accordingly, we believe that fluids must be injected into the reservoir to supplement the natural recovery mechanism and that reservoir performance must be monitored closely and withdrawals controlled to achieve the maximum oil recovery. It is therefore obvious that if gas is to be sold, fluids or gases must be injected into the reservoir. The level of gas sales will be determined by the volume of fluids injected. In this respect, our studies do not differ significantly from those of the operators.

Our reservoir study -- commonly referred to as the van Poollen Report -- which leads to these conclusions was not undertaken for the purpose of dictating to the operators how the field must be operated. Rather, it was done to provide us with a guide to evaluating the operators proposal to manage the field.

The van Poollen Report was supplied to the Federal Power Commission and to all parties, including the competing pipeline applicants, in the Federal Power Commission Alaska gas pipeline proceeding.

2. The possible effects of gas withdrawal at rates between 1.5 and 2.6 million cubic feet per day correlated with oil production between 1.2 and 2.0 million barrels per day.

After the operators filed the proposed operating plan, the State utilized it to update Alaska's model of the Prudhoe reservoir and made several additional computer runs. These additional runs may be found in a February 1977 supplement to our reservoir study titled "Prediction of Reservoir Fluid Recovery Sadlerochit Formation Prudhoe Bay Field, Supplement A." By using the later data, we were able to make more definitive runs than had been made before. Our reports studied gas withdrawal rates of two (2) to five (5) billion cubic feet per day (i.e., gas sales of 1.5 - 3.75 Bcf/Day), correlated with oil production between 1.2 to 1.8 million barrels per day. We also studied oil recovery with no gas sales.

We looked at the effect of gas production and sales on ultimate oil recovery from the reservoir. Our analyses showed that if fluids are not returned to the reservoir to replace the voidage, ultimate oil

recovery is reduced. In this case, the greater the gas sales rates, the greater is the loss in ultimate oil recovery.

We also looked at the effects of water injection in the event of gas sales. If gas sales are kept at a constant rate of 2 billion cubic feet per day, there will be an increase in oil recovery with water injection. Early start of water injection will give a slightly higher oil recovery than a delay of several years but the advantage is slight. Our cases included some in which no gas sales were made and water was injected. These cases showed oil recovery about the same as would result from gas sales with larger volumes of water injection.

These analyses show that gas production rates in excess of 2.7 billion cubic feet per day, which would give gas sales rates in excess of 2 billion cubic feet per day, would cause a significant reduction in ultimate oil recovery unless very large volumes of fluids are returned to the reservoir. As a practical matter, it may not be possible to inject enough fluids to permit sustained sales rates very much in excess of 2 billion cubic feet per day.

3. <u>An evaluation of a successful injection program, utilizing water or carbon dioxide, instead of natural gas produced from the field</u>.

Once the Prudhoe Bay reservoir is producing at a normal rate it will be necessary to have at least two and maybe more years of production to achieve a degree of reliability in forecasting the best future method of operation for this reservoir. Mr. Doscher has suggested that carbon dioxide be considered as an injection fluid in this field for enhanced recovery. No one knows at this time, including Mr. Doscher, what the best recovery mechanism will be. It is just as possible that the best recovery methods will incorporate either water, enriched gas, solvents, fire, steam, chemicals or inert gases or some combination of these.

It should be noted that many of these methods of recovery show some promise to aid in the production of substantial amounts of additional oil. Many of these exotic methods however have not yet been proven in the field and current economics will not permit their use. Some are at the technological and economic edge of the state of the art. As the price of oil is increased, they become more attractive and possible. Certainly with the tremendous volumes available at Prudhoe, neither the State nor the operators have to be told to consider these possibilities.

We are convinced that some fluids must be injected into the reservoir. However, until enough

production history is available to validate the reservoir simulation programs, we do not believe it is possible for anyone to say what the ultimate method of operation of the reservoir should be. We have required that operators secure voluminous data which will help define the reservoir parameters. As is our right and our responsibility, we will exercise continuing jurisdiction over the operation of the field and will require that the method ultimately chosen by the operators be one that will achieve that greatest recoveries from the reservoir consistent with sound engineering and operating practices.

4. What type of producing plan appears to be most appropriate to insure the maximum production of both oil and gas over the expected life of the field.

Water injection as contemplated by the operators of the Prudhoe Bay Field has proved to be one of the most reliable techniques for maximizing oil recovery in fields all over the world. This does not mean that other techniques should be ruled out even though they may be currently uneconomic or not technically feasible at this time. One such technique, the injection of CO_2, is being considered. The produced gas in the Prudhoe Bay Field does contain approximately twelve percent CO_2 which could be removed and injected

into the reservoir. We have not ruled out any recovery techniques yet, nor have we foreclosed use of alternative techniques by our authorization of an initial operating plan.

Our opinion is that proceeding as we have will not result in any irreversible damage to recoveries. During the first five years of operation, or until the approximate time that a gas line could become operational, we estimate that the decrease in reservoir pressure would amount to approximately ten percent of the original pressure. By that time we will know if and to what degree the decline must be arrested or if it should be reversed.

If, in the future, a better method of operation is indicated we believe that the maximum recoveries still can be achieved. We believe the free gas saturation to be established by permitting the reservoir pressure to drop will be beneficial to a water or gas injection project. If some other type of project is undertaken and the free gas saturation is not needed, it can be eliminated simply by rebuilding reservoir pressure by injection. This has been done many times in other fields. As a matter of fact, our own Swanson River Field in Alaska, which is a very large field by conventional standards, has an extremely efficient recovery and it was operated in this manner. The

field produced for some period of time before a miscible gas injection project was initiated. The recoveries have far exceeded most expectations.

In short, we do not believe that a pressure decline of the magnitude we have described would have any long term detrimental effects on ultimate oil recovery and we certainly do not agree with Mr. Doscher that there would be losses in the magnitude of billions of barrels.

5. What the likely rate of gas production will be for each year over the expected life of the field.

If the plan of operations as proposed by the operators is followed, with significant water injection, our work indicates that a gas sales rate of two Bcf/D starting in approximately five years could be sustained over the remaining life of the field.

In summary, Mr. Chairman, let me say that the State of Alaska is aware of the many unknowns in producing this reservoir and of many possibilities in the mode of operations. We have made a completely independent and comprehensive study of this reservoir. We have concluded that the present proposal of production rates of 2.7 billion cubic feet per day which will provide about two billion cubic feet of gas for sale will not be detrimental to recoveries if satisfactory fluid volumes are injected in a reasonable time. This depends on the plans of the operators. It is our intent to maintain a close sur-

veillance of the reservoir performance and require operations that will achieve the greatest recoveries.

Now I would like to comment on certain aspects of Mr. Doscher's testimony. To begin with, it is important to distinguish between the basic engineering conclusions reached by Mr. Doscher in his report and the broader more philosophical and policy pronouncements contained in his report. Basically, as a petroleum engineer, I find little dispute with Mr. Doscher when he describes what is still unknown and must be learned, as operations continue. Our plan is to learn more and act accordingly. It is on policy matters where I cannot agree with Mr. Doscher's approaches. For example, Mr. Doscher says: "No operating plan should be approved or committed to by the State at this time which does more than assure the minimum orderly development of the field to attain crude oil production at the rate required for successful operation of the Aleyska Pipe Line." I see two problems with that statement. First is the assumption that our approval of an operating plan was, or should be, motivated by a desire to ensure successful operation of the Alyeska Pipeline. Our approval of a plan is based on conservation of hydrocarbons in the reservoir. If successful operation of the Alyeska line needed 1.5 million barrels/day and the reservoir could only produce at 1.0 million without loss of ultimate recovery, then we would be legally required to limit production to 1.0. Happily, this is not the case.

The second problem with Mr. Doscher's statement is that it implies that the State has committed to more than is

necessary. That is not the case. Conservation Order No. 145 clearly indicates the Conservation Committee is concerned about production rates of the reservoir, will retain continuing jurisdiction, and will review and require adjustments in the operating plans if additional information indicates adjustments are appropriate. I believe what Mr. Doscher would have had the Conservation Committee do is remain totally silent on the question of gas production. While that certainly was possible, I believe such course would have been irresponsible in light of the National concern and interest in the question. We choose instead to share our knowledge on this point and to make the clear decision to proceed in a manner consistent with good conservation practices.

I disagree sharply with Mr. Doscher's statement that there will be a loss of two billion barrels of oil if the pipeline is approved. Mr. Doscher has not substantiated this figure with any studies and has not furnished technical data on which this opinion is based. To the contrary, our own studies have been substantial and we can reach no such conclusion based on any information available to us assuming that a water injection program is implemented to maintain field pressure.

As we see it, the basic question is whether a pipeline decision should be deferred until more is learned about the performance of the Prudhoe Bay Reservoir. The State of Alaska, based on what we know today -- i.e., our own studies, Mr. Doscher's two draft reports and testimony here, the material presented to it in its regulatory capacity, and its own

professional judgment -- believes there is no sound technical reason to delay provided that the operators adopt and implement a source water injection program by the time gas sales start. If the operators do not implement a source water injection program, then gas sales will have to be limited or postponed in order to avoid jeopardizing ultimate oil recovery.

We agree that more information about the performance of the reservoir is desirable. But the State's plan allows for the gathering of that information without jeopardizing the early construction of the pipeline. It does so without substantial risk to the ultimate recovery of oil from the reservoir, and without unnecessary delay in the bringing of a major new gas supply to lower forty-eight users.

State of Alaska
Exhibit No. 1

STATE OF ALASKA
Department of Natural Resources
Division of Oil and Gas Conservation

Alaska Oil and Gas Conservation Committee
3001 Porcupine Drive
Anchorage, Alaska 99501

Re: The request of Atlantic Richfield Company and BP Alaska Inc. to present testimony to determine new pool rules and amend existing rules for the Prudhoe Oil Pool.	))))))	Conservation Order No. 145 Prudhoe Bay Field Prudhoe Oil Pool June 1, 1977

IT APPEARING THAT:

1. The referenced companies applied by letter received March 30, 1977, for a hearing to adopt new or amend existing pool rules.

2. Notice of public hearing was published in the Anchorage Daily News on April 2, 1977.

3. A public hearing was held in the Ramada Inn, Anchorage, Alaska on May 5 and 6, 1977.

4. The hearing record was continued until the close of business on May 16, 1977. Additional data was received.

FINDINGS:

1. Rules pertaining to the Prudhoe Oil Pool have been included in Conservation Order Nos. 98-B, 130, and 137.

2. Administrative approvals 98-B.3, 98-B.6, 98-B.7, and 98-B.8 written pursuant to Conservation Order No. 98-B, Rule 8 are currently in effect.

3. Waivers pertaining to blowout prevention practices written pursuant to Conservation Order No. 137, Rule 2 are currently in effect.

4. The applicants propose to raise and lower the vertical pool limits of the Prudhoe Oil Pool to include the "Put River Sandstone" and Ivishak Shale respectively.

5. No drill stem tests or production tests have been conducted in the "Put River Sandstone" or the Ivishak Shale.

6. No analysis of fluid from the "Put River Sandstone" or the Ivishak Shale are presently available to the Committee.

7. The areal extent of the Prudhoe Oil Pool as defined on March 12, 1971, in Conservation Order No. 98-B, is considerably larger than the area now proven to be productive by the drilling of additional wells since that time.

8. Most producing wells in the Prudhoe Oil Pool are deviated holes to minimize the number of drilling pads.

9. The applicants propose to eliminate reference to acreage spacing requirements but request that at least 2000 feet be maintained between the pay opened in the well bore in all wells in the Prudhoe Oil Pool.

10. The applicants propose that a distance of 1000 feet be maintained between the pay opened in any well and the boundary of the Prudhoe Oil Pool.

11. Data from the early production performance is needed for the proper regulation and operation of the reservoir.

12. Performance must be accurately observed and quickly analyzed for a timely assessment of reservoir behavior.

13. Performance during the first two years will be used to design the water flooding projects and will be vital in formulating and implementing future operating plans.

14. A reservoir surveillance program can provide for monitoring both reservoir and production data.

15. Monthly production tests will monitor changes in well productivity, gas-oil and oil-water ratios, and provide basic data for reservoir performance studies.

16. The reservoir is complex with many discontinuous interbedded shales.

17. The reservoir is underlain by a heavy oil or tar zone of varying thickness.

18. Some areas of the reservoir contain many faults.

19. The reservoir pressure data will provide information on well flow efficiency, reservoir permeability, reservoir discontinuities, and the need for a pressure maintenance program.

20. The use of specialized transient pressure testing techniques such as pulse testing, vertical permeability tests, and interference tests may prove useful.

21. Specific wells may be selected which are located outside the main area of the Sadlerochit oil column to monitor the pressure in the gas cap, the aquifer, the Eileen area, and the Sag River gas cap.

22. The applicants have agreed to a common datum plane of 8800 feet subsea for all pressure surveys.

23. Changes in the gas-oil fluid contact movement in the reservoir with response to production would provide information on shale continuity, effective vertical permeability, displacement efficiency of oil by gas and define areas of poor natural recovery.

24. Preliminary studies indicate that early run open hole or cased hole neutron logs may provide a suitable base log for monitoring the movement of the gas-oil contact by comparison with a later cased hole neutron log run in the same well.

25. Open hole neutron logs have already been run on the majority of wells.

26. Cased hole neutron logs have already been run in a number of wells and will continue to be run in selected wells until this technique is confirmed.

27. Monitoring the movement of the oil-water contact should help to determine the extent of water influx from the aquifer, identify areas of peripheral water influx and allow determination of the water displacement efficiency.

28. Monitoring the oil-water contact should provide information to help define locations where water injection would be beneficial.

29. A program is now in progress to evaluate the capability of monitoring the oil-water contact with one of three different methods, such as the Thermal Decay Tools (T.D.T.) or the Neutron Lifetime Log (N.L.L.), the Carbon-Oxygen Log and the Gamma Ray Log.

30. The capability of these methods to monitor the changing oil-water contact has not been demonstrated as yet.

31. The contribution of each of the various perforated intervals in each producing well may be determined through downhole spinner flow meter surveys.

32. A reliable assessment of the rate of the production from the various lithologic subdivisions within the reservoir will assist in the determination of the effectiveness of the well completions to drain the reservoir.

33. Numerous computer reservoir simulation model studies of the Sadlerochit Formation have been made by the State and the working interest owners. In these studies the offtake rates of oil and gas and the injection rates of gas and water have been varied.

34. The Trans-Alaska Pipeline will have an initial capacity of 1.2 million barrels per day and should be ready to accept oil near mid 1977.

35. The applicants have submitted a Plan of Operations which includes proposed average annual offtake rates of 1.5 million barrels per day for oil plus condensate production and 2.7 billion cubic feet per day for gas.

36. Production facilities to support an average oil offtake of 1.2 million barrels per day will be installed by the last quarter of 1977. Additions are planned during 1978 and 1979 to support an average oil offtake rate of 1.5 million barrels per day plus condensate production, when pipeline capacity is available.

37. Gas sales in large volumes from the Prudhoe Bay Field will not be possible until a gas conditioning plant and a large gas sales pipeline are constructed.

38. The completion of a large gas sales pipeline and plant to condition gas is estimated at approximately five years from start of oil production.

39. Until a large gas sales pipeline is available, all produced gas, except that used as fuel in the field and small local gas sales, will be reinjected into the gas cap.

40. Gas will be used to supply the operating requirements of the Prudhoe Bay Field, the first four pump stations of the Trans-Alaska Pipeline and other minor local fuel needs.

41. To meet pipeline sale quality it will be necessary to remove carbon dioxide from the gas.

42. Water production will be minimal initially and will be disposed of by injection into sands of Cretaceous age.

43. When water production becomes significant, the applicants plan to file a secondary recovery application for the injection of this water into the Prudhoe Oil Pool.

44. Injection of produced water into the Prudhoe Oil Pool could begin within two years after start of oil production.

45. The applicants will proceed with design and implementation studies concurrently with injectivity tests and reservoir data gathering to shorten the implementation time for a source water injection system.

46. The Sadlerochit Formation aquifer exhibits the best reservoir qualities near the Prudhoe Bay Field area and progressively deteriorates away from the field.

CONCLUSIONS:

1. To avoid confusion it would be desirable to consolidate the outstanding Pool rules effecting the Prudhoe Oil Pool into one order. Conservation Orders Nos. 98-B, 130, and Rule 2 of Conservation Order No. 137 should be canceled and the relevant portions included in Conservation Order No. 145.

2. Administrative Approvals 98-B.3, 98-B.6, 98-B.7, and 98-B.8 should remain in effect and will be applicable until stable production from the field is attained or until the time period stipulated expires.

3. Waivers pertaining to blowout preventers written pursuant to Conservation Order No. 137, Rule 2 should remain in effect.

4. There are insufficient data to justify raising or lowering the vertical limits of the Prudhoe Oil Pool, as proposed by the applicants, to correspond with the vertical limits of the Prudhoe Bay (Permo-Triassic) Reservoir as described in the Prudhoe Bay Unit Agreement.

5. The areal extent of the Prudhoe Oil Pool should be identical to the initial participating area of the Prudhoe Bay Unit which is described as the Prudhoe Bay (Permo-Triassic) Reservoir in the Unit Agreement.

6. A rule eliminating acreage spacing in the Prudhoe Oil Pool should facilitate present and future additional recovery operations and enable the unit operators to develop the productive capacity to meet the planned throughput of the Trans-Alaska Pipeline.

7. A distance of 2000 feet between the pay opened in the well bore in all wells in the Prudhoe Oil Pool should maintain an adequate drainage area, not unnecessarily restrict bottomhole target locations and protect correlative rights and prevent waste.

8. A distance of 1000 feet between the pay opened in any well and the boundary of the Prudhoe Oil Pool will protect correlative rights.

9. To gather the data necessary for proper regulation and operation of the reservoir, a rigorous surveillance program of reservoir performance should be accurately observed and assessed especially during the first two years of operation. The surveillance program should also provide guidelines for a long term key well surveillance program.

10. A surveillance program should include monitoring the reservoir pressures, gas-oil and oil-water contact movements, production tests, gas-oil and water-oil ratios, and productivity profiles of individual wells.

11. A gas-oil contact movement monitoring program, based on a comparison of open hole neutron base logs to be later compared with neutron logs run in the same wells should be attempted.

12. The data obtained during the first two years could lead to a key well program of periodic surveys that may adequately monitor the gas-oil contact movements.

13. Monitoring the movement of the oil-water contact is desirable to evaluate the water influx in the reservoir and the applicability of water injection systems. Three methods are potentially applicable as means of monitoring the movement of the oil-water contact. These methods are the Thermal Decay Tools or the Neutron Lifetime Log, the Carbon-Oxygen Log and the Gamma Ray Log. The program to evaluate the relative capability of these

logs should be continued and should any method be demonstrated capable of adequately monitoring the changing water saturations in the reservoir, a key well program should be set up.

14. Downhole spinner flow meter surveys to determine well productivity profiles should help determine the effectiveness of completions and provide information on reservoir drainage.

    To provide the necessary productivity profile data a base line survey should be run on each well with later follow up surveys on each well.

15. The injection of produced water into the sands of Cretaceous age will not contaminate fresh water sources or endanger other natural resources.

16. Studies of the aquifer have indicated that it probably will not offer much pressure support.

17. Reservoir studies have shown that both produced water injection and source water injection into the Prudhoe Oil Pool should increase oil recovery.

18. Reservoir studies have shown that large scale source water injection will probably be necessary to maximize oil recovery.

19. The planned reinjection of gas into the Sadlerochit gas cap prior to large gas sales will help to maintain reservoir pressure and will not adversely affect ultimate recovery.

20. The Plan of Operations proposed by the applicants which include average annual offtake rates of 1.5 million barrels per day for oil plus condensate production and 2.7 billion cubic feet per day for gas are consistent with sound conservation practices based on currently available data.

21. After field and local fuel requirements and the removal of carbon dioxide and liquids from the produced gas, it is estimated that a gas production rate of 2.7 billion standard cubic feet per day will yield 2.0 billion standard cubic feet per day of pipeline quality gas.

22. Production history will be needed to locate water injection wells and to refine reservoir model studies.

23. The offtake rates approved by the Committee at this time must be established without the benefit of production history. Therefore, these offtake rates may be changed as production data and additional reservoir data are obtained and analyzed.

NOW, THEREFORE, IT IS ORDERED THAT the rules hereinafter set forth apply to the following described area referred to in this order as the affected area:

UMIAT MERIDIAN			
T. 10N.,	R. 12E.,	Sections	1, 2, 3, 4, 10, 11, 12
T. 10N.,	R. 13E.,		1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 24
T. 10N.,	R. 14E.,		1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 36
T. 10N.,	R. 15E.,		all
T. 10N.,	R. 16E.,		5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31
T. 11N.,	R. 11E.,		1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 24, 25
T. 11N.,	R. 12E.,		all
T. 11N.,	R. 13E.,		all
T. 11N.,	R. 14E.,		all
T. 11N.,	R. 15E.,		all
T. 11N.,	R. 16E.,		30, 31, 32
T. 12N.,	R. 11E.,		15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36
T. 12N.,	R. 12E.,		23, 24, 25, 26, 27, 28, 33, 34, 35, 36
T. 12N.,	R. 13E.,		19, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
T. 12N.,	R. 14E.,		25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36
T. 12N.,	R. 15E.,		27, 28, 29, 30, 31, 32, 33, 34

Rule 1 Pool Definition

The Prudhoe Oil Pool is defined as the accumulations of oil that are common to and which correlate with the accumulations found in the Atlantic Richfield - Humble Prudhoe Bay State No. 1 well between the depths of 8,110 and 8,680 feet.

Rule 2 Well Spacing

In the affected area, no pay shall be opened in a well closer than 2000 feet to any pay opened in another well in the Prudhoe Oil Pool or be nearer than 1000 feet to the boundary of the affected area.

Rule 3 Casing and Cementing Requirements

(a) Casing and cementing programs shall provide adequate protection of all fresh waters and productive formations and protection from any pressure that may be encountered, including external freezeback within the permafrost.

(b) For proper anchorage and to prevent an uncontrolled flow, a conductor casing shall be set at least 75 feet below the surface and sufficient cement shall be used to fill the annulus behind the pipe to the surface.

(c) For proper anchorage, to prevent uncontrolled flow and to protect the well from the effects of permafrost thaw, a string of surface casing shall be set at least 500 feet below the base of the permafrost section but not below 2,700 feet unless a greater depth is approved by the Committee upon showing that no potentially productive pay exists above the proposed casing setting depth, and sufficient cement shall be used to fill the annulus behind the pipe to the surface.

The surface casing shall have minimum post-yield strain properties of 0.9% in tension and 1.26% in compression.

(d) If the surface casing does not meet the strain requirements in (c) above, the integrity of the well shall be protected from the effects of permafrost thaw by running an inner string of casing also set at least 500 feet below the base of the permafrost section and properly cemented except that the two casing strings shall not be bonded together within the permafrost section. This inner string of casing shall not be utilized as production casing.

(e) Other means for maintaining the integrity of the well from the effects of permafrost thaw may be approved by the Committee upon application.

(f) Production casing shall be landed through the completion zone and cement shall cover and extend to at least 500 feet above each hydrocarbon-bearing formation which is potentially productive. In the alternative, the casing string may be set and adequately cemented at

at an intermediate point and a liner landed through the completion zone. If such a liner is run, the casing and liner shall overlap by at least 100 feet and the annular space behind the liner shall be filled with cement to at least 100 feet above the casing shoe, or the top of the liner shall be squeezed with sufficient cement to provide at least 100 feet of cement between the liner and casing. Cement must cover and extend at least 500 feet above each hydrocarbon-bearing formation which is potentially productive.

(g) Casing and liner, after being cemented, shall be satisfactorily tested to not less than 50% of minimum internal yield pressure or 1,500 pounds per square inch, whichever is less.

(h) No well shall be produced through the annulus between the tubing and the casing unless a cement sheath extends from the top of the pay to the shoe of the next shallower casing string.

Rule 4 Blowout Prevention Equipment and Practice

(a) The use of blowout prevention equipment shall be in accordance with good established practice and all equipment shall be in good operating condition at all times.

All blowout prevention equipment shall be adequately protected to ensure reliable operation under the existing weather conditions. All blowout prevention equipment shall be checked for satisfactory operation during each trip.

(b) Before drilling below the conductor string, each well shall have installed at least one remotely controlled annular type blowout preventer and flow diverter system. The annular preventer installed on the conductor casing shall be utilized to permit the diversion of hydrocarbons and other fluids. This low pressure, high capacity diverter system shall be installed to provide at least the equivalent of a 6-inch line with at least two lines venting in different directions to insure downwind diversion and shall be designed to avoid freeze-up. These lines shall be equipped with full-opening butterfly type valves or other valves approved by the Committee. A schematic diagram, list of equipment, and operational procedure for the diverter system shall be submitted with the application Permit to Drill or Deepen (Form 10-401) for approval. The above requirements may be waived for subsequent wells drilled from a multiple drill site.

(c) Before drilling below the surface casing all wells shall have three remotely controlled blowout preventers, including one equipped with pipe rams, one with blind rams and one annular type. The blowout preventers and associated equipment shall have 3000 psi working pressure and 6000 psi test pressure.

(d) Before drilling into the Prudhoe Oil Pool, the blowout preventers and associated equipment required in (c) above shall have 5000 psi working pressure rating and 10,000 psi test pressure rating.

(e) The associated equipment shall include a drilling spool with minimum three-inch side outlets (if not on the blowout preventer body), a minimum three-inch choke manifold, or equivalent, and a fill-up line. The drilling string will contain full-opening valves above and immediately below the kelly during all circulating operations with the kelly. Two emergency valves with rotary subs for all connections in use will be conveniently located on the drilling floor. One valve will be an inside blowout preventer of the spring-loaded type. The second valve will be of the manually-operated ball type, or any other type which will perform the same function.

(f) All ram-type blowout preventers, kelly valves, emergency valves and choke manifolds shall be tested to required working pressure when installed or changed and at least once each week therafter. Annular preventers shall be tested to 50% recommended working pressure when installed and once each week thereafter. Test results shall be recorded on written daily records kept at the well.

Rule 5 Automatic Shut-in Equipment

Upon completion, each well shall be equipped with a suitable safety valve installed below the base of the permafrost which will automatically shut in the well if an uncontrolled flow occurs.

Rule 6 Pressure Surveys

(a) Prior to initial sustained well production, a static bottomhole pressure survey shall be taken on each well.

(b) Between 90 and 100 days after commencement of sustained pool production, the applicants shall perform an initial key well bottomhole transient pressure survey on one specific well on each producing pad or drill site. Another survey of the same type shall be conducted each 90 days thereafter.

(c) Within the first six months following the initial sustained well production, the applicants shall conduct a transient pressure survey on each well.

(d) A semi-annual transient pressure survey shall be conducted on one well in each governmental section from which oil is being produced. This is in addition to the pressure surveys conducted in (b) and (c) above.

(e) A long-term key well pressure survey will be formulated and implemented in approximately two years from the start of production based upon evaluation of data submitted under (a), (b), (c), and (d) above.

(f) Data from the above mentioned surveys shall be filed with the Committee by the fifteenth day of the month following the month in which each survey is taken. Form No. 10-412, Reservoir Pressure Report, shall be utilized for all surveys with attachments for complete additional data. Data submitted shall include but is not limited to rate, pressure, time, depths, temperature, and other well conditions necessary for

complete analysis for each survey being conducted. The pool pressure datum plane shall be 8800 feet subsea. Bottomhole transient pressures obtained by a 24 hour buildup or multiple flow rate test will be acceptable.

(g) Results and data from any special reservoir pressure monitoring techniques, tests or surveys shall also be submitted as prescribed in (f) above.

(h) By administrative order the Committee shall specify additional pressure surveys if the survey program designated in this rule is found to be inadequate.

Rule 7 Gas-Oil Ratio Tests

Between 90 and 120 days after substantial production starts and each six months thereafter a gas-oil ratio test shall be taken on each producing well. The test shall be of at least 12 hours duration and shall be made at the producing rate at which the operator ordinarily produces the well. The test results shall be reported on gas-oil ratio test form P-9 within fifteen days after completion of the survey. The Committee shall be notified at least five days prior to each test.

Rule 8 Gas Venting or Flaring

The venting or flaring of gas is prohibited except as may be authorized by the Committee in cases of emergency or operational necessity.

Rule 9 Gas-Oil Contact Monitoring

Open hole and cased hole neutron logs shall be run in selected wells to confirm gas-oil contact movement unless this technique is proved unworkable or an alternative approach is recommended and accepted by the Committee.

The wells selected for this neutron log survey together with a summary of the survey analyses shall be submitted to the Committee by January 1, 1978, and each six months thereafter. The Committee may also specify additional wells to be surveyed should they decide the survey program being followed is inadequate.

The cased hole neutron logs run shall be filed with the Committee by the fifteenth day of the month following the month in which the logs were run.

Other methods of monitoring the gas-oil contact movement may be approved if they show to be more effective.

A long term key well gas-oil contact movement monitoring program may be formulated and implemented in approximately two years from start of production if a workable technique is found.

Rule 10 Oil-Water Contact Monitoring

(a) A report on the evaluation program to determine the oil-water contact monitoring capability of the Thermal Decay Tools or the Neutron Lifetime Log, the Carbon-Oxygen Log and the Gamma Ray Log shall be submitted to the Committee by January 1, 1978.

(b) If the capability of monitoring the change in oil-water contact movement can be demonstrated by one or more of these methods, a key well program shall be set up by the applicants subject to the approval of the Committee.

Rule 11 Productivity Profiles

(a) A spinner flow meter survey shall be run in each well during the first six months the well is on production.

(b) A follow up survey shall be performed on a rotating basis so that a new production profile is obtained on each well periodically. Nonscheduled surveys shall be run in wells which experience an abrupt change in water cut, gas-oil ratio, or productivity.

(c) The complete spinner survey data and results shall be recorded and filed with the Committee by the 15th day of the month following the month in which each survey is taken.

(d) By administrative order the Committee shall specify additional surveys should they determine the surveys submitted under (a), (b) and (c) above are inadequate.

Rule 12 Changing the Affected Area

By administrative approval the Committee may adjust the description of the affected area to conform to future changes in the initial participating area.

Rule 13 Orders Cancelled

Conservation Orders Nos. 98-B, 130, and Rule 2 of Conservation Order No. 137 are hereby cancelled. Portions of Conservation Orders Nos. 98-B and 137 are made part of this order and the hearing records of these orders are also made part of the hearing record of this order.

Rule 14 Approvals Redesignated

Administrative Approvals made pursuant to CO 98-B, Rule 8 and the waivers made pursuant to Conservation Order No. 137, Rule 2 remain in effect and will now be authorized by this order.

Rule 15 Pool Off-Take Rates

The maximum annual average oil offtake rate is 1.5 million barrels per day plus condensate production. The maximum annual average gas offtake rate is 2.7 billion standard cubic feet per day, which contemplates an annual average gas pipeline delivery sales rate of 2.0 billion standard cubic feet per day of pipeline quality gas when treating and transportation facilities are available. Daily offtake rates in excess of these amounts are permitted only as required to sustain these annual average rates. The annual average offtake rates as specified shall not be exceeded without the prior written approval of the Committee.

Annual average offtake rates mean the daily average rate calculated by dividing the total volume produced in a calendar year by the number of days in the year. However, in the first calendar year that large gas offtake rates are initiated, following the completion of a large gas sales pipeline, the annual average offtake rate for gas shall be determined by dividing the total volume of gas produced in that calendar year by the number of days remaining in the year following initial delivery to the large gas sales pipeline.

DONE at Anchorage, Alaska, and dated June 1, 1977.

Thomas R. Marshall, Jr., Executive Secretary
Alaska Oil and Gas Conservation Committee

Concurrence:

Hoyle H. Hamilton, Chairman
Alaska Oil and Gas Conservation Committee

Lonnie C. Smith, Member
Alaska Oil and Gas Conservation Committee

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JUN 30 1975

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REVIEW OF ROYALTY AND BONUS BIDDING

BY

Hoyle H. Hamilton

Division of Oil and Gas
Department of Natural Resources
State of Alaska

June 25, 1975

AGO 668328

INTRODUCTION

The purpose of this report is to acquaint the reader with some general relationships between royalty and bonus bidding, and using probabilities based on national and Alaska statistics, compare the expected income to the State from these two types of bidding.

Using these same probabilities the expected income to the State was compared for bonus bidding with fixed royalties of 1/6 and 1/3. The reduction in bonus or "front money" was determined for 1/3 royalty compared to 1/6 royalty.

OPERATORS PROFITIBILITY AND EQUALIVALENT ROYALTY AND BONUS BIDS

To show a meaningful relationship between royalty and bonus bidding it is necessary to first examine this comparsion from an operator's viewpoint.

Computer runs were made to determine the profitibility to an operator for developing a given size field. These runs were originally set up for a field size of 100 million bbls. reserve. However, it was assumed for this general study that the income stream from this field size could be ratioed up or down by the reserve ratio of another size field e.g. a field having a billion bbl. reserve would have 10 times the income of a 100 million bbl. field. This also means that if the bonus bid for the 1 billion bbl. field was 10 times the 100 million bbl. field then the operators profit indicators would be indentical. This concept was used in developing the relationships between royalty and bonus bidding throughout the study. The computer runs were made with various oil prices and with various bonus bids and royalty bids. A fixed 1/6 royalty was assumed with each royalty bid. The rate of

return was selected as the profit indicator to be used to measure and equate the operators profitibility for different bidding schemes. The results of this work are shown in Figure 1. In the upper graph in this figure the rate of return to the operator is plotted against his royalty bid for various oil prices. The lower graph shows the relationship between the operator's rate of return and his bonus bid for various oil prices.

Royalty bids were then equated to bonus bids that would yield the operator the same rate of return. Figure 2 shows this relationship for various oil prices. The dashed lines represent rates of return of 10% and 20%.

INCOME TO STATE FROM ROYALTY AND BONUS BIDS WITH KNOWN RESERVES

Using the same computer runs used to compute the operators profitibility, the income to the State was determined for different royalty and bonus bids at various oil prices. Since there can be 4 to 10 years from the time a bonus payment is made until royalty income starts, if a discovery is made, the time value of money needs to be considered in any bid comparison. Therefore, the present worth income to the State has been used throughout this study, determined by using 10% per year present worth discount factors.

The results of this work are shown in Figure 3. The upper graph in this figure shows the present worth income to the State for any royalty bid and for 3 different oil prices. The lower graph shows how the State's present worth income would vary for different bonus bids, and for 3 different oil prices. As labeled, the graphs are for a field with a billion bbls. reserve,

however using the ration technique previously discussed these graphs could be used for larger or smaller fields. For example, in the lower graph with an $8.50 per bbl. oil price it shows $1500 million income from an $800 million bonus bid. If a 100 million bbl. reserve field were being considered then an $80 million bonus would read $150 million for state income.

Relationships have now been shown that equate royalty and bonus bids to yield an operator the same rate of return. The present worth income to the State can now be calculated for whatever royalty or bonus bid that is to be considered. However the big unknowns are:

1. Will a field be discovered and
2. If it is discovered how big will it be.

PROBABILITIES OF DISCOVERY AND FIELD SIZE

Both Alaska and national statistics were examined to determine how successful operators have been in discovering oil fields and what the probabilities are for finding fields of different sizes.

The probability of discovering an oil field was considered for two different conditions:

1. Wildcat acreage, remote from proven production.
2. Drainage acreage, closely associated with or contiguous to proven production.

For wildcat acreage a 10% chance of discovery was used. This has been the historical discovery rate for both Alaska and the nation. To be considered

drainage acreage there must be a high chance of finding oil on the acreage. However until the acreage is drilled there is always some element of risk. For this study drainage acreage was assigned a 90% chance of discovery.

Since there have been only seven oil fields discovered in Alaska and one of them happens to be Prudhoe Bay, the Alaska statistics for determining the probabilities of finding oil fields of different sizes are probably optimistically weighted toward finding large fields.

The probabilities thus determined and used are shown in Table 1.

COMPARISON OF EXPECTED STATE INCOME FROM ROYALTY AND BONUS BIDS

Using the relationships developed for royalty and bonus bidding as shown in Figures 1 through 3 and the probabilities described in Table 1 it was possible to calculate the expected present worth income to the State for royalty and bonus bidding. This was done for wildcat acreage and drainage acreage with oil prices of $8.50/bbl. and $10.00/bbl. The results are shown in Figures 4 through 7.

For wildcat acreage, as shown in Figure 4 and 5, it makes little difference whether Alaska or national statistics or used for field size probabilities because the chance of discovery is the dominant factor. The bonus and royalty curves diverge rapidly as the bonus values increase. A check was made to see what royalty bids would be necessary to make the royalty curves equivalent to the bonus curves for wildcat acreage. It was found that even a 100% royalty bid would not yield the expected income to the State as a

bonus bid for bonuses as low as $100 million.

For drainage acreage, as shown in Figures 6 and 7, it makes a considerable difference whether Alaska or national statistics are used. With the national statistics the royalty bid would not equal the bonus bid even with a 100% royalty, similar to wildcat acreage. However using Alaska statistics the royalty bid shows slighty more income in the bonus range of $50 million to $170 million for $8.50/bbl. oil and $35 million to $285 million for $10.00/bbl. oil. At the bonus level of $500 million it would take a royalty bid of 83% for $8.50/bbl. oil to yield the same income as the bonus and an 86% royalty bid for $10.00/bbl. oil.

COMPARISON OF BONUS BIDDING WITH FIXED ROYALTIES OF 1/6 AND 1/3

Bonus Bids were compared for fixed royalties of 1/6 and 1/3 to determine how much the bonus would be reduced with the higher royalty. Figure 8 indicates the amount of reduction or loss in "front money" that would occur. For example, if an operator were willing to bid $300 million with a 1/6 royalty he could only bid $150 million with a 1/3 royalty if he wanted to obtain the same rate of return on the project. This would be a 50% reduction in the bonus or "front money".

Further comparisons were made to determine the differences in expected income to the State over the life of the project for the two royalties. Figure 9 is for wildcat acreage and there is very little difference between using Alaska or national statistics. Increasing the royalty from 1/6 to 1/3 would result in a reduction in income from approximately $100 million to

$200 million.

Figure 10 shows the same comparison for drainage acreage. The reduction in income using national statistics is about the same as for the wildcat acreage or approximately $90 million to $195 million. With Alaska statistics the reduction ranges from zero to approximately $100 million.

CONCLUSIONS

Using the relationships between royalty and bonus bidding developed in this study the following could be concluded:

1. The State should expect to realize more income from bonus bidding on wildcat acreage as compared to royalty bidding.
2. Since there have been only seven oil fields discovered in Alaska and one of them happens to be Prudhoe Bay, the Alaska statistics are probably optimistically weighted toward finding large fields.
3. For drainage acreage, the Alaska statistics would favor royalty bidding in some instances. However national statistics indicate that the State would realize more income from bonus bidding.
4. For wildcat acreage or drainage acreage the State should expect to realize more income from a bonus sale with a fixed 1/6 royalty than with a fixed 1/3 royalty.
5. By increasing the fixed royalty from 1/6 to 1/3 in a bonus sale, the reduction in bonus or "front money" could range from 42% to 100%.

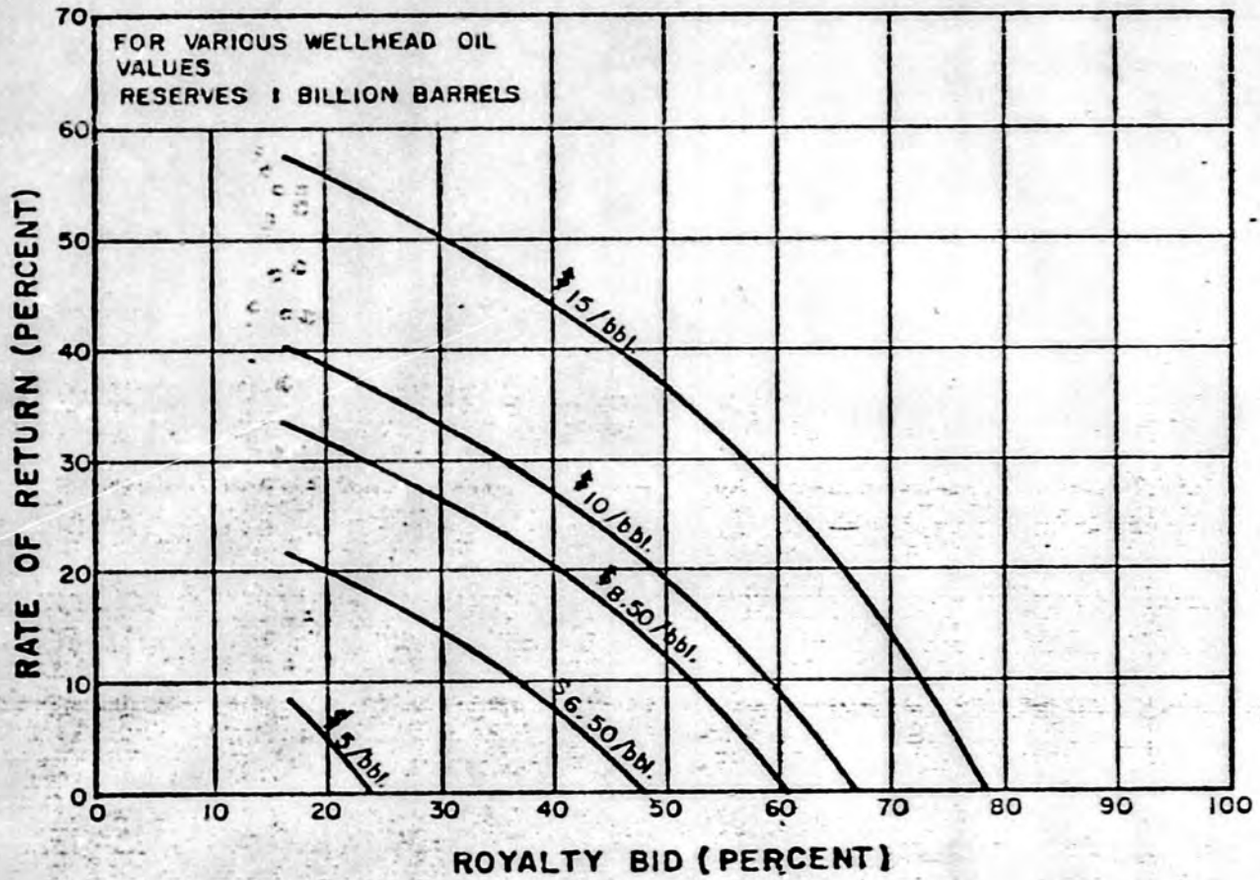
TABLE 1

Possible Events	Wildcat Acreage Probability		Drainage Acreage Probability	
	Alaska	Nation	Alaska	Nation
No discovery	90.0%	90.0%	10.0%	10.0%
10 million bbl. Field	5.0%	6.7%	45.0%	60.3%
50 " " "	1.58%	1.3%	14.22%	11.7%
100 " " "	2.05%	1.8%	18.45%	16.2%
500 " " "	.53%	.14%	4.77%	1.26%
1000 " " "	.61%	.059%	5.49%	.531%
5000 " " "	.09%	.0009%	.81%	.0081%
10,000 " " "	.14%	.0001%	1.26%	.0009%

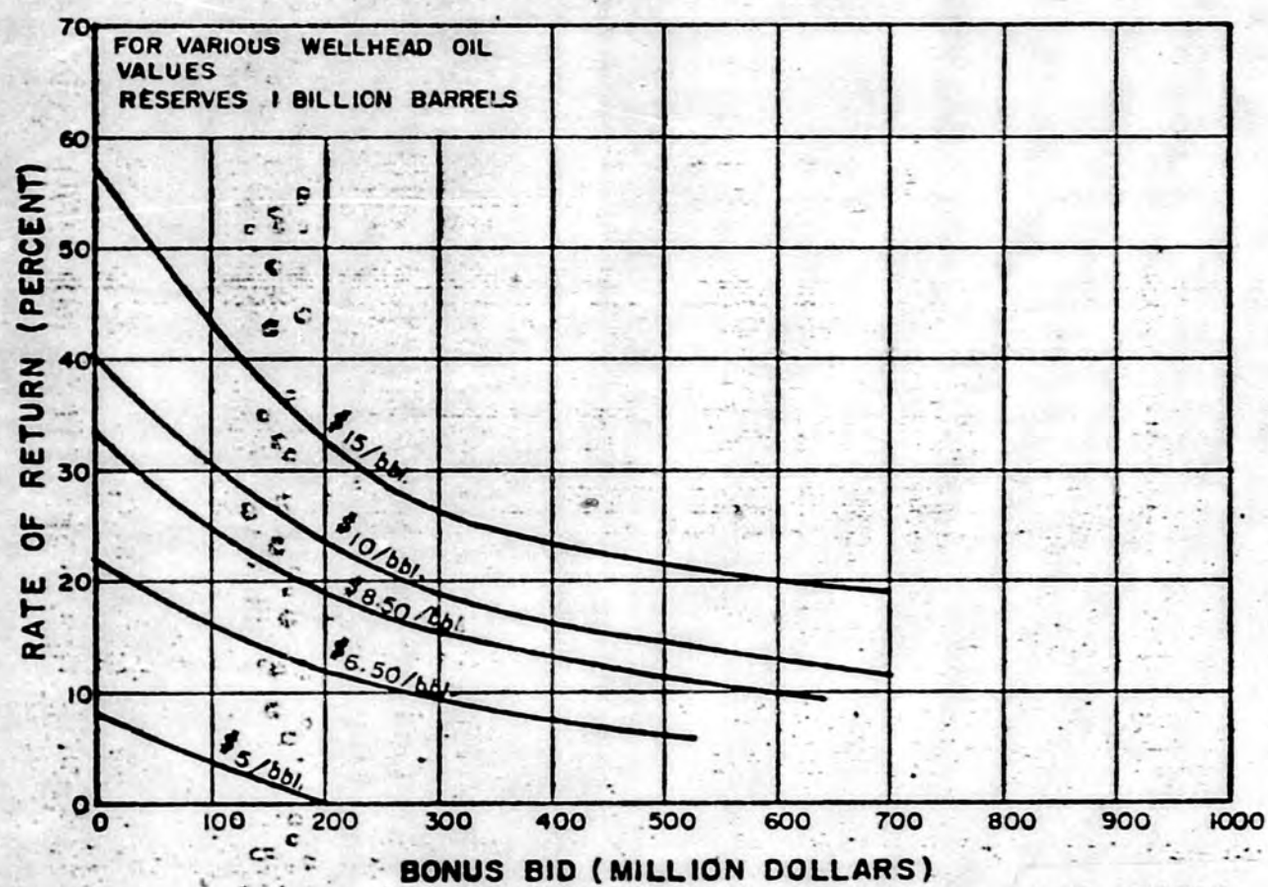
AGO 668335

FIGURE 1

RATE OF RETURN VS ROYALTY BID



RATE OF RETURN VS BONUS



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ROYALTY BID VS BONUS BID

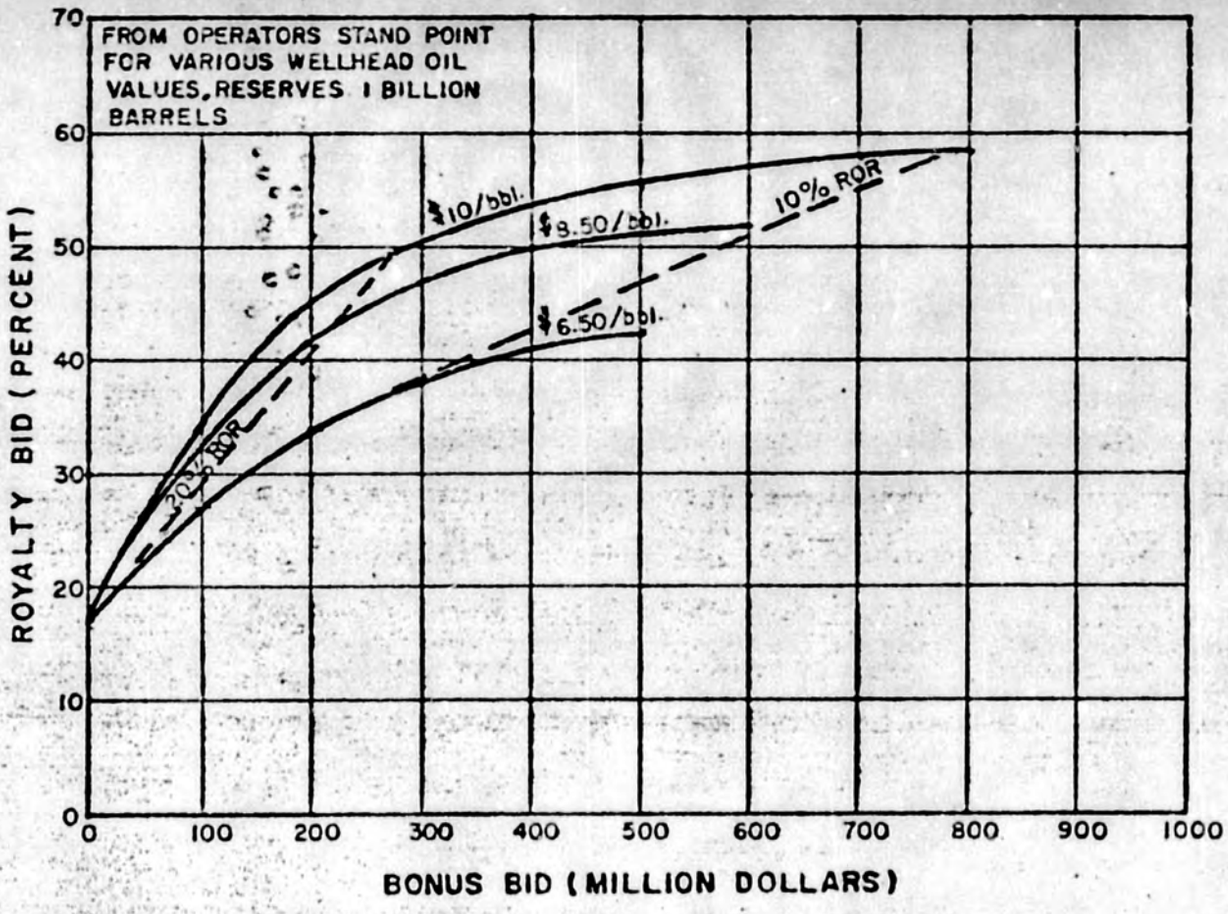

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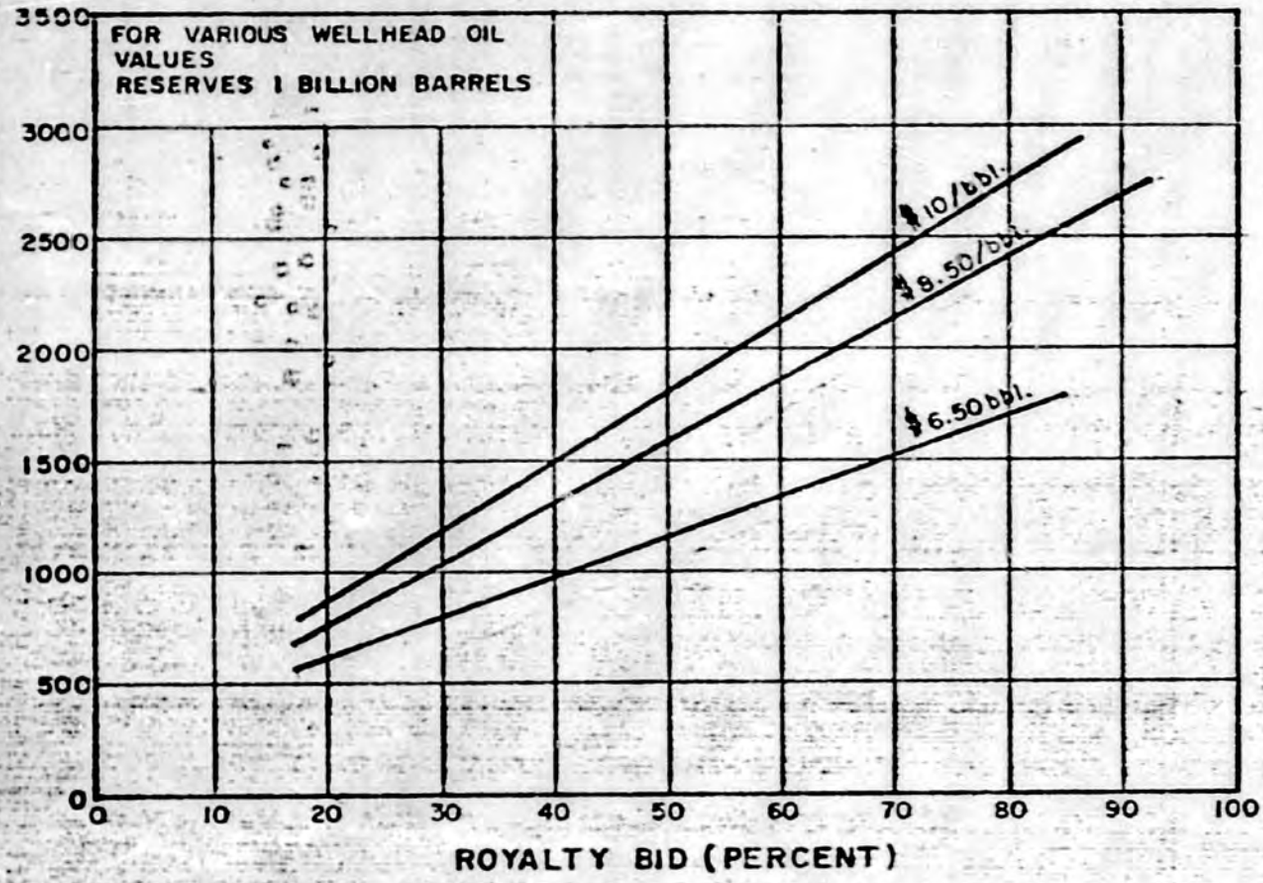
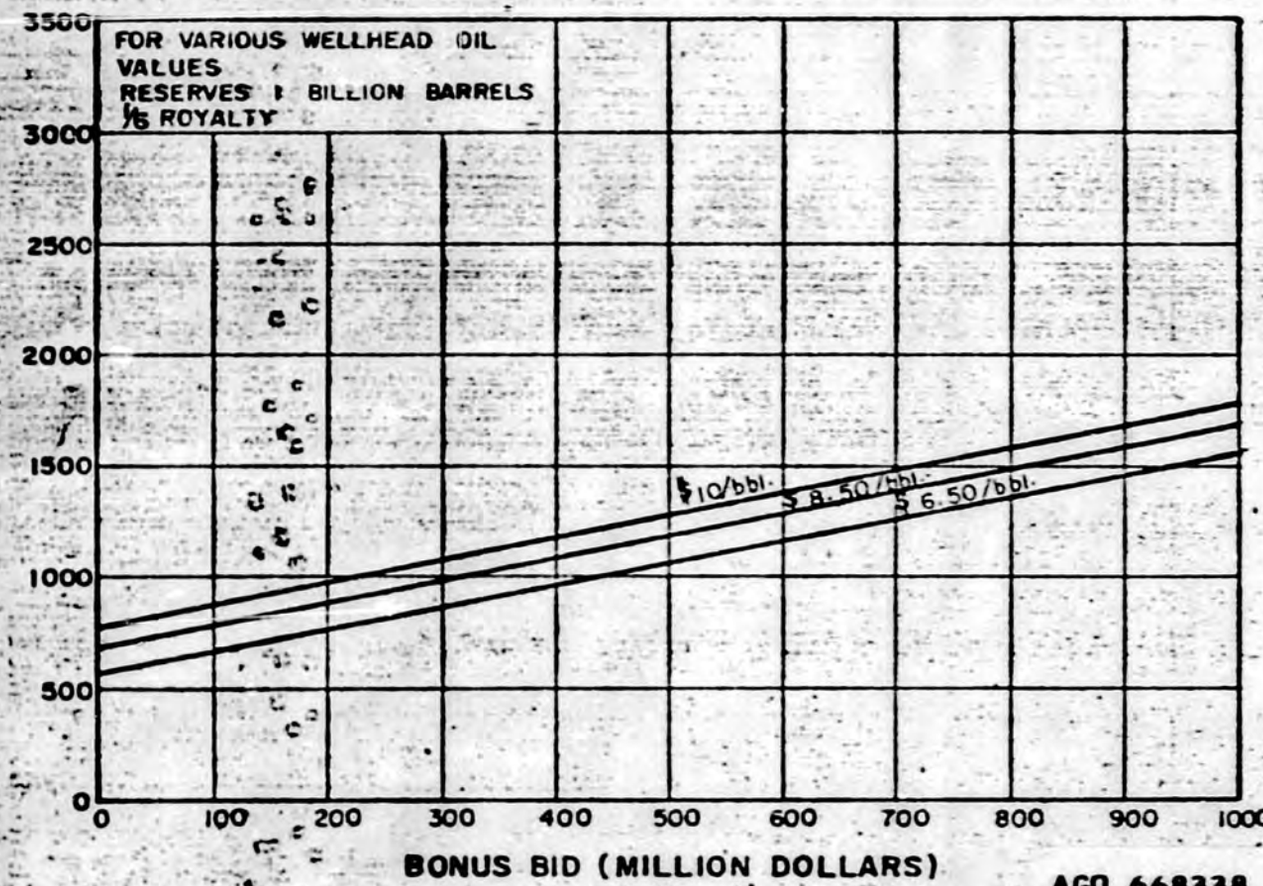
FIGURE 3

PRESENT WORTH INCOME TO STATE VS ROYALTY BID



PRESENT WORTH INCOME TO STATE VS BONUS BID



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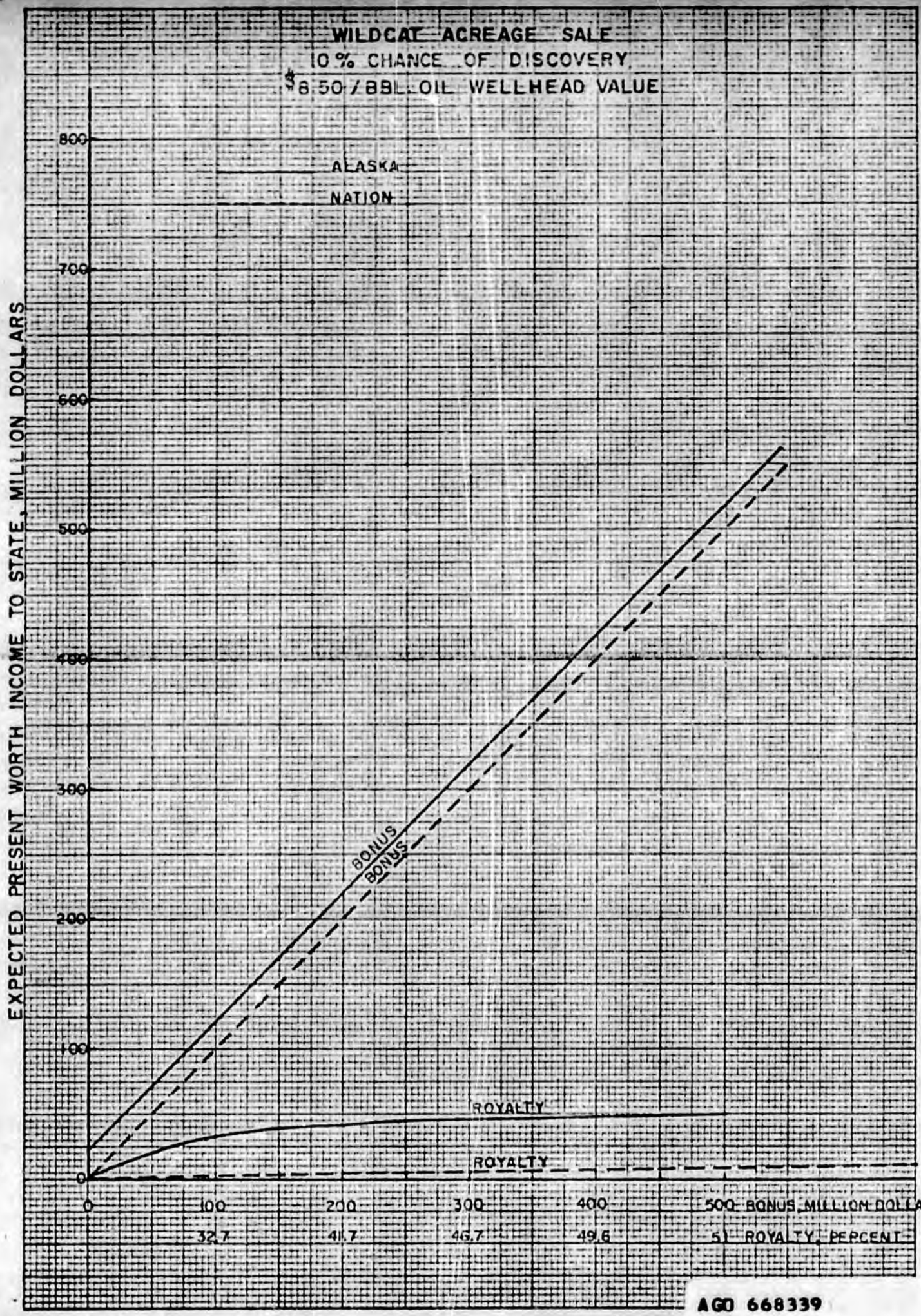
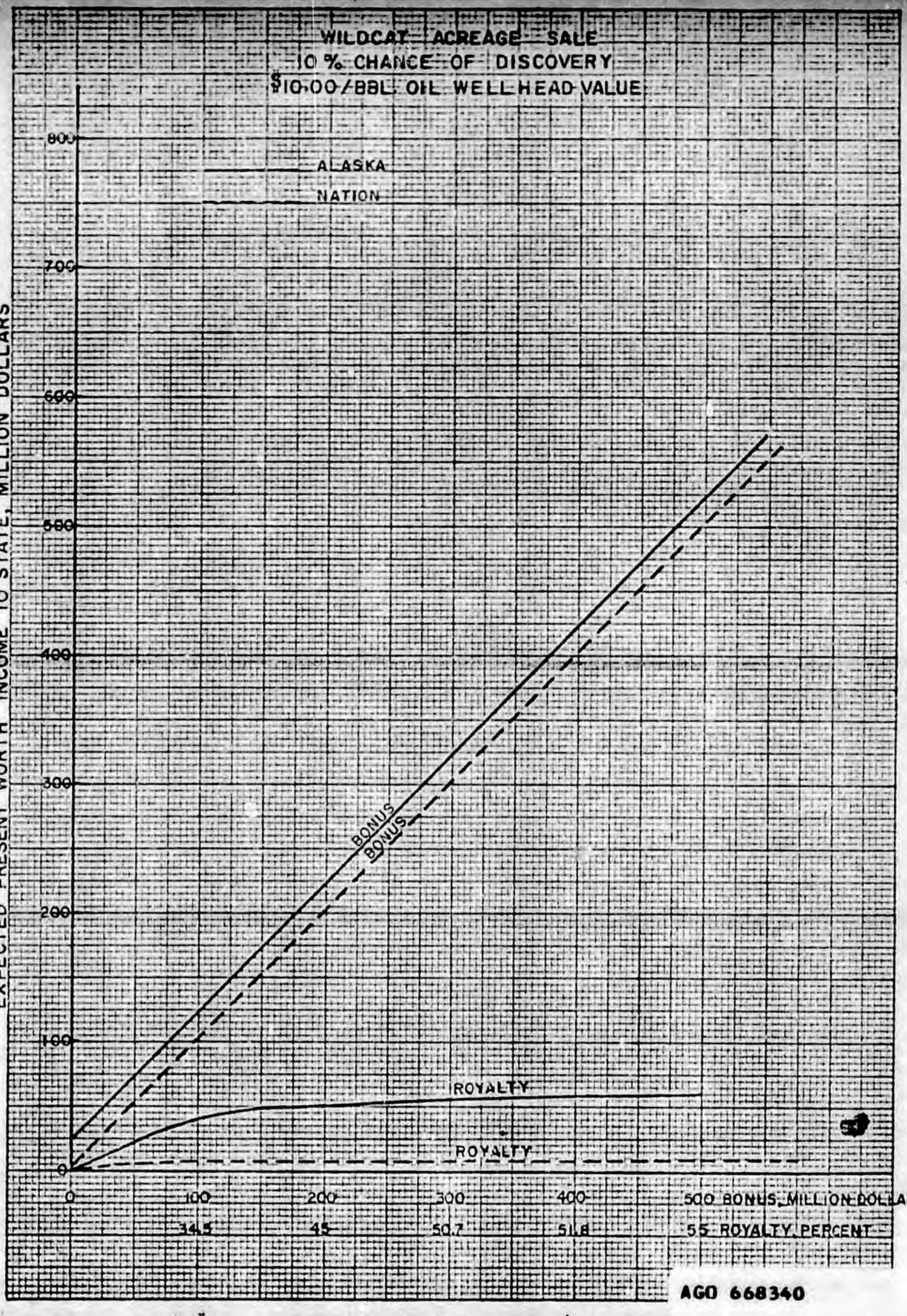


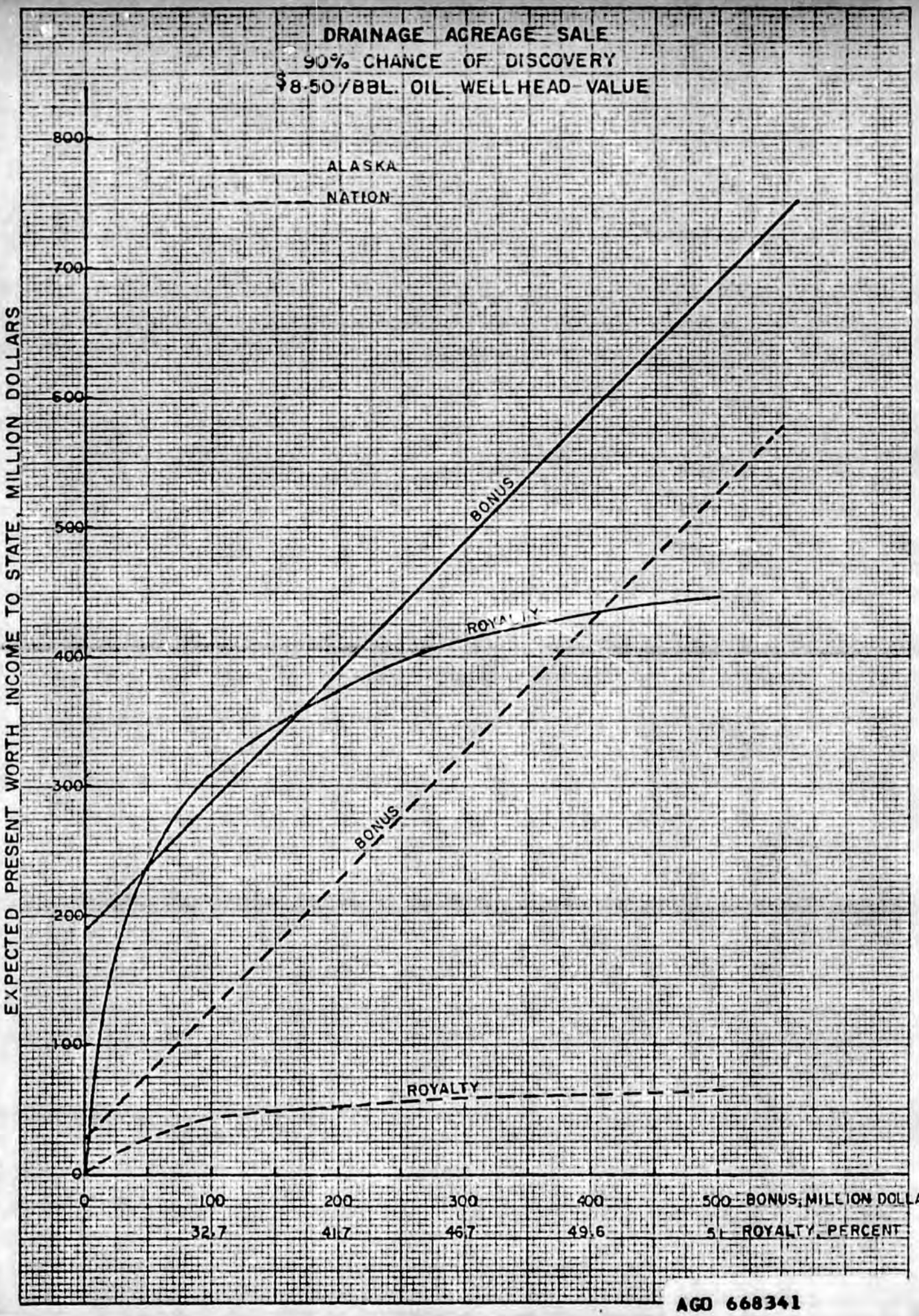
K+E 10 X 10 TO ½ INCH 46 1323
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

AGO 668339



K-E 10 X 10 TO ½ INCH 46 1323
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

FIGURE 6



K+E 10 X 10 TO ½ INCH 46 1323
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KEUFFEL & ESSER CO.

AGO 668341

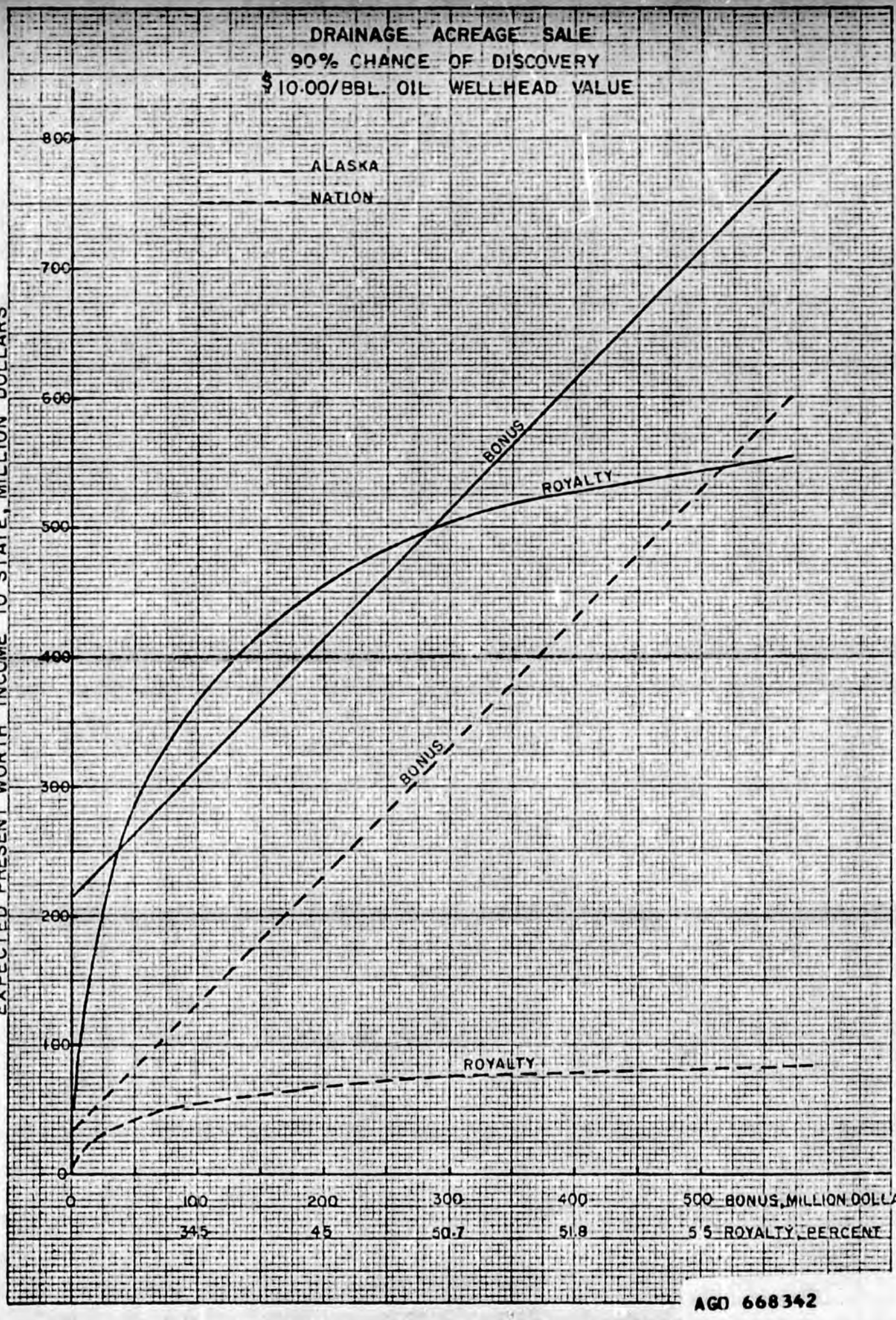
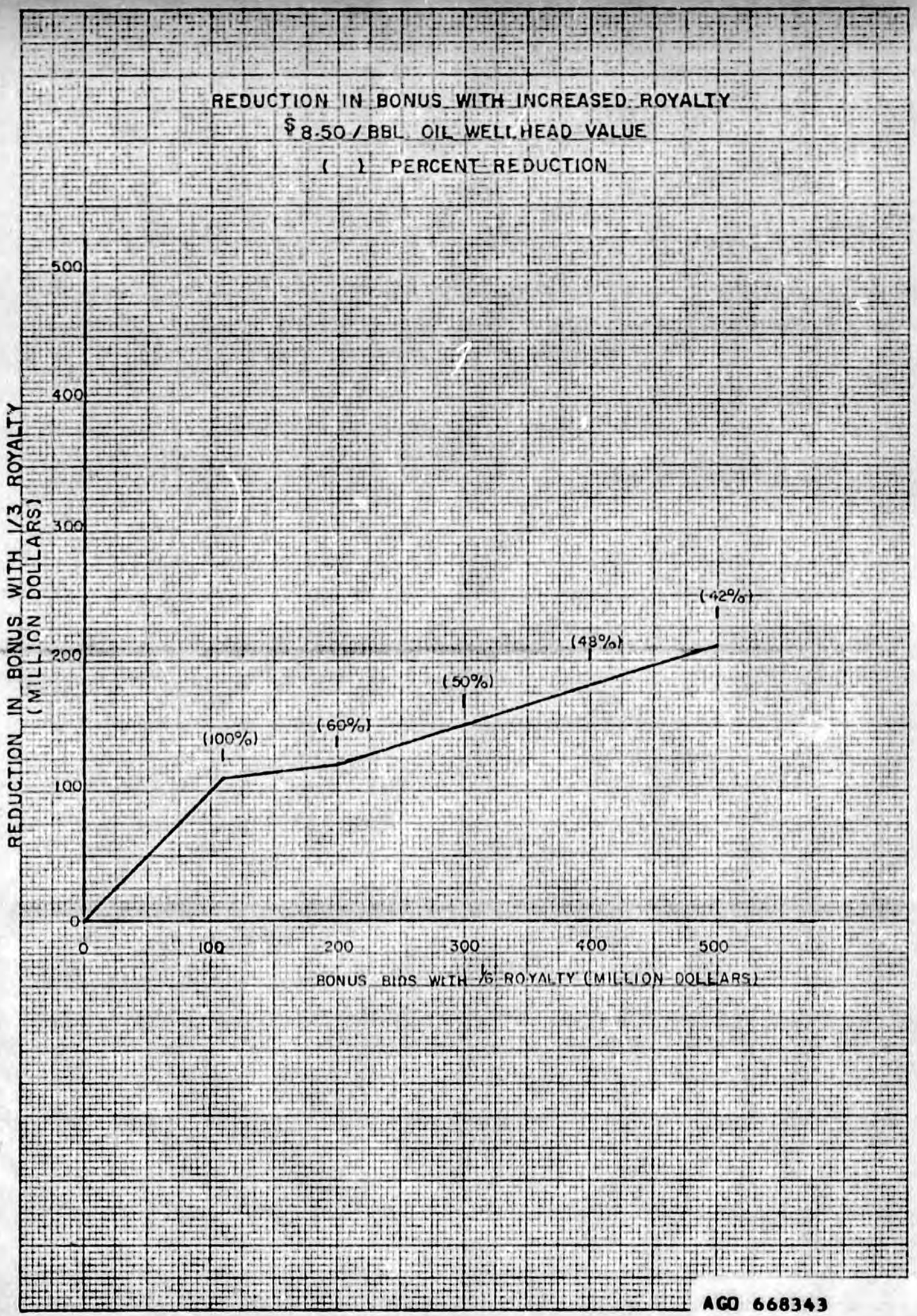
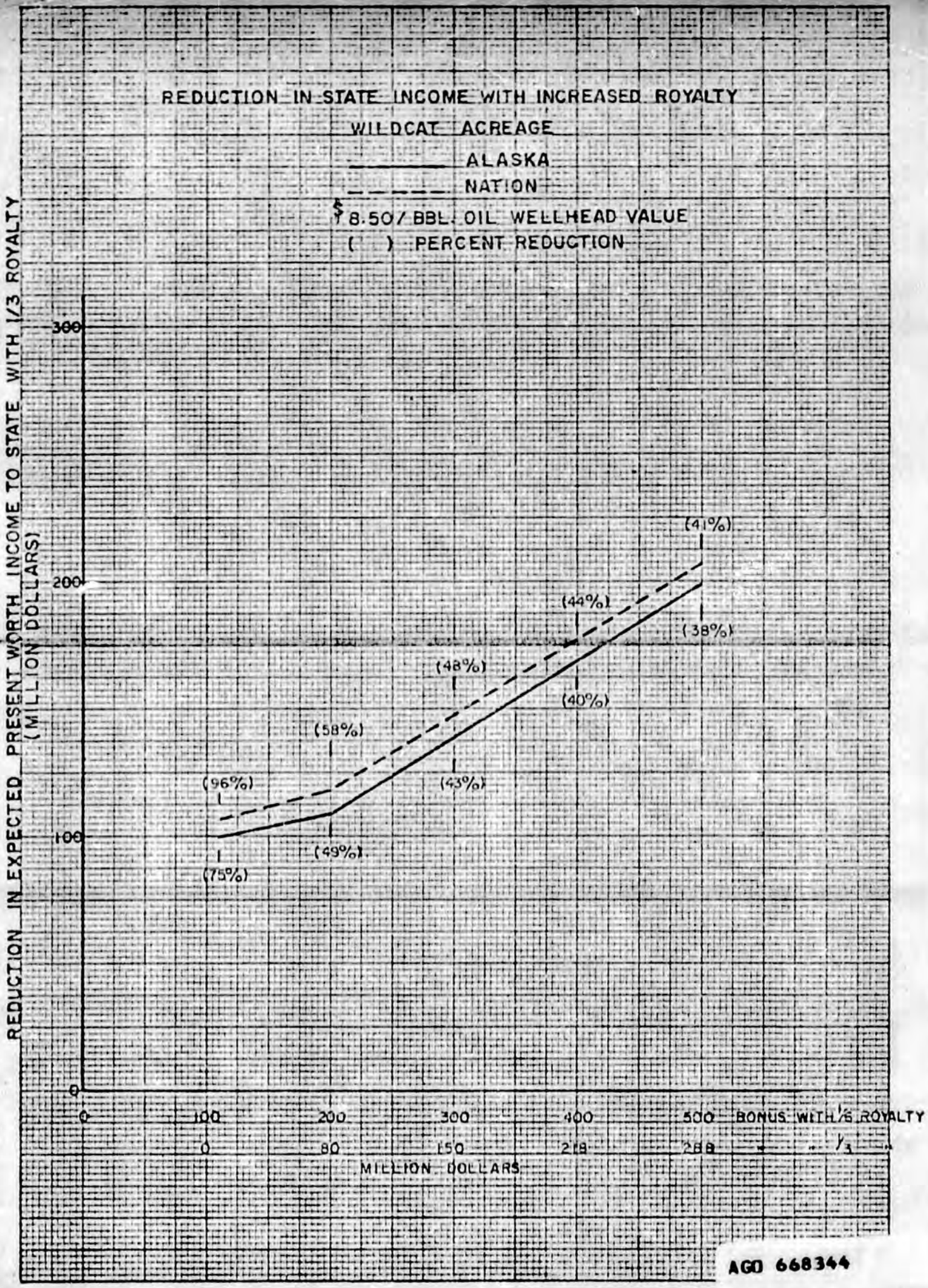

DRAINAGE ACREAGE SALE
90% CHANCE OF DISCOVERY
$10.00/BBL. OIL WELLHEAD VALUE
ALASKA
NATION
BONUS
ROYALTY
BONUS
ROYALTY
EXPECTED PRESENT WORTH INCOME TO STATE, MILLION DOLLARS
800
700
600
500
400
300
200
100
0
0
100
200
300
400
500 BONUS, MILLION DOLLARS
34.5
45
50.7
51.8
5 5 ROYALTY, PERCENT
AGO 668342

FIGURE 8



K&E 10 X 10 TO ½ INCH 46 1323
7 X 10 INCHES
KEUFFEL & ESSER CO.

FIGURE 3



K-E 10 X 10 TO ½ INCH 46 1323
7 X 10 INCHES
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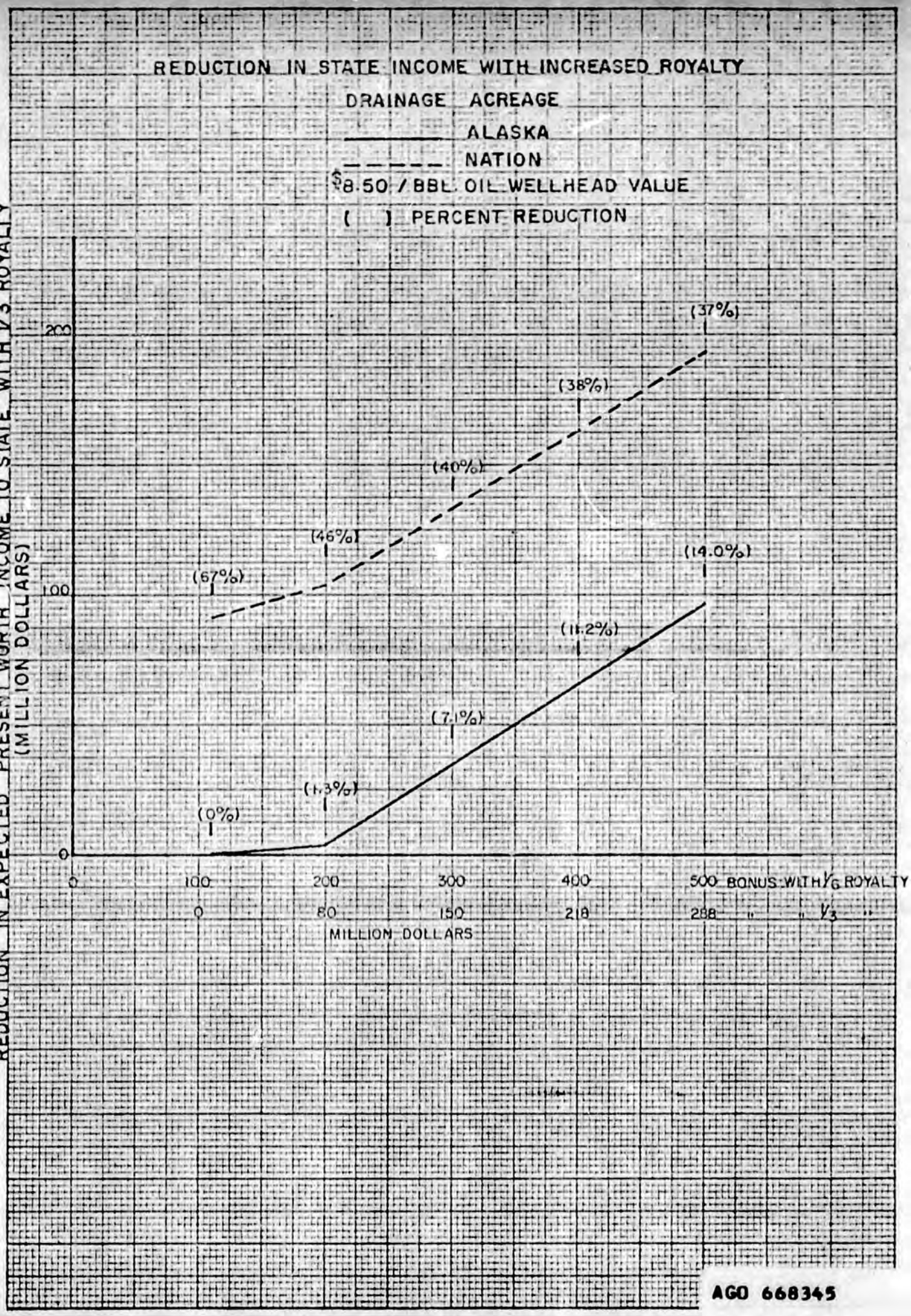
FIGURE 10



K&E 10 X 10 TO ½ INCH 46 1323
7 X 10 INCHES
KEUFFEL & ESSER CO.

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SCOMM

#21:33

Northwest Officials

John McMillian - Chief Executive Officer

Jim Allen - Vice President - Finance, Northwest

Morris Thompson - Vice President, Northwest

Jack Bachman - General Counsel, Northwest

Carl Bornmann - Attorney - Cahill, Gordon and Reindal of New York

Walter Lubanco - Partner, Managing Director, Lehman Bros., Kuhn, Loeb, Inc. of New York

Neil Eisner - Associate, Lehman Bros., etc.

Jay Hellstrom - Vice President, First Boston Corporation

Mike Stanfield - Vice President, Loeb, Rhoades, Hornblower and Company of New York

Howard Cann - Vice President, Bank of America, San Francisco

***

FERC Officials

John Adger

Phil Essley - Technical expert

Bob Anderson - Economist

Ned Hengerer - Attorney

***

JOINT HEARING

HOUSE SPECIAL COMMITTEE ON ROYALTY
OIL AND GAS

AND

SENATE RESOURCES COMMITTEE

FEBRUARY 15 and 16, 1978

AGO 668396

CHAIRMAN MILES: We will call this Joint Hearing to order. This is the Ninth Hearing of the Senate Resources Committee and the House Special Committee on Oil and Gas. We are very pleased to have Mr. McMillian of Northwest Pipeline with us. He has brought along a number of his experts in various fields. This meeting is purely informational and its partly in response to _____ with the representatives of Northwest Pipeline to begin hashing out what decisions they feel we have to make. And we also get our opinions _____. It is my understanding that in Mr. McMillian's presentation that he is going to dicuss the current situation with the Alcan Pipeline and then a number of financial matters. Following his presentation he and his staff will be available for questions and answers. If it is acceptable to the committee I think that we should proceed along the lines of having Mr. McMillian make his statement and then the Committee pose questions and take it from there.

SENATOR RADER: Mr. Chairman, yesterday during the Joint Session Senator Stevens, in his address to us, did discuss very briefly the pipeline situation and we did not have time yesterday to take questions from the Senator and to get his indepth thoughts on that matter. Several of the Legislators mentioned that to me after the session and I contacted Senator Stevens and asked him if he would take this opportunity to discuss with the Legislators here and particularly this

Committee, his views from the national point of view relating to the financing of the pipeline or anything related. I therefore would very much appreciate it if you could extend to him, I know that he doesn't want to take more than just a few minutes but he has agreed to make himself available for questioning from the Committee. I therefore would move, Mr. Chairman, that the State would ask the Senator to speak out of order and proceed with him at this time.

SENATOR STEVENS: Thank you very much, Mr. Chairman. I don't have any prepared statement for today. I appreciate the statement that Senator Rader has made and would elaborate just for a couple of minutes on the statement that I made. I am aware of the general outline of the proposal that Mr. McMillian is bringing to you and I particularly refer to the bottom, literally the bottom. I'm glad to see that it is the bottom line. That the ultimate backing for the State's participation will be revenues generated from the project. This has been the position that we have taken from the beginning, those of us that have been in Washington, concerning this project that the State should be willing to take a risk along with all others who would benefit from the project, but that the risk should be limited to the potential revenues that we could derive from the completion of the project.

As I mentioned to Senator Radar last night, I think that it is important to keep in mind the position that we

are in with regard to financing this project. There are other matters that are pending before the Legislature that I'm not intimately familiar with in terms of detail but I have read in terms of the general subject matter. I think that it would have an impact on the financing of this pipeline also. One of those that I read is the proposal as I understand it to bury the taxation laws as it would apply to the producers of the North Slope oil. From my point of view and from what I know about the financial community and the problems of financing the gas pipeline, I think that a change in the rules of the game now, the change of the basic laws of the State as it applies to those who took the risks on the oil pipeline to change our State corporate tax income tax laws would be a signal to the financial community that the same thing could happen if the gas pipeline is financed. Whether we like it or not it takes a tremendous amount of before tax income to have after tax income to amount to CAPITAL formation. I checked with my office this morning. We anticipate in Congress a need for about $400 billion of capital in the total energy field in the next decade. Of that we can expect about 10% to be new capital that is generated and generally the rest of the shifting capital that will have be attracted to investment in the oil and gas industry. I think that if you look at Alaska, Alaska needs a minimum of $400 billion in the next ten years just to keep with the projects that we already know are

going to go ahead. This gas pipeline the gas conditioning plant, the liquid hydrocarbon extractions plant that will be associated with the gas pipeline, the petrochemical plant and the financing of the off shore developments plus we have the additional energy demands such as the Susitna Dam and the extention and completion of the drilling and the production mechanisms for Prudhoe Bay and the area north of Prudhoe Bay in terms of Buford Sea. What I'm saying to you is that from where I sit it looks to me like the State of Alaska is going to require about 25%, at least, of the capital when we have the capability of forming a new capital just for this pipeline alone but we are going to need 10% of all of the money that this country can _____ for oil and gas development in the next decade. In this state with 500,000 people competing with the nation with 220,000,000 people. I would urge you and again I don't know the details of your legislation. I tried to point out in my address yesterday and I'm going to stop now and see if you have any questions Senator Rader or anyone else. My point is that we need stability. We need to give the financial world the total picture of Alaska as a mature entity, financially and from the point of legislation of Legislation and if we had legislation now that comes along and is looked upon, whether rightly or wrongly gentlemen, it is looked upon as being punitive legislation for those who appear to be making more money than we anticipated in

AGO 668400

the beginning, it is going to deter financing of this gas pipeline and the other things that we need money for. I urge you to consider the impact on the outside that I was mentioning. We, too, are getting a great deal more money out of the oil and gas business than we anticipated. I remember the first time that we looked at this Alaska oil pipeline we were talking about $3.0 to $4.00 barrel oil. Our profits have gone up, their profits have gone up. They need that after tax profit for capital formation to go on further in our development and I believe that we should be very wary of legislation that could be termed discriminatory legislation as far as the energy picture is concerned. If I have accumulated your thoughts again Senator I appreciate the invitation and I appreciate your courtesy on the rest of you as well for listening to me. If you have any questions I will be pleased to answer them. I'm sure that you are looking forward to hearing from Mr. McMillian.

CHAIRMAN MILES: Thank you Senator Stevens. Any questions for Senator Stevens?

SENATOR HUBER: Yes, Senator Stevens are you aware that the testimony that we received from _____ in the Wall Street _____ in reference to the financing of the Alaska pipeline when they testified at open meetings we had here in Juneau, and I was carrying this _____ that every bit of the financing is figured on the basis that the company had a

continuing liability for 9.4% Alaska corporate income tax. And that presently the oil companies will realize only a 2 3/4% to a 2 1/2% liability from the Alaska income tax when an Alaska corporation has the liability of 9.4% and that the financial community in every case had considered a 9.4% corporate income tax. And that the bill that you said that you said you are not familar with, none of them, calls for carrying Alaska's income tax over 9.4%. Have you taken this into account in making this recommendation to us?

SENATOR STEVENS: Yes I have and I think that again I say that I don't know the specifics of your bill. But what you're talking about is the apportionment of interstate income and that's a highly contested area of taxation in the nation and we are doing our best to assure that the monies that are actually earned in Alaska are fairly taxed in Alaska. But it is my understanding that the variations and the percentages that you mentioned are related to that apportionment of income. All of the $14.00 of the barral of oil that is delivered, whether it is in the gulf or in California, wherever its delivered, ultimately and sold, the first sale, all of that money was not earned in the State of Alaska. I think that this is one of the big problems that we have to make certain that we have a fair apportionment of that income to the State and as I understand it we're battling constantly as you know, to make certain that the charges are

fair as we back price that oil from the first point of first sale to the wellhead where we get our 1/8 because we're trying to protect the wellhead value, as you know, and we have worked together, the members of Legislature, the State Government and the three of us in Washington, on that subject. But I don't think we ought to confuss that with what I am saying, and I hope that you won't. I'm saying that there is a stability factor as far as the concept, and I'm trying to ask you to look at the big picture as far as the future of the State is concerned.

If you change the laws even if that discrimination exists, If you change the laws so that Wall Street and the financial world looks at it as discriminatory taxation and the net result is to delay a $10,000,000 gas pipeline or a $4,000,000 gas conditioning plant or a $4,000,000 liquid hydrocarbon installation then I tell you that we have lost the forest for the trees, and I'm urging you to look at the problem that we have. Now all of us have spent a great deal of time in the last year, Don Young, Senator Gravel and I, in going to New York to visit with those people who are handling the financial decisions of large capital in this country. And we are trying to convince them that we are a stable mature society, that we can handle the investment of this kind of money in a short period of time. What you people do has a great deal more to prove that we are right

with Mr. McMillian and his people who have come on say, as far as this project is concerned. Their looking to you to say what is the business climate, what is the investment climate for Alaska. That's my position and I hope that you understand. I'm not arguing about the fact and you can draw your conclusions, I can draw mine from the apportionment problem of income. But from the point of view of the broad picture of how Alaska is viewed in the financial world, I hope that you will see what I am trying to say.

SENATOR HUBER: Mr. Senator, I hope that Alaska's changes propose income tax structure are not being construed in Washington and elsewhere as an attempts to raise it. But we have not getting a fair apportionment of this price and we have been working very hard to try to get fair apportionment and I hope that you will work with us on that and _____.

SENATOR STEVENS: Let me tell you again, whether you are right or wrong and I haven't come down to determine that. Whether you are right or wrong if you change these tax laws so that they are so interpreted this year they will have an impact on it. Let me point out to you that the energy bill that is coming out of conference has a provision in it which says that State severance taxes are in addition to the first sale price for gas limited to the extent that the State collected severance taxes on April 20, 1977. We believe that date will be changed to at least this date of January in 1978.

But when we inquired where it came from the people on the Conference Committee told thats to prevent Alaska from raising its taxes anymore in terms of severance tax. I'm not talking to you just about the financial world. I tried to talk to you yesterday about the way that Congress is preceeding this State of some 400-500 thousand people in terms of what they consider to be our masive income already from oil and gas projected and now we're saying that we want more taxes. We are trying also to deal, John, with the BC people. Mike Gravel and I just spent time in New Orleans dealing with the BC people on trying to get them to be non discriminatory with their taxation on our gas pipeline if it goes through BC. I'm sure you know that the provisions that currently is in effect limits the taxation to $30,000,000 or the taxes that would be derived from the State of Alaska as tax laws. So they built right into the agreement that if we raise taxes, BC and Yukon Territory and the rest of them can raise taxes. We are be preceived, John, as moving to fast in terms of wanting to increase our income from these projects. And again I'm not arguing whether you are right or wrong, I'm asking you to see it from where we see it in terms of what the reactions are outside to what we are doing with regard to our tax law.

SENATOR HUBER: Senator I'm afraid that that is perceived as your suggestions and although I realize your position and I appreciate the job that you are doing in New York for us,

For instance, a refund regarding the severance tax on gas. For so many years we haven't raised it any so it no longer coincides with severance tax on an energy basis. We held back because we didn't want to increase the taxes on our essential industry thats supplies natural gas to south central Alaska. So now Alaska _____ and now it is perceived to be lost after we didn't raise it for years and years. If your advise is for us to stand still and agree to wait by Congress or anybody else I can't see it then.

SENATOR STEVENS: Well if you call it that, John, you just have to call it that. I'm saying to you that we can look forward to a construction period of the gas pipeline, of a gas conditioning plant, of all these other facilities. We can have a stable onstruction industry related to the oil and gas industry wit a smooth flow of investment capital to bring that about. Or we can be perceived as wanting to change the tax laws every year and slow down the flow of that capital and interupt and have peaks and dives in our construction and our employment picture. You're going to have to make up your mind, I'm not sitting where you are now. You are going to have to make up your mind what you think is right about it. As far as the severance tax is concerned, again that is already done. The Conference Committee has limited the severance taxes that may be added

to the wellhead price of gas to the severance taxes that were charged by laws already in effect. And specifically it came about because of the increase of the Alaska severance taxes. I'm not saying that it was right of wrong, I'm just saying that they have said we have drawn the line from now on its a stable act to increase the severance taxes, it comes out of the wellhead price. It is not in addition to the wellhead price as far as the consumers of the United States are concerned. So it's just a signal. You can read the handwriting on the wall, the next thing is going to be a question as to whether their severance taxes are deductable. That fight went on between the Province of Alberta and the Federal Government in Canada and I would urge you to study it because the Province of Alberta had to back up. And we could get ourselves in that position, John, and I hope that you don't get us in that position because I think the net result will be that there will be an increasing anomosity towards this state not only from the Congress but from Wall Street.

CHAIRMAN MILES: Thank you. Senator Butrovich.

SENATOR BUTROVICH: ... (indiscernible) You know a short time ago I read an article in one of the _____ byline or dateline or whatever you want To call it, concerning labor on the pipeline. It's a pretty tough article as far as hiring in Canada. It went to some length to say that portions

of the line in Canada would be done by Canadian laborers and I noticed in your statement of Mr. McMillian's that something to the effect that Alaskans would be given preference. This is supposed to be raised in discussion of the oil line. There is a lot of people who work on that oil line and have no special qualifications in fact the hardest work that some of them did was ... (indiscernible). And if we are going to have that kind of a job on the gas pipeline I want Alaskans to enjoy it not the Canadians. If they are going to be tough enough _____ _____ then perhaps the article didn't speak for the [illegible] but it apparently spoke for the feeling that must exist in Alberta and I feel the same way. I don't know how you feel about that.

SENATOR STEVENS: John, I feel the same way that you do about that and Senator Gravel and I at the meeting with the Canadian members of Parliament discussed that at length. As a matter of fact that subject took up more time in our joint meeting then any other subject between our two countrys. It is the so called question of Canadian content. And I don't think that Mr. McMillian and his people really have much control over this now because this is a bill that is standing before the Canadian Parliament and the Canadian Parliament has indicated that Canadian content is going to be a condition of the approval of the legislation to allow this pipeline right of way to go through their country and that content, John, has been set a 90%. We argued long and hard about

that concept of Canadian content and how it impacted on us. I reminded the Canadians that the first material that came in for the oil pipeline where the Canadian built Atco camp that came into Fairbanks. You will recall that, as a matter of fact I think you had a conversation with me about it at the time and its a very difficult problem to handle. That is another government, another national government and they have got legislation pending before their national congress, their Parliament which we don't agree with and we are having a very tough time getting changes made in it. But again that hasn't got anything to do with the financing of the pipeline, John.

SENATOR BUTROVICH: . Yes it does.

SENATOR STEVENS: It does in the sense of our approval of it but it doesn't in the sense that the support or lack of support of investors in the pipeline. That's what I mean.

SENATOR BUTROVICH: Senator Stevens ... (Indiscernible). You mentioned 90%. Were you told told by 90% of Canadian labor in Canada.

SENATOR STEVENS: Now this is going to shock you but they say that 90% of all good services, labor, material, equipment will be of Canadian origin on the part of the pipeline that goes through Canada.

SENATOR BUTROVICH: Well I can't argue with that. (Indiscernible) I just don't want them telling us how trying to run this government for us.

SENATOR STEVENS: Oh no, on our side its going to be 97%+ U.S. and in Alaska I hope that it will be 100% Alaskan. We are talking about the portion going through Canada when we're talking about Canadian content. We are not talking about the portion in Alaska or the portion south of the Canadian border. But going through Canada their in effect insisting upon Canadian hire as we insisted upon Alaskan hire. Their insistant on Candian contracts as we insist on Alaska contractors. But we were telling them that fair share that it should not be so inclusive that the people of ours who have the experience in construction and that the welders, for instance, should be excluded from Canada when they have the experience and we allowed such people in our construction of the oil pipeline.

SENATOR BUTROVICH: Mr. Chairman, that is one of the things that concerns me and the others, IS the petrochemical plant. I don't want to get down the road and then get across the Canadian border and then try to set the petrochemical plant. I want to have that petrochemical plant on our side of the border.

SENATOR STEVENS: I do too, and that is what we are talking about is taking those liquid hydrocarbons out of it and we had better be able to get the money to build it and we had better be able to have the people associated with it who have the confidence to get that kind of money because, John, you are talking 3+ billion dollars to take the heavy

and medium heavy liquid hydrocarbons out of that gas before its transported. It means a great deal _____ to do it. That propane and that butane and gasoline and we need that in this state and I think that everybody understand what we are trying to do.

SENATOR BUTROVICH: ... (Indiscernible). If we are going to be a partner in this we want some kind of barginning with. We want to go in there and say we want Alaska labor and Alaskan support on the line. Then we are going to try real hard to get the petrochemical plant on the Alaska side of the border. In other words we are not just going to be good guys and say in order to get a line we're going to join up with them and be partners because there are other people also who can build the line. It just so happens that at the present time that Northwest was going to do it. (Indiscernible).

SENATOR STEVENS: I hear you John.

CHAIRMAN MILES: Senator Stevens, do you imply that if WE CHANGE OUR TAX LAWS, IT WOULD CREATE A certain amount of uncertainity. Is it converse to say that the major financial endeavors by ... (Indiscernible). Are we also, committing to locking ourselves in forever and ever ... (Indiscernible).

SENATOR STEVENS: Well I don't think so Mr. Chairman. It's a good point though. Again I'm not saying that you should change the tax, I think that if you change the tax laws in a manner that they are preceived to be discriminatory, whether

they are or not. That is the impact, there is going to be an impact on the financial world if it is perceived to be discriminatory. I think that you will find that the people who analyze State actions are fairly objective even though they have got a different perspective. They are looking at the alternatives for the investment of limited supplies of capital and if you had to make that decision you would put that capital where the assurance of repayment was greatest. That's the difference of perspective. But as far as the commitment for this line, if we take an action to commit a portion of our future revenues that we would derive only if the line is completed and the gas is sold, then we are taking a risk of a portion of the profits we may make as a State, as an owner of the gas. That gas price is going to rise over the time between now and the time when this pipeline is completed. I have every reason to believe our income, our profits as a State from the sale of this gas at 1/8 royalty is going to go up as much or more than the oil prices have gone up in the past. It's a very limited quantity of gas we have in the world today and this is a valuable resource. So what we are doing is that we are saying we would take a risk along with the company and the investors to the extent that we might derive a profit and no more. And as a matter of fact they are not asking us to risk even all of that. They are saying, though that our State of Alaska's financial

risk will be limited to the revenues that we would derive from the project itself. That to me is a very fair saying and to answer your question directly, yes. If we take that step the financial world is going to say that the State of Alaska has confidence in this project. And that is going to make a great deal of difference in terms of the financial world.

SENATOR SUMNER: I think that without question, without debate one of the primary, maybe the primary issue before the _____ as you probably know is the jobs and the jobs opportunity. Certainly every gubernatorial candidate, including the incumbent, has locked that as their number one attack issue. And it seems to me that this might be an appropriate time to discuss the investment in this pipeline, this proposed pipeline to the Alaskan's jobs. There has been to much lip service given to the term "Alaska Hire, Local Hire" we have beat that to death. But down at the bottom line at the problem line comes Do we have Alaskans and on what weight can we use, to see that that comes about. And again comments along that line, I would like you to address that question.

SENATOR STEVENS: Bill, there is no question as we have dealt with this project through consideration in Congress that all three of us who represent Alaska in Washington has said time and time again we support the Alaska Hire Law, we believe

that it has been interpreted in court as being fair and we want to see it followed in terms of the gas pipeline. I have every reason to believe that this line is committed to Alaska hire. I think that Mr. McMillian will tell you that today and will answer your questions about it. It is again something that there is no question about its need in this State. I'm sure that we support your same approach to that. Thank you very much for your courtesy gentlemen. Mr. President I hope that I've met your request.

JOHN MCMILLIAN: Thank you Mr. Chairman. Mr. Jim Allen, Vice President in Charge of Finances with Northwest Alaska on my right, Mr. Walter Lubanco is a Managing Partner with Leman Comro of New York City, our Financial Advisor. We also have other parties here that will be willing and able to answer questions and would you like to introduce everybody by name.

_____: This is Carl Bornmann from Cahill-Gorden. Mr. Collen from Bank America, State Health Managing Director and First Boston Canadian Financial Advisor. Niel Eisner, also with Union, Mike Stanfield with Labrose, and Jack Bachman our Financial Advisor.

MCMILLIAN: Jack Bachman is a General Council with Northwest Alaska. Thank you Mr. Chairman. I'm John McMillian, I'm Chairman and Chief Executive Officer of Northwest Alaskan Pipeline Company. As you know, our company, which was formally Alcan Pipeline has been selected by the President

of the United States, with approval of Congress, to design, construct and operate the Alaska segment of the Alaska Highway Project. I'm pleased to be here with you today and to have the opportunity to report on the status of our progress and to discuss ways in which we can work together to assure its success.

Since I was last in Alaska several parts of development have taken place, both in Canada and the United States. Federal, State and Provincial Governments are continuing to demonstrate their commitment to the project by organizing to expedite for the projects completion. On December 16, 1977 the Federal Energy Regulatory Commission, FERC, issued Conditional Certificates of Public Convenience and Necessity to the Northwest Alaskan Pipeline Company, Northern Border Pipeline Company, Pacific Gas Transmission Company, thereby clearing way for us to move forward with our scheduled planning, design and engineering work. For example, our GS geotechnical exploration program which will involve a great deal of field work in Alaska is scheduled to begin on March 1, 1978. Plans are also underway for full scale frost heave tests near Fairbanks and pipe burst tests in Northeastern Alberta. These two programs which will begin late this year and early 1979 will be carried out in corporation with the U.S. and Canadian government agencies. U.S. federal agencies have commenced working together in order to develop the

necessary plan that will allow for timely permitting and monitoring the construction. FERC has created a new Alaska Gas Project Office to facilitate the entire certification process and named John B. Adger, Jr. as Director. Mr. Adger's function is to assist in expediting the project by gathering necessary information required by the Commission to rule upon future applications for permanent certification. He will also represent the Department of Energy on the Executive Policy Board.

Also, over the last two months we have had a series of very positive meetings with Governor Jay Hammond and other officials of the State of Alaska. Our discussions have centered around such issues as the Alaskan Local Hire, use of North Slope haul roads, and of course the possibility of State participation in the financing of our project. We're pleased and encouraged by the cooperative spirited and demonstrated by the State of Alaska and its officials. On the Canadian side a bill similary to the Alaska Natural Gas Act was introduced in the Canadian Parliament on February 3, 1978. This bill is to provide for the approval and centralization of authority necessary to permit the project to go forward. We feel like this bill is a positive bill. This is similar to our Alaska Natural Gas Bill and we see no conflicts today in the proposed bill that is now before Parliament. Further more, Prime Minister Lougheed Lawheed

has indicated the provincial government of Alberta is interested in participating in the financing of the project from the Canadian point of view. We think this is very important. The Heritage Fund of Alberta now has over $4,000,000. It also shows that the Canadian's are confident in the project. It also shows that the Canadians are confident that this is a good investment for their Heritage Fund. Concurrently with the government efforts, our company is moving forward to organizing a partnership group that will form the foundation for the equity financing of the Alaskan segment. In that regard I'm pleased to announce the final negotiations are currently underway with a number of U.S. gas transmission companies and we expect to announce the formation of this partnership within the next few weeks.

Let me talk about one of the main subjects that brings us all together and that's financing. I would like to outline briefly why we want and need your support. The benefits to Alaska and their people that your support would produce, and the opportunity for investment by the State which would permit the State to realize the same return that all the other investors will receive. The need for Alaska participation, the capital for our project will be raised on a project financing basis. That is, the project will be financed on its own merits and stand as an independent entity. The service for the projects debt and the return on its equity investors will be provided by the cash flow

generated by the project. This financing concept is different from that employed in connection with the Alyeska Crude Oil Line. Financing strength for the U.S. gas transmissions companies that will participate in the project does not match that of the major oil companies involved with the crude line and therefore requires a fund to be raised for a gas pipeline on a project financing basis. Successful utilization of this financing approach will be achieved by demonstrating the economical viability of the project. We are very confident that this can be done. Because the private capital markets must provide most the financing it will be necessary to erase any doubts that may possibly exist and in turn generate a continued interest in our project. This can be accomplished best through and working with and education of the financial community and also through your active and early commitment to participate in this project. The education process is already underway. A team of project managers and financial advisors are conducting a series of meeting with representatives of major financial institutions that focus on many of the significant differences between our project and the Alyeska line. These include such viable factors as existance of a haul road to the North Slope to provide access to the project, the existence of a work pad that will be utilized wherever possible, the existence of camp facilities, and fewer major river crossings, including the now operating Yukon River Bridge will accommodate

the gas pipeline.

In otherwords, a basis infrastructure already exists. Major facilities now in place will simplify the preparation for construction of a gas pipeline. The construction requirements will also be simplified. For example, the refrigerated barried gas pipeline will need substantial fewer miles of insulation compared with the hot oil line. Also most of the gas line will be barried compared with about half of the oil pipeline. Consequently the problems of providing structural support for the line and the frequency of going from above ground tc below ground loads are avoided. Construction experience is also a very important factor. A number of pipeline contractors have benefited from the oil line experience and are prepared to apply that knowledge to our project. This experience will materially improve the effeciency and should reduce the construction costs. Arctic construction experience as to equipment men and arctic knowhow and background is very important for the cost estimates. We have this information in Alaska data base at hand now. These are but a few examples of the striking difference that will help us in the planning and construction of the system. The initial results of our educational and in working with other parties indicate that we are on right track. However, we must now submit to the financial community tangible evidence of Alaska's conv ction that our project is economically sound and its construction funda-

mentally different from the Alaskan line. Alaska's participation would demonstrate that you have recognized the difference between our project and Alyeska's. Moreover, responsive and effective governmental involvement will help keep our project on schedule and insures timely completion. Alaska's financial participation will not only serve to reassure the financial community but it will also add an important element to the success of this project.

Finally, given the various substantial benefits of our projects will provide Alaska and the support that was suggested for in the El Paso Project. A negative response from Alaska would seriously hinder our efforts to develop confidence in the project in capital markets. We believe the benefits to Alaska are very important. Let us now briefly review some of these benefits to Alaska and their people that would derive from a timely completion of our gas line. These benefits can be classified as direct economical and employment benefits, indirect economical and employment benefits and developmental benefits. According to our estimates Alaska will receive the following direct economical benefits. Approximately $10 billion in royalty in income over a 25 year period. Approximately $7 billion in serverance taxes over 25 years and approximately $1 billion from other taxes including advalorem and income taxes. Total royalties in taxes including taxes in connections with the gas processing

plant as well as corporate income taxes related to the sale of gas will substantially exceed $20 billion for this project. It should be noted that these are only minimal benefits estimates and they are based on the production of 2 billion cubic feet of gas per day at a wellhead price of $1.45 per thousand cubic feet exculated at 6% per year.

Now as to the direct employment benefits. During the construction of the project from 1979 to 1982 the number of jobs created will range from 1,300 to more than 10,000. The project is committed to hiring qualified Alaskans and after its completion the project will employ a permanent staff in Alaska. Indirect economical benefits include the various other services necessary to support the project. These services will provide Alaska with additional employment and revenues stemming from housing, communication, transportation and so forth. Also all the benefits directly and indirectly related to the project will be multiplied as they circulate throughout the Alaskan economy.

With respect to developmental benefits, our project that not only delivers the Prudhoe Bay gas to lower 48 market, it creates an energy gas corridor to the North Slope of Alaska. We believe that this will stimulate further exploration and development of Alaska's natural gas. We also believe that the gas available in the North Slope is one to two fold from that gas that is now available and our

system will allow for the distribution of Prudhoe Bay gas to Alaskan communities along the pipeline route thus providing an energy supply for future industrial development. In summary, we believe that our project generates substantial and continual economical benefits for Alaska. For providing early financial support for the project Alaska would accelerate the realization of these benefits. I think that it is important if the project is not built none of these benefits will be realized by the State. Alaska can help. Before discussing how Alaska can support the project let me state the position of the current administration in Washington, D.C. and that is that no major energy project will be financed on the basis of federal guarantees. This includes LNG projects, co-gasification projects, SNG projects, nuclear project as well as our gas pipeline.

As mentioned prevously funds for the project will be raised on a project financing basis. Our general financing plan visualizes a committed pool of capital sufficiently large to assure all investors and lenders that there are sufficient funds to complete this project. The committed pool of capital would consist of approximately 25% equity, 75% debt. Most of the equity components of this pool will be invested by the gas transmission companies. However, we welcome equity participation by the State of Alaska as well as her citizens, native regional corporations, and other

organizations. Most of the projects debt financing will be provided by the capital markets, principaly banks, insurance companies, however we expect that the major project beneficiaries will also participate in this segment of the financing. Now to get to more specific items the project encourage Alaska financial support in the order and magnitude of $1.2 to $1.4 billion. This commitments would include purchase of both debt and equity and is consistant with support that was suggested by the State for the El Paso project and adjusted for inflation. Alaska's commitment would be limited to a fixed amount. Alaska will receive a rate of interest on its debt purchased and a return in equity investment identical to those received by other investors. Alaska's committment will not be binding until all the capital necessary to insure the completion of the project has been committed. The ultimate backing for Alaska's financial participation will be revenues generated from this project, including gas royalties, Alaskan taxes, internal backing could come from a number of different sources. The projects financial and legal advisors are examining the alternatives and we hope to discuss these with you in further meetings.

We hope that by appearing here today we have helped bring about a better understanding of the economical and employment benefits of our project that will occur to the State of Alaska and its people. We are looking forward to corporating with you during this session and to achieve a

form of participation in our project that will be to our mutual benefit and assist the projects timely completion. Finally, on behalf of all of us who are working on the project, I wish to thank you for this opportunity to meet with you today and at this time myself and my colleages would be willing to try to answer your questions. I thank you very much.

MELAND: Yes Mr. Chairman. This is a question that perhaps only a Legislator from Southeastern Alaska would ask. But during the years when we have been discussing the El Paso project and the old Alcan project it was rumored or mentioned several times I think that there was a possibility of a spur line down through Southeastern Alaska to Haines. Is that idea now dead or is there still a possibility that there could be a spur line down the existing gas line corridor that is already there and if it would be built what benefit would it give to Southeastern Alaska?

MCMILLIAN: You are addressing the spur that would go along the old Haines pipeline right of way to that area. That concept is not dead. We did some initial studies, very priliminary nature to determine the volumes of gas that could be transported through the existing system and I don't have these studies with me but I know that by using the existing systems you could transport usable volumes of gas for industry and communities along that route. I had all the facts and figures but I

AGO 668424

don't have them with me. We have given that various parties in the State and I will be glad to furnish to you that information. Yes that is a viable option.

?? Miles: Mr. McMillian there has been regular repeated efforts to the alleged financial commitments that the State made to El Paso that came up in Senator Jackson's report and the President's report. You mentioned a couple times in your speach that your Financial Advisor Bob Rose has mentioned in communications with him. I think it has to be clarified, the State of Alaska, or at least the Legislature of Alaska, passed an appropriation to study the possible financial participation in the El Paso project. That didn't indicate that, or did it LEGHIE any possible commitment but there is a fine distinction that definitly has to be made that since we have a appropriation to study the financial participation of capital in the project. Do you have any comments on that?

MCMILLIAN: Yes, I realize what you say and I realize that it requires your approval before anything of that magnitude or substance could be official. But irregardless of that a letter was filed with the FBC during the preceedings that indicated that $900,000,000 would be available to support that project and in that context of the hearing was looked upon by parties as being there as a commitment. We argued at the time but this has been picked up by the President in

AGO 668425

his report, it's been picked up by other reports as you mention and is now looked upon, and we have kind of painted into a box on this issue because it is looked at by the financial communities, the federal government, as an indication of a commitment from Alaska and if we do not have the same degree of confidence in this project does this mean that Alaska does not want a gas line, or this gas line? And these questions we have to answer and that is why we are here today to try to work out a working relationship with you.

Miles: Thank you, I just did want to clarify that point.

MCMILLIAN: Yes I understand that.

SENATOR HUBER: Yes Mr. Chairman, thank you. Do I understand from what I have heard today that there is a particular problem in financing the gas pipeline, particularly in Alberta? Is it likely to fail there, is there something wrong there? Or did I get that wrong?

MCMILLIAN: No sir, I didn't think that at all. I was trying to just indicate the opposite. I think that we have had an indication from the Provincial Government of Alberta that they would be willing to participate in the financing of the project which we think is a very positive move and we think that this gives out a lot of credibility to the project and so I didn't mean to indicate that at all. If I did I'm sorry.

SENATOR HUBER: Well if I may continue. Why I am confused about it is there any problem with the private sector being willing to finance the Alberta portion of the line?

MCMILLIAN: No, would you like to address this, my Financial Advisor. We don't think so.

BOB ROSE: The problem I think with respect to Canada is uniquely handled by the representative of First Boston and he is most intimatly familiar with what is going on in Alberta, but I think that the exact opposite conclusion could be drawn from Mr. McMillian's statement and Jay would you like to address yourself to that.

JAY HELSTROM: No, I would emphasis that there is a spirit of cooperation on this pipeline between the participants and the parties of the interested two governments. But in the final analysis, you look at a pipeline from beginning to end as one entity and it would have to be financed on that basis. Even though there will be different jurisdictions and different legal _____ as it applies to the two sectors. But in the final analysis, its U.S. gas being delivered to U.S. markets the strength of which in the economic process will to able to force the raising of the equity in the sum of roughly $10 billion in this project. And if anything I think in the both business and regulatory sense in Canada its very much in step with that in the United States.

SENATOR HUBER: Well Mr. Chairman my reason for going into this is alluded to an _____ and then Senator

AGO 668427

Stevens had just told that the problem that Alberta has with attracting capital and then I learned from your testimony of course, that they have $4 billion in their Heritage Fund, I wish we could be so lucky, and that they were figuring on investing it. I wondered if there was a problem.

MCMILLIAN: Tell me what you are referring to exactly. I don't understand.

SENATOR HUBER: Well I believe that Senator Stevens when he was talking to us, indicated that the investment community is no longer willing to invest in Alberta and I wondered if you were supporting that, and you were not.

MCMILLIAN: Let me, if I may, say that was not the case at all that the Province of Alberta and the project and companies in the Province have been quite active in raising capital. A point and case can be made as to their own petrochemical complex which I'm sure you are aware of raising funds in not only the banking market but perhaps more importantly in the long term institutions markets in both Canada and in the United States during 1975, 1976 and 1977. There is a very good environment for investment of marketable securities in both ongoing companies in a new start projects in the Province of Alberta and I don't think in any way one could interpret comments made by Senator Stevens or comments made by Mr. McMillian to infer the investment community could be perceived negative in the Province of Alberta or the pipeline foothills.

AGO 668428

SENATOR HUBER: And then Mr. Chairman, I would just like to pursue this just a little bit further. Is Alberta then differently perceived by people in regard to financing of the gas line than Alaska is? Are we taxing more than Alberta? Are we putting an undue burden on you that Alberta doesn't, and if so I would like it explained?

MCMILLIAN: Well we studied your proposed taxing and basis of every segment through Alaska, B.C., and Alberta. I think Alaska was nearly two fold greater than the next highest tax basis and that was B.C. Alberta again was about one half of what they had the tax basis on the pipeline that B.C. had. So Alberta does have one of the lowest tax bases of any segment of this line that would be constructed.

SENATOR HUBER: Does that have any effect on the amount of the line that is in Alaska in comparison to the amount that is Alberta?

MCMILLIAN: No, this is on a per unit basis.

SENATOR HUBER: Would you say then, Mr. Chairman if you will bear with me just a little longer, that it would be a safe bet to say that maybe we should investigate our tax policies in Alaska and pattern them a little more closely after Alberta?

MCMILLIAN: I think that the reason the American and the Canadian negotiating team on their treaty agreement, the Canadians insisted on using the Alaskan tax basis and they felt like they were adequately protected since you did have a higher tax basis on some of these on the pipeline. And that was

one of the conditions that the Canadians put on the negotiations between us. Now, however you want to look at that you may. But that was a Canadian requirement.

SENATOR SUMNER: One of the areas I concentrate on and drive hard so that we have no misunderstanding in the areas of employment and employment opportunities. In an attempt to maximize the opportunities for Alaskans. One of the things that I would like to know is if you have other than embrasing that it will be one of the areas of priority for you. Have you at this time assigned anyone to come up with a specific plan of how that will come about? In otherwords, it will take some planning and some effort on your part rather then just saying that we will give preference to Alaskans if they are at the right place at the right time. And specifically, I am concerned about identifying some of the job needs that the pipeline will have and ultimatly generate a plan that might share in the training of those persons so that they are at least available. Would you comment in regards to how far along?

MCMILLIAN: I would really like to, because we don't mean to be critical in any way of Alyeska. Alyeska had a first time through tough project and the experience gained by them has been very helpful to us and I believe allows for us to do things that we wouldn't be able to do if that experience had not been there. One of the things and one of the real advan-

tages that we have is a proper planning time on this project and this is a massive planning effort of some $200,000,000 that will be spent over the next two years on just planning, engineering and such matters, that you have decribed and so we do have, to answer your direct question, we do have administrative people, we have labor relation people that are making surveys, they are making inquires, that are working on this we are also using consultants on this and basically if we can plan ahead, if we can train ahead of time, its to our economical advantage to use Alaskans where they're here and happy, rather than transporting other people up here that we would have to move, go through the training period from Oklahoma or Texas that are not familiar with these conditions. It's to our economical advantage, we think its to the best advantage to the State and these are our objectives and we are going to do it.

SENATOR SUMNER: I further think that it is to a tax base advantage as well because invariably if we don't meet this need up front in a direct approach we have to do a mop service and that usually means taxes. And I would like to invite you, the Senate through the President of the Senate had charged the committee that I chair with the responsibility of maximizing employment opportunities. I would like to be included as early as possible on any efforts that you are conducting along that line.

MCMILLIAN: Yes sir, we would be glad to have our people come and visit directly with you and we will have them in touch with you. We appreciate the opportunity.

Bennett: Thank you Mr. Chairman. Mr. McMillian in your prepared text here you state that Alaska will receive a rate of interest on its debt purchases and a return on its equity investment identical to those received by any other investor. While we have the gentlemen here with the financial backing, I'm wondering what sort of an interest rate, or what sort of a return, just a ballpark situation assuming that we go on this project. What will we be looking at as far as the return?

MCMILLIAN: I will let Mr. Lubanco answer that question.

WALTER LUBANCO: Obviously the instruments that are being sold, are going to be sold in accordance with the market conditions at that time. However, all the calculations included in our financial projections indicate an interest rate of approximately 10% on the debt and a return of investment on the equity in the ballpark of 15%. So if you want parameters in which to work I think they're reasonably good numbers. The point that we are making however, is that Alaska will be receiving exactly the same thing that other investors are going to have whose sole purpose of investing in this project is the rate of return on their money that is in competition with other opportunities for investment. Alaska will be granted that opportunity, if you will, in addition to will

get the other _____ benefits that Mr. McMillian referred to.

SENATOR HUBER: I have one more on Alaska hire ... (Indiscernible). Are you committed to effective Alaska hire to the point of being willing to negotiate with the State of Alaska without asking for extra concessions for that negotiation during your right of way leasing negotiations with the State to enter into such agreements for Alaska hire based upon their proprietary rights as a property owner in negotiating the leasing as distinct from their right as a regulatory body? This is where we fell down in being able to enforce the requirement for Alyeska. Our hindsight is better that our foresight, and are you willing to do this?

CHAIRMAN MILES: I'd like to interject a bit. I'm not trying to answer for him but it seems that that's one arena that we need to sit down and negotiate and that is why I invited him to participate and I would be glad to have you participate in those hearings and maybe address that point at that time. But it seems to me that there is a whole better parameter to be established in terms of the Alaska hire and how to enforce it and I didn't want to try to get it off in one _____.

M. LeResche: I think that it would be perfectly profitable to have Mr. McMillian comment. He can't answer in negotiation itemizing...

HUBER: Before he answers Mr. Chairman. I know that both Senator Sumner and I have this concern and recently during

AGO 668433

the royalty oil sales meeting every single bidder on royalty oil and the State of Alaska's Department of Natural Resources all committed themselves towards that agreement based upon proprietary rights. And I'm asking you only in principle, are you willing to negotiate in that way?

MCMILLIAN: I'm not prepared to negotiate these details of labor agreements of that type of right of way agreements because I'm not really an expert on those items, but in principle yes, we are willing to work with you in every way possible to optimize the Alaskan labor content to the maximum possible degree because we believe that it is to our benefit as well as your benefit to do so. And so the answer is yes, we will sit down and work with you in principle and try to work out the details we can to optimize this for both of us.

HUBER: The issue then Mr. Chairman comes down to the agreement difference between under proprietary rights and doing it under regulatory rights. That is where we fell down before. If you have any reservations on that, I would sure like to hear about them.

MCMILLIAN: Well, I don't really understand the difference between I mean you are out of my kind of field or area.

HUBER: The State of Alaska as a property owner in negotiating its right of way lease with you for the right to cross the state property. It's perfectly within its right as a property owner to require you to achieve certain things that cannot

due constitutionally under their regulatory powers. That is what I am talking about and its a hard point right to the subject.

MCMILLIAN: Well, I'm sure we'll have our negotiations along those lines and we stated to you in principle what we are willing and I think that it is very fair and open and we plan to be that way.

HUBER: I think that this call came from the Philadelphia plant... Thank you Mr. Chairman.

(REST OF TAPE INAUDIBLE).

MCMILLIAN: It would mean that if we didn't have it at this time it would mean that the final design, the final cost factor would not be properly defined until those issues were. In our engineering scheduling to meet first gas in delivery of a 1-1-83 which was still at that date to meet those definate design criteria will be needed about the middle of the year, June or July.

Radix: There is some suggestion also of those talking about moving our capital and funding part of that by general obligation bond issues and part of it from general fund expenditures and I think that alot of people have a lot of good ideas about that. You suggested that something less than $900,000,000 share might jeopardize the state in their general obligation bond. (Indiscernible). Do you feel that, does your bank financial advisor feel that being involved

with you would retract from the ability of the State bond to carry out corporate _____ of normal ordinary governmental functions.

MCMILLIAN: I would say that the project would stand on its own but I'd let Mr. Lubanco respond.

LUBANCO: I think what Mr. McMillian is suggesting, what we have suggested in our rather informal meetings, is obviously the State has other problems for which we are not a _____ to as you. And what we are suggesting is that we at the earliest pratical moment establish formal or informal committees so that we can better understand your capital requirements and further we can structure a method whereby your participation in the pipeline would be consistent with that which we said. That is ultimatly your monies will come from the proceeds received as a result of the construction of the pipeline. Now I think, obviously, you cannot continue to borrow and continue to have the same credit rating. There is something that has to give and I do not, with any definition, where that is.

Roder: You're initial suggestion is not that we use general obligation ~~bonds~~ bonds?

MCMILLIAN: That's correct.

LUBANCO: We think that as a result of our studies of your statutes and as a result of our understanding that we are reasonably optimistic that a method of financing can be provided whereby your general credit is not called _____. As we suggested

AGO 668436

there is a possibility of using the natural gas in sight of additional security of the bond. All of these things are areas where we have to have further discussion with you in order to come to a definitive conclusion. But we are optimistic that this can be done.

Miles: (Indiscernible). Pool of funds, all-events tariff

MCMILLIAN: Until completion from the time the first gas flows through the project in effect this would be an _____.

Miles: In that case would we be equally liable as well as for the series of cost overrun... (Indiscernible).

LUBANCO: Mr. Chairman as Mr. McMillian described this project is being financed on the basis of its standing alone. We will not be able to raise any funds over and above the founders money, if you will. That is the basic pipeline distribution companies referred, the transmission companies that are involved in this project, with third party money unless we can convince them that that pool of funds is sufficient to complete the pipeline. Accordingly, it is taken down, every time investor money, and that would by definition include the State of Alaska. We have to insure the investors that the funds already expended, together with existing commitments at that time are sufficient to complete the pipeline. We're asking the State of Alaska for a fixed commitment and your commitment together with all of the other fixed commitments that we will have obtained, would

be sufficient to assure any reasonable man that we have enough funds to complete the project.

Miles: So... (Indiscernible) So everybody else is in the same position?

LUBANCO: Overruns has to be defined. We are going to raise enough money, we may not use it all, but we are going to raise enough money to ensure the investors to the extent that is reasonably called for, that the pipeline will be completed on the basis of all that have been committed for. Am I answering your question? What further can I say on the subject?

77. Miles: (Question Indiscernible).

LUBANCO: You are paying for the cost of the project. And you are taking a risk to be sure by investing that fund but you are taking a risk no greater than all the other people who are investing in it and there will be presumably in the area of $10 billion in investments involved.

SENATOR BUTROVICH: (Question Indiscernible).

LUBANCO: We are giving you the option. If you would like to participate we would welcome you.

SENATOR BUTROVICH: (Question Indiscernible).

LUBANCO: If they put up their money they would. If they pay for it they would.

SENATOR BUTROVICH: (Question Indiscernible).

AGO 668438

MCMILLIAN: Yes sir. There could be a market established, and public issue made. We have that flexibility built into the plan.

SENATOR BUTROVICH: (Indiscernible)

MCMILLIAN: Yes sir. You'll have stock certificates, you'll have a _____ estimate just like everybody else has with the same protection requirements that everybody else has.

SENATOR BUTROVICH: (Indiscernible)

MCMILLIAN: You are prefered by you rare position.

SENATOR BUTROVICH: (Indiscernible)

LUBANCO: Well lets take your numbers. The way we would plan it would be attempt to get commitments of $20 billion so that we will only spend $10 billion and so therefore not call upon the $10. The exact definition of our cushion, if you will, has not yet been decided. But the best of all possible worlds would be for us to have commitments over and above the amount actually expended for the pipeline. Naturally if you would exculate to a percentage you just can't come with it.

MCMILLIAN: You're using an example there that we don't think is fair and we have examined this very carefully and a risk analysis has been conducted on this. I know that every place that we go we are compared with Alyeska and the cost overruns involved. There are so many different variables between this project and their project by all

the people in the financial community we have discussed this point by point, unit by unit. We're convinced that this is a normal pipeline project that our industry has been doing for years with a great data base of information. Where accurate costs estimates can be made.

?? Miles : (Question Indiscernible)

LUBANCO: No again I think you're... We have to raise sufficient funds that would satisfy the sophisticated institutional investors that we have funds to complete the project committed for. Now we will demonstrate this as best we can. I don't believe that there is anybody however, that could assure you that the project will be completed regardless of any turn of event. However, this is true of every investment that anybody has ever financed other than the printer of the currency.

Miles ?? : (Question Indiscernible)

MCMILLIAN: We think the most important variable in the overall financing of the project, the values are important, but the most overall important factor is the roll and pricing concept of being able to roll in the unit pricing of Alaskan gas delivered in the lower 48 with exsisting gas supplies in the lower 48. Also there could become a point where Alaskan gas is priced so high, your transportation system, that it is not marketable. That would have to be extremely high and so it's a direct function of the volume, of the wellhead price the volume of that goes through the

line that is going to ultimately determine what that pricing is and so naturally we, everybody else would like to see that optimum gas volume flow through the system but I think that there is more important variable whether it is 7/8 or 1/8 of your yet not clearly defined volume. I think it is going to be 2 billion, it could be 2.4, it could be some other variable. We think that the rolled in pricing is critical and its more important than anything else and the marketablity of Alaskan gas could reach this point but it would be a pretty large, we would have to go a long way because it is a domestic energy source, you do have a balance of payment problem, you do have other advantages that you opening other energy corridor for a future gas supply and so I don't think that that is a critical point that would make _____ project.

Miles??: (Question Indiscernible)

MCMILLIAN: We've always, we haven't always, but we have assumed cases where we have assumed that the 1/8 volume is going to be used in Alaska. Some of the studies have indicated that.

RADER: Mr. Chairman along that same line we have a problem of... Let's assume that we are unable to find _____ purchaser and this time who can process REFILE and do whatever he can do in state _____, let's assume that our population... (indiscernible) But that

three years from now or five years from now we find out that now the market is such, or our population is such that or something else we're ..... We cannot use today that we find out we can use in five years from now. What kind of a dislocation... (indiscernible). And what kind of a price are you looking at... (indiscernible). What kind of a tariff would we have at that _____. Would we develop on the payment of the tariff on the total line, or 1/8 of the line or how do you resolve this kind of a problem.

?? Lu Barlo: There are more different pipeline tariffs than the imagation of ma: I mean they just go on forever and there are a lot of ways to approach it. But its very seldom that you have a MCS mile type of tariff where, a charge is made for moving gas a set distance for a set volume because a system has to be designed, financed and structured before that unit could be transported at all. And so usually there is a disproportional transportation cost to the units of gas that are transported shorter distances and so I couldn't give you exact numbers or anything like that because a tariff has not been exactly established nor has it been approved by the FERC. But those conditions do exist in current gas complex in the lower 48, short term contract, long term contract and it is not an unusual situation, its not a first time situation.

AGO 668442

RADAR: I know. Let's assume, I am _____ to _____ of the disproportionment charge, to avoid that disproportionment charge if we do, before construction begins, during the design stage there would be no reason for disproportionment charge then would there? In other words if we were able to tell you that we have taken oil off at point X, before you started your design stage, would that tend to minimize?

MCMILLIAN: It would tend to minimize yes, I don't think it would eliminate, but I think that it would tend to minimize and you would be able to optimize your transportation charges if conditions were known in advance, yes.

RADAR: You have the discretion of setting those tariffs, is that the kind of thing that we could negotiate with you or the kind of thing... (indiscernible)

MCMILLIAN: Its a thing that we all go before the with a long series of talks and negotiations with the Federal Power Commission, The FERC now.

RADAR: Even if we tell you today that we want X amount of gas inside the State of Alaska, we would still have to get Federal Power Commission to approve that would we? ...(indiscernible)

MCMILLIAN: That's right.

_____: Thats correct.

RADAR: And if we went in to a hearing there who would our

AGO 668443

opponents be in that hearing. Would that be you, would that be other purchasers, or who would that be? Let's assume that we went in five years from now and wanted to get a tariff through Fairbanks. Who would be the arguer there?

MCMILLIAN: Well traditionally, usually the pipeline operators are able to negotiate these matters out and they come up with tariff. And traditionally they are usually opposed by some states and the state PEC commission. I believe that is true, right? That California, the state of New York or somebody like that would come and say well you're getting 20¢ transportation charges when it should be 30¢ or something, you intervention would be not from us so much, we would have a negotiating process to go through and agreement on tariff _____, but then the approval that would go before the FERC would be the probably the intervention from another states regulatory agency.

RADAR: The way I understand it then, if five years from now we want to withdraw and we got an agreement from you, that we could take 20¢ off of our tariff and pull it out of Fairbanks, you would have to add that 20¢ on to somebody elses tariff who was going through the line and then those people who were footing the bill on that tariff would appear, I suppose, in front of the Commission. existing as you and we worked out?

AGO 668444

MCMILLIAN: That is entirely possible because you have a total unit cost for services, total dollar unit to go from A to B with all the variables involved and to reduce a segment of it here, well somebody picks it up down here and that is where the intervention comes.

Rader: We have had some experience with the oil line and the right of way leasing and that sort of thing. It is my understanding that you and with the Federal Power Commission certificate on an international pipeline, an interstate pipeline in this condition, has the right to condemn without our consent State lands or any property held State land that the State holds as right of way has to be approved by the Federal Power Commission. Is that correct?

MCMILLIAN: That is correct. That is my understanding.

Rader: So actually to get down to negotiating with you, if we are realistic in looking at what we offer and what you have to offer that the withholding of the right of way is not really a threat to you, that it would be in the interest of the oil line but the negotiations would be carried on more as to what we would want from you to be a willing partner in the financing of the line rather than the right of way type of issue but I think _____ the right of way is ours. Without our ...(indiscernible).

MCMILLIAN: You could but its more desirable and more agreeable

AGO 668445

in pay agreements that we reach with both parties and usually that can be done.

CHAIRMAN MILES: We will take a five minute break when Mr. Butrovich is through.

SENATOR BUTROVICH: (Question Indiscernible).

MCMILLIAN: Well, you mean if the density of the gas is more or less, The heavier ends are ...

SENATOR BUTROVICH: (Question Indiscernible).

MCMILLIAN: I see, no very little because our pipeline quality gas has to be conditioned so that the gas remains in a aporogaseous stage for the entire transportation of the gas system and so we condition and design our facilities to keep it in a gaseous stage. Now you have a little bit of difference in density. of the gas that is pumped but that would be relatively small and so it wouldn't have any major impact, a minor impact yes, but no major impact.

SENATOR BUTROVICH: (Question Indiscernible).

MCMILLIAN: Appreciable no, its not an appreciable difference.

(BREAK)

CHAIRMAN MILES: Could this meeting please come to order.

Odenbark: Yes I was just wondering about the royalty share of the State. Somebody else was telling us about it, that it would be enough to supply two and half times the size of Seattle and what I want to know is what would we do with it?

MCMILLIAN: It would supply about the whole state of Oregon.

AGO 668446

_____: And another thing that nobody has talked about, when are we planning on putting in this pipeline or starting this construction.

MCMILLIAN: Well the date that we are planning on, the date that we are shooting towards is 1-1-83 for the first gas in. We can meet this schedule in the construction of the pipeline, we also believe that the gasoline processing plant can be constructed in that time frame. It will depend alot on Federal Government actions that are now pending like the energy bill and the gas processing and a few other things but our target date is 1-1-83.

Osterbark: (Question Indiscernible). asks for completion date.

MCMILLIAN: We begin several construction works in 1979 so there will be, that's where we start building up our people and putting people in camps, maintaining camps and that type of work. And then the major part of our civil work starts in 1980 and then 1981 and 1982 will be the major part of our pipeline construction. I can give you those broad guidelines. We have exact figures as to manning tables and personnel but I don't have them available but I can send them to you and I will be glad to do so.

SENATOR RADER: You talked about a 15% return on equity. Is that the rate of return. It's a little higher than I thought was permitted by the Federal Power Commission. Where do you get that figure?

AGO 668447

MCMILLIAN: Well we get this figure from two basic reasons. One is that today in rate of return, has always been higher than our industry and their figuring on their section line 16% rate of return and we think that this would set a basis and a foundation for a similar rate for our return on equity should be established. I think the highest rate today for an old existing system is 14 3/4% for El Paso. So there are some systems that are approaching this level. Now the industry average I will admit is a lot lower but the equity ratio is also much wider on most existing pipeline systems. For the dead equity spread that we are talking about, you're looking at a lower income on equity which usually brings a high rate of return and we feel like this is reachable because we know that incentive has to be given to equity before equity is going to participate and the indications that we have is that this is a reachable goal.

SENATOR RADER: You'll first test the tariffs for the whole line including the Canadian portion and the whole works. I don't understand you're figuring. The Canadians are figuring a 16% return and the Americans will have to generate it. We're talking about two different entities here, each one of which will have a different rate of return?

MCMILLIAN: Yes sir, that is part of the agreement between the two governments. I mean the Canadian portion of the system will be built by Canadian companies and they will be

AGO 668448

regulated by the Canadian government under their laws, under their environmental controls and all the different controls that they have in Canada, and so they will approve their rate base and approve their expenditures of like our FERC will do for us and then a combined tariff will be structured for the entire system with the understanding that the segment in Canada is regulated by the Canadians. But there is also language in the treaty agreement that refers to a cooperative effort between NEB and the FERC.

SENATOR RADER: You indicated that a number of participants would be willing to get into financing in it. Would it be possible for you to finance the line without Alaskan participation?

AGO 668449

MCMILLIAN: I think it would probably be possible. It would be extremely difficult. I never say that anything is impossible, but I think that the benefits to the project of your participation would make a lot of difference.

LUBANCO: We think that it is of utmost importance the reason for this is that if Alaska with all its benefits accruing to it is not willing to invest, it is very difficult to persuade third parties investors looking for a rate of return only to invest. However again, I concur with Mr. McMillian I don't think that is presenting a insuperable obstical, but I do think that it is presenting an obstical of considerable significance.

SENATOR RADER: But the project doesn't hinge on Alaska's participation.

LUBANCO: I say that to say that it hinges on Alaska's participation is too strong, however, Alaska's participation is of great importance.

SENATOR RADER: You are saying that it can be done without our participation.

LUBANCO: Yes we think so. We wouldn't want to close the book without you.

REPRESENTATIVE MCKINNON: Talking about State participation of $1.2 to $1.4 billion, what is the breakdown in terms of debt?

MCMILLIAN: The definate guidelines established other than the

AGO 668450

thinking of $1.2 billion debt.

REPRESENTATIVE MCKINNON: You also indicated that the Province of Alberta is interested in this _____. Are they talking about debt on equity financing?

MCMILLIAN: Mostly they have been talking abcut debt. These equity discussions I am really not familiar with.

McKinnon: Does anybody else besides the State being considered for equity capital outside of the Alcan group?

MCMILLIAN: Yes, in Canada the trans-Canada, who is not a member of the _____, is being considered. Also Alberta National Gas is being considered. They are talking about a approximate 20% participation.

McKinnon: That's not on the Alaskan segment. That is on the Canadian segment. Just so that he understands that.

MCMILLIAN: I'm sorry. Just on the Canadian segment.

McKinnon: We also consider... (indiscernible). There are more pipeline issues that are an issue to the public _____.

McKinnon: How firm is that 25% figure in terms of ~~dead~~ debt equity?

MCMILLIAN: It is approximately, that's kind of your traditional type project financing for pipelines of this magnitude. But it would be in that range.

LUBANCO: It is not inconceivable at all that many of the institutional investors who may wish to invest in debt may also like a portion of the equity and indeed, we would be willing to talk to them. In addition to that, we are not

AGO 668451

ruling out the fact that the Alaskan section could be in part, financed in equity by virtue of public ownership. We're taking this one step at a time, we are building this pipeline one section at a time, or the financial structure one section at a time. We are not foreclosing any avenue which makes sense. And all of these that we have talked about make sense.

_____: Did you say, in response to Representative _____, that 20% that is under consideration in Canada, is for the Canadian section only?

MCMILLIAN: Yes.

Butrovich Then is the $1.2 billion that is proposed that Alaska participate in is in the Alaska section only?

MCMILLIAN: That is part of the Alaska financing. We are going to be responsible for financing the portion in Alaska. The Canadians are going to be responsible for putting up their equity for financing the part in Canada. However, in the financial institutions the total debt picture would have to be structured... (indiscernible).

T. LeBlanc I think that basically the two pipelines will be structured and coordinated in such a way that when a lendor is presented a package he will be presented with the overall pipeline. We will have two series of debt. One in U.S. and one in Canadian as he makes his investment.

SENATOR BUTROVICH: You say one in U.S. and one in Canadian?

AGO 668452

_____: Perhaps I should back up and explain how the Canadian segment of the pipeline is structured and that might help. This is structured in a series of companies that parallel the segments as to our transverse in Canada, starting in Yukon then through the northern part of British Columbia, then into Alberta and then two small segments that go along the lower section, one which goes west in the lower part of BC and the other which goes east into _____. Each one of those segments is done by a separate project company, similar when it comes up to the Alaska company.

SENATOR BUTROVICH: Will our portion be tossed into the lower 48 portion?

McM: No.

SENATOR BUTROVICH: Then wouldn't there be three.

MCMILLIAN: Four different financing segments to our system and that is why we believe that they are financiable. You're talking about the Alaskan segment which is around $4 billion, and then you are talking about the Canadian section which is greater than that, then you are talking about the northern border leg which is financable and then the western leg. The western leg is going to be structuring the existing BPU system.

SENATOR BUTROVICH: Well the equity if we are talking only about _____ section with the percentages .... we are talking almost 50% of the Alaskan portion.

AGO 668453

MCMILLIAN: No, you are talking a little over 25% I think.

SENATOR BUTROVICH: (Indiscernible).

LUBANCO: But again, recognize that this pipeline, although it is segmented into sections, is one pipeline and as a result the top half isn't going to built without the bottom half. So the total financial commitment has to encompass almost all of the financial strengths. It can be utilized in this type of investment in the United States, into a lesser degree Canada, it's that large. And to suggest that your investment will be put in to build the Alaska section, however, that Alaska section could not be divorced from the Canadian section, and indeed, it could not be divorced from the south 48 section, without which you would have no consumers to pay for the gas.

SENATOR BUTROVICH: Is there one total transportation cost?

LUBANCO: There will be, yes.

SENATOR BUTROVICH: And one kennel?

LUBANCO: There will be one total transportation cost, which would blend in many factors which Mr. McMillian suggested including the Canadian.

SENATOR BUTROVICH: Would that total transportation cost only be to one kennel? In otherwords, would it be divided into our segments?

T. Lubanco: There would be a separate tariff for the segments. I think answering your question, sir, there would be a

tariff that would represent the Alaskan tariff, which would represent the Canadian. And then as you would go down the system there is a series of other tariffs, depending on whether it is _____ gas that is dropped off and that is the subject...

MCMILLIAN: You have one total delivery price here that the consumer distribution companies pay to that company which is distributes according to the tariff along the line.

SENATOR SUMNER: Yes if I could follow up briefly and then I have a series of items that I need to talk to you about. If the Alaska portion of the financing winds up generating more money than is required to build just the Alaska portion, what would happen to that surplus or would that be thrown into one common construction pool? Well let me back up and make that simpler for you to respond to. Is the Alaska financing portion for which the State will contribute intended only to finance the Alaskan portion of the line?

LUBANCO: That is the intent because we recognize the desire for the Alaskan participants to invest in Alaska. It is the Alaska section that is perhaps subject to the greatest degree of uncertainties to the extent that there are uncertainties here. The south 48 is a very convential type of line and that will have very little variations and we don't anticipate that one would necessarily feed on the other.

SENATOR SUMNER: One certainty that I could share with you that it could appear that on the basis of return on investment is that Alaska money built some portion, any other portion, of the gas line that there would be some reprecussions.

LUBANCO: We would have no problems structuring your particular financial commitment to assure you to your satisfication that that would be clear. That would be no problem.

SENATOR SUMNER: Another point. To the best of your knowledge are there any other obsticals standing in the way of construction of this pipeline except financing at this point?

LUBANCO: We don't consider financing to be an obstical. We consider it to be a problem that can be resolved.

MCMILLIAN: I agree with Mr. Lubanco. The problems that have yet to be resolved, as we mentioned to you, are to first determine the price of the wellhead Prudhoe Bay gas, and that is the main problem that has to be addressed. And the contrast ... (indiscernible). Those are the problems that we must solve before complete financial structure ...

SENATOR SUMNER: I understood that while it wasn't impossible to obtain financing, that it was one of the problems that to be surmounted. Are you telling me that not...?

LUBANCO: I beg your pardon.

SENATOR SUMNER: I understood from most of the testimony today and the presentation, that while financing outside other than Alaska participation was not impossible that it was

AGO 668456

still one of the problems that had to be resolved in constructing the line. And you are just telling me that financing is not a problem?

LUBANCO: I didn't say that. I said that it is a problem that still has to be resolved. Sir, I was just commenting on your word obstacal. We felt that was indicating something that would be an insuperable hurdle. And we don't consider it to be such.

SENATOR SUMNER: Okay, in your equity position in this program, would it be estimated at this time to be what, you mentioned $200 million this morning. Is that in essence the amount that you intend to have in the capital position?

MCMILLIAN: That is the position that we would like to have. We realize that there are other parties, other participants, that would be here, including the State and parties that we mentioned earlier and other companies. There might be possibly, we might not be able to achieve those goals. That is what our goal is.

SENATOR SUMNER: You may have answered this at some time in the past, but has anyone in the State implied any moral commitment in terms of State support or State financing of this line?

MCMILLIAN: No they haven't.

SENATOR SUMNER: Okay. Do you perceive a plan that you would propose to the State to pledge in anyway, or encumber in anyway, the reserves of the field?

AGO 668457

MCMILLIAN: No. I think that in this light the reserves that we would have and the initial statement would be naturally, a commitment to the project to be sure that the project is completed. But as far as allowing you to do something with these gas reserves upon completion of the project, we don't see any barrier there.

SENATOR SUMNER: You indicated earlier today that in the process of conditioning the product to maintain a continues gaseous state, what happens to the heavier properties? What disposition do you plan for those?

MCMILLIAN: Basically we receive a pipeline quality gas in the _____ of our pipeline and this depends upon the design of the plant that we were discussing earlier. We can design the plant where it carries a certain percent of liquids according to the pressures and tempertures that you operate. The rest of these will be recovered on the North Slope... (Indiscernible). Would be recovered on the North Slope for either blending with the present crude oil where possible so that a large volume of liquids will be recovered. I think the number is around 100,000 barrels a day of liquids of various types will be recovered on the North Slope. Now these have various uses depending on overall energy _____ and how these liquids can be put back into _____.

SENATOR SUMNER: The last area that I would like to see if we

can get a little closer on. When Senator Rader was speaking to you a little earlier today he mentioned the possibilities of take off in maybe Fairbanks or other places along the line and you mentioned the term disproportionate share. I'm more familiar in term of in the oil line what that does, and that says that disproportionate share tends to imply mostly that you pay for the length of the line, like 99% of it. I'm wondering if we are talking similar terms in disproportionate share in this instance?

MCMILLIAN: I can't answer that question direct. I don't think that I have ever seen a tariff structured for a gas system of that magnitude... (Indiscernible).

LaBarre: Well I think that it is fair to say that we would contemplate a tariff if delivery, let's say at Fairbanks, the transportation from the North Slope to Fairbanks would be something less than the transportation charge from the North Slope to the Yukon border. And that recognizes the fact that it is being transported a very shorter distance.

SENATOR SUMNER: I certainly don't want to abuse that because I know that there must be some pratical way out of it, but I would urge you to generate some sort of a plan to address that problem because it would be one you will hear.

LaBarre: Well I think that this will be addressed by the FERC in terms of approving the tariff. I think that we would contemplate that the Commission would not approve it

unless it had that feature in it.

SENATOR SUMNER: It just seems to me that the you are talking a four foot line and 1200 hundred and some pounds of pressure. Am I correct there? Does that equate to a flow rate?

MCMILLIAN: There is a maximum flow rate in which we hope to obtain of about 3.5 billion cubic feet a day in this system. I know that without lopping now, when you lop a system you get further additional capacity, depending on how you do it. We design and build this line for an initial design of 2.6 _____. So it is a matter of _____ in the spacing of design and _____. And so, basically that determines the volume.

SENATOR SUMNER: The one thing that I am leading up to is that, as Senator Butrovich has referred to here and encouraged to pursue, is the ultimate hope of the petrochemical facility in the State. Of course, that meets its own share of obstacals and we would hate to see that added to the, problems added to the fact that we would be facing pipeline tariff equivalent to some figure that would prohibit the effort. Those areas, while I don't ask you at this moment for specific answers, I do think that that is an area that needs to be addressed for the producers to answer.

MCMILLIAN: We can give you general guidelines, but the final approval would have to come from FERC.

AGO 668460

SENATOR SUMNER: I was thinking in terms of, I suppose in no bigger pipeline and I am not attempting to preempt those people who have enginerred and designed pipelines, but if there was any way to address the situation that if it is to come off at Fairbanks or if there is to be a take off at Haines junction, that these... I would hate to see us preempted from those options down the road on the financial basis alone. So those aren't critical comments but they are areas of concern I think. Thank you.

CHAIRMAN MILLS
REPRESENTATIVE ~~MCKINNON:~~ I just would like to clear up something in my mind. Assuming the State agrees to participate, are we gaining an equity position as a company operating the pipeline system or as a company operating one fourth of the pipeline system?

MCMILLIAN: Basically you would be gaining the equity position of a company operating the Alaska portion of the pipeline. Our main interest... (Indiscernible).

LUBANCO: But understand that that section of the pipeline which is restricted to Canada will be bound by as firm agreements as is possible with the other sections of the pipeline so as to make it in effect one continuous pipeline for these purposes. So although legally there might be separate section, the form of agreements and treaties with the Canadians, and indeed the agreements with the lower 48, would be such that you will be looking for the viability

AGO 668461

of a single system. Otherwise there aren't to many buyers for gas at the Canadian border in the Yukon.

REPRESENTATIVE ~~MCKINNON~~ Chairman 11/65: One significant factor that hasn't been discussed and I think that we have to throw it out on the table, is the conditioning plant. It has been variously estimated to cost $1 billion by some and $2 billion by others. It probably falls somewhere inbetween. It seems traditionally that producers have passed the cost of this conditioning facility on to their buyers. Recently, it is my understanding, that there has been a reverse on the Phillip's case. Whose problem is that? Maybe we can start with that. Is that your problem, is that our problem, is that the producers problem? Somebody has got to pay that, let's call it $1.5 billion, and its obviously going to be plugged into the top, who is going to eat that?

MCMILLIAN: Well, traditionally 85% of the gas processing plants in the United States are owned by the producing oil companies, and 15% by the transmission companies. Today if we had a large field and we wanted to build the gas processing plant in the lower 48... (Indiscernible). Now you have a different set of circumstances with you processing plant in Alaska. And that is that a lot of the liquids to be obtained from that processing plant on the slope cannot can not be as oftenly used as the liquids can be down in the lower 48 where you are right at the transportation

AGO 668462

system with a market right next door. I think that we know that ARCO is making a feasibility study on this project. They say that they can assume the responsibility for this feasibility study before the Congressional Committee and indicated that if they had a proper rate of return that they would be willing to build this plant. We do look for it as the producers responsibility. It is indicated that the most... (Indiscernible).

Chairman MILES
~~REPRESENTATIVE MCKINNON:~~ But that trend has changed now, hasn't it? Aren't we talking about new ground rules? Wasn't there a recent litigation that said, well, it may not be the producers responsibility?

MCMILLIAN: Well, I am not familiar with that.

LUBANCO: You mean litigation on this particular project?

Chairman MILES
~~REPRESENTATIVE MCKINNON:~~ No, not in this particular project. The Phillip's case I think it was.

MCMILLIAN: That would be a matter of contract negotiations. I mean like I said if you had gas reservoir down in the lower 48 and you want to build a gas processing plant on it and you try to reach out and do it, they will try to break your arm.

LUBANCO: It is usually not something shunned. It is usually one of the most desirable investments that you can make because you know that the gas is there and you are taking off the top and selling liquids. It's a money machine really.

_____: I think maybe that what you have reference to is the fact that there are several weeks of FPC, FERC rulings that would really support the concept here that Mr. McMillian has said. I think in certain cases where the transportation companies have taken over that responsibility the FERC has now said that that really should have been the responsibility of the producer and reflected in the price that the producer is receiving in the sale of his gas. So I think that they have taken the position very comperable to what we're saying. That really it is the responsibility of the producer. How he gets compensated is another question.

Chairman Miles ~~REPRESENTATIVE MCKINNON:~~ It is the responsibility of the producers and the producers may not be allowed to pass this cost on? Is that what you are saying?

?? McMillian I think that the indication is that in certain cases, and these are very specific cases, that the area price or the nationwide area price, was such to have compensated the producer for that processing function. Now in certain instances the transporter has taken on that and the Commission has questioned whether the consumer ought to pay for that because the producer really should have been compensated for it by way of the gas price that he is receiving. I think that my point is that is consistant with our position which is that it is a producer responsibility. Now the compensation for it is another question.

AGO 668464

MCMILLIAN: ... (Indiscernible). In some form these drafts should be approved. We talked about two different prices of gas, $1.48 was the lowest price. It also goes on to mention that that they shall be compensated for the severance tax, like Senator Stevens said, up to a certain amount. And also the compression process and other things that normally take to process gas. There is also readjustment that has to be determined on most of these projects. You have a cost to process it, to compress it, to gather it, but you also have a recovery of liquids at that processing point. And so the exact processing cost, if the energy bill goes through as today, it would be a set price with a processing charge to be added to that to compensate for those factors.

REPRESENTATIVE MCKINNON: So we are in a position now, as I understand it, that we don't know who will pay that billion and a half?

MCMILLAIN: No. We think that the producers are and we anticipate that they are.

REPRESENTATIVE MCKINNON: What time frame do you take to build that?

MCMILLIAN: The initial studies that we have was to give it about a four year time frame.

REPRESENTATIVE MCKINNON: There has been no environmental impact statement done on it?

MCMILLIAN: Well, if you put this under the Oil Pipeline Act you don't need an environmental impact statement.

Chairman Miles
~~REPRESENTATIVE MCKINNON~~: Yes, but if we don't?

MCMILLIAN: Well then you have to have the environmental impact statement.

Chairman Miles
~~REPRESENTATIVE MCKINNON~~: That is backing us up quite a bit isn't it?

MCMILLIAN: That would be very true.

SENATOR POLAND: I wanted to ask Mr. McMillian, isn't there a clause in the treaty that says that the liquids can be taken off in Canada in exchange for BTU on the ...?

MCMILLIAN: I believe there is a clause, I don't remember that, I might be wrong but I don't think that is allowed. I think that what is allowed is that volumes of gas can be removed from Alaskan gas to be removed in Canada to service their small communities along the route and that gas of equivalent BTU volume is put back in the system for the placement in the smaller communities in Canada. So I don't remember the liquid concept. I don't believe that that is there, but it is that they can take gas out for their communities in small volumes and would have to equivalent BTU volumes back.

SENATOR POLAND: Does it define small volumes?

MCMILLIAN: Eight delivery points to eight different communities.

T. LeBeau: Mostly, Senator, in the Yukon. They are mostly

AGO 668466

speaking about Yukon Territories. In very small, generally rural communities.

_____: (Indiscernible. Speed of tape extremely slow.) Bennett asks about construction headquarters. No determination made.

SENATOR ~~RADER~~ RODEY: Mr. McMillian, it is obvious from discussions today that we will need further discussions between both the Legislature and the Executive Branch before this motion can be drafted that would approve the project. How would you like to see these discussions undertaken from your point of view. It is obvious that we need to do this right away.

MCMILLIAN: Yes, we would like to pursue several problems, ... (Indiscernible).

(Last few minutes of tape indiscernible.)

My notes:

Miles: Asks about $20 billion in benefits projected to Alaska.

McMillian: $20 billion based on inflation. A $4.26/mcf average gas price.

AGO 668467

FEBRUARY 16, 1978

CHAIRMAN MILES: We will call this public hearing to order. This is the Joint Hearing of the Senate Resources Committee and the House Special Committee on Oil and Gas. (Indiscernible). We have with us today a gentlemen with the Federal Government and I invite him up to the table.

JOHN ADGER: My name is John Adger and I'm the Department of Energy's Senior full time person on the Alaska Gas Project. With me today I have Phil Essley who is my Technical Advisor, and Ned Hengerer who is a Legal Advisor, and Bob Anderson who is the Economic Advisor. We have a fourth person working with us now as an Environmental Advisor, a man named Mike Satoc who couldn't be with us today because he had to be in New York last night to receive a national award for his work with the Federal Power Commission on the Alcan System, the chosen project for this Alaska gas delivery system. Our office has a dual function really. First is to manage the Federal Regulatory Commission final certification process. The result of that process is the final Certificate of Public Convenience and Necessity for the facility. Approval of the financing plan, approval of the gas sales contracts, and the like. We have a description of function of our office which we talked to you all about a little bit earlier today and we will make available

AGO 668468

at the end of this second hearing. The second thing that we do is we have responsibility for the Department of Energy's interests in this project to go beyond the normal jurisdiction of the Federal Energy Regulatory Commission. Those interests are in the area of relationships with the Canadians on this project and in the area of relationships with other government agencies for establishment of the Office of the Federal Inspector, for instance, and the monitoring process that would be part of the Federal Government's relationship to this project.

Let me tell you a little bit about what the different people here have done on this project and then I want to get into a bit of a discussion of the decision itself, the President's decision itself. We have also brought with us copies of that for anybody who doesn't have them. Phil Essley did an important piece of treasury analysis on the relationship between deliverability and the financing prospects of this system and wrote a great deal of the material on safety and design aspects of the Alaska Gas Transportation System decision that went into agency reports and the final report to the President. He also did the material in the President's report which includes a comparison with Alyeska on economic grounds. Ned Hengerer has been an attorney at the Federal Power Commission who was involved in preparation of the Admistrative Law Judge's

AGO 668469

initial decision in which case, so he has an extensive knowledge of the issues that were involved and how they apparently came out. And Bob Anderson was the principal author of the Interior Department's Title Three of the CAPS Act that authorized the study by the Secretary of the Interior of alternative gas transportation systems. The result of both Bob's work and Ned's work, I think, were to pump up the El Paso system relatively. Bob's work in particular was looked to as a very substantial kind of improvement in El Paso's prospects and I guess my role in this thing was that I was a member of the group that prepared the President's decision, negotiated the deals with the Canadian and prepared the President's decision, so I have to be considered, I believe it was referred to yesterday as the person who went through the grocery store and picked up a bunch of groceries and told the man that "my friend would come in later and pay the bill."

We have brought copies of the decision for people who haven't seen it but let me go through quickly some of the reasons for the decision as we perceived them at the time that the decision was made, and then I want to get into a more sensitive discussion of the State's role. The threshold issue, of course, was whether or not to do an Alaska gas project at this time at all. And we felt that it was time to do it now. We felt that even if the availability of

AGO 4468470

gas supply was better than we expect, the Alaska gas project would ultimately displace oil imports. I think if you look at the decision of the President's Energy Program the sum total of the proposals for crude oil equalization tax and the conversion taxes produced an affect which means that natural gas is always to be cheaper than oil to lower priority users, to all users I guess. And if the gas supply situation should be such that the Alaska gas might not be needed for strictly gas demands in the early years of the operating life of the project then it, through the operation of the incentive taxes that are part of the President's program, it would be consumed because it would displace oil imports. It would be cheaper on the basis than oil and it would displace the oil imports. Additionally, an important consideration with the relationship of this decision went to our Canadian gas supplies. It was clear from our discussions with the Canadians that if we did not do a joint project there was a serious risk of curtailing existing Canadian gas exports, whereas if we did do a joint project there was every possibility that Canada's gas supply situation was that we would be able to get additional gas exports. Another reason for going ahead and doing one of the projects now was the simple fact that the net national economic benefits of doing something like this sooner, rather than later, are higher.

It's just a net benefit of going ahead with it now. Now, on the choice of systems, the primary consideration was, and here again it is layed out in detail in the President's decision, was the clear cost of service advantage of the trans Canada alternative over the El Paso system. We estimated that that cost of service advantage at roughly 15% which amounts to really a tremendous amount of money for the life of this project. Other reasons were direct delivery to the markets in the lower 48, not having to depend on displacement. The higher effenciency of an oil pipeline system rather than one that is dependent on the changes of state to liquified state and the regasification. That same efficiency gives you cheaper expensibility as well, longer useful life of the facilities and, of course, facility siting difficulties on the West Coast. Our experience has been that environmental and legal complications with facility siting on the West Coast puts you in a position of not really knowing when such a facility might be available.

A final but very important reason was that the Alaska Highway System that was ultimately chosen seems to be clearly regarded as an environmentally superior system by all of the conservation intervenors and in fact FERC environmental staff. That was Mike Sotac who was very instrumental in having that chosen as the staff's environ-

AGO 668472

mentally preferred alternative.

Now talking about the President's decision itself, perhaps the most controversial aspect of the President's decision was the finding that the project can and should be privately financed without recourse to either Federal Government loan guarantees or any form of consumer completion guarantee Our conclusion that the project can be privately financed was based upon our analysis of our experience in financing the oil pipeline. Federal policy on whether or not such projects should be privately financed, based on a very careful analysis of costs and benefits of taxpayer assistance which was carried out for the recent Synthetic Field Commercialization Program. That analysis showed that such assistance was not in the taxpayers interest and we have nothing since then to change the results of that analysis.

The appropriate role for the Federal Government is to expedite resolution of the remaining uncertainties surrounding the project, thereby creating an atmosphere of confidence about what investor's can expect from it. My office for the Federal Government is the vehicle is the fastest possible action in the area of tariffs and financing and reducing regulatory uncertainties. We are working with other federal agencies to insure efficient and responsive planning and monitoring.

Another major timing regarding financing was that the

direct and major beneficiaries of the project should participate in financing it, either directly or through loan guarantees. Specifically, our finding was as follows: "Tradition and equity suggest that the parties who tend to benefit directly from a transportation system should participate in the financing and share the burden of these risks. The direct beneficiaries include the equity investors, namely a consortion of gas transmission companies, the producers of the gas, and the State of Alaska with its royalty interest in the gas. Now let me emphasis quickly that I think that those two findings are separable. One was that Federal Government financial assistance was inappropriate given the analysis that we've just been through in the context of this synthetic fuels program, and secondly that given that it should be privately financed, we felt that it is important that the major beneficiaries of the project should participate in the financing.

Now let me review with you the basis of that finding. We have prepared a sheet detailing our estimate of the approximate distributions of benefits and costs to the state and other beneficiaries of this project. We derive these figures starting with an estimate of the approximate market value of the gas at the wholesale level after delivery to the lower 48 states and backing out the transportation costs using analysis leading to the President's decision to determine the value of Prudhoe Bay for

purposes of calculating tax and royalty payments. Now this is in constant 1975 dollars and all of the numbers here under the per thousand cubic feet. This is an a twenty year average. The twenty year average cost in 1975 dollars was really the basis that we used in reaching the decision. There are plenty of other ways of considering this and unless we go into some sort of transportation costs normalization system, levelization system , then the transportation costs would be expected to be higher in the early years and lower in the later years. That would be the normal case but in this case we are not going to set a level like that. Now as you can see from this table, the total transportation costs, according to our calculations, is average $1.04 per MCF over the life of the project. And you get that by adding the 84¢ plus the 3¢, the 5¢ and the 1¢. I think that comes to $1.04. And the 10¢. $1.03 plus the State corporate income taxes that pushes it up towards $1.04. Adding the wellhead price in the range of $1.50 means that the delivered cost would approximately equal the value of this gas to the consumer. The consumers would not receive major benefits from this project. The $2.62 number represents the measure of what the gas is worth to the consumer. And it is derived from the price of alternative fuel. At that price the consumer doesn't care whether he is buying gas from Alaska or from someplace else, or whether he is buying fuel oil derived from imported oil.

Notice the Federal Government's benefit from corporate income taxes. That is 10¢ per thousand cubic feet or $90 million annually. If this project is not built the $10 billion of investment would be shifted to other needed projects in Alaska or the lower 48 states and the Federal Government would still receive its tax revenues. This is not true for the State of Alaska if a project is not built in Alaska. The transportation costs figure of 84¢ represents payments to the company for the facilities used to transport the gas and the various Canadian government industries for property and income tax. Notice that this figure includes our estimate of the likely cost overruns. The asteric item is our estimates of the flow through the State of Alaska when the project is completed. These benefits items are State corporate income taxes, State property taxes, severance taxes and royalty. Now we haven't tried to reconcile our estimates of the benefits to the State with those of the project sponsors, but I suspect that if you went through inflating the dollar flows and you did not deal on a twenty year average basis, than the estimates would probably be comparable to the direct benefits. Now if you were to invest $1.5 billion in 1975 dollars which I think is more than the project sponsors are asking you for, we estimate that you would have annual benefits from direct taxes and royalty of the $320 million, for an

annual rate of return in excess of 20%. The interest or dividends which you would earn on this investment would be over and above the $320 million annual return. That annual return there is simply from corporate income taxes, property taxes, severance tax and royalty. This sheet lists only direct costs and benefits. At many stages shown there are a number of indirect benefits which will flow from the project.

1. Miles : (Question Indiscernible).

ADGER: That's right. If the project goes forward, our estimation of the benefits that would accrue to the State is separate of any return on the State's investment. This is direct costs and benefits. Among indirect benefits are indirect taxes from the salaries and property of workers on the pipeline project and from the profit and property of companies supplying businesses and services to the project which are based in Alaska. General economic stimulus for other workers and companies which, in turn, create more indirect tax benefits, stimulus to oil and gas exploration on the North Slope from availability of the transportation system, with attendent employment and tax benefits. Higher bids in forthcoming lease sales in the Buford Sea area because of the availability of the transportion system ... There are, of course, other costs to the State in extra provisions of Government services and in generally coping with additional development. These costs will have

to be counted against the total of direct and indirect benefits to arrive at an estimatation of the net benefits to the State. We had a meeting with Commissioner of Transportation Harris this morning and we were talking to him about benefits to the State and he was very careful to emphasize that pretty substantial costs are involved here as well.

The terms of any State participation in the project are a matter for negotiations between State representatives and the project sponsors. My intent is to explain to you the basis for the President's findings in this area and to be sure that you understand the significance of your decision to the overall outlook of the project. Potential investors are aware of the very substantial benefits which will accrue to the State of Alaska, over and above any interest on debt securities or return on equity investments when the project is completed. Surely those investors would be difficult to enlist for only normal rates of interest on debts on competitive rates of return on equity that they _____ the State declined to participate. Investors now expect that the State will participate in order to realize this extra benefits early and the atmosphere for completing the rest of the project financing would be severely affected if the State is unwilling to help. In the context of discussing the

the expectations of potential investors, let me take this opportunity to try to set the record straight with regard to the perceived degree of the State's financial commitment to El Paso. It was well known, both to us and to the financial community generally, that the State Legislature had only authorized the State Administration to study the possibility of financial participation. However, even this limited commitment on the State's part was taken by the financial community and the Treasury Department as an expression of the degree of interest, assumed degree of interest in possible financial participation. Although on your part I think you would consider this an extremely limited expression of interest, when we on our side compared that with the expressions of interest in financial participation from anyone else, it looked awfully large.

Commissioner Gallergher's letter of last summer to the Treasury Department was in response to a request from them to estimate the limits of the financing assistance, on any financing assistance which might be provided by the State. He was asked for an estimation of capacity as opposed to some sort of expression of intent. I think that is an important distinction. Although the purpose of his letter was limited, there again its very existence reconfirmed to the financial community, the State's possible interest in participating in the El Paso Project. Again I would refer you to the fact that even though you're

AGO 668479

expression was very limited compared to everybody elses, it looks pretty large. The additional expections created by the State's limited expression of interest in the El Paso Project would be very hard to overcome if the State declines participation in this project.

The President's decision as it stands, contains the conditions under which both the Canadian and the U.S. Federal Governments are prepared to have this project go forward at this time. Although you may not like some of those conditions, it is important to realize that to change any of them means starting all over again. The decision on the Northwest Alaska Project, with all the attendant conditions, is the result of a unique affirmation process which is included approvals by the Federal Power Commission, which is now the Federal Energy Regulatory Commission, a large number of Federal Government agencies, the President himself and the Congress, not to mention all of our counterparts on the Canadian side. To try to change any aspect of that decision would have to be expected to result in extensive delays. I hope the State of Alaska will take the possibly of extensive delays into consideration in reaching its decision with respect to financial participation in this project.

When the wellhead prices of the gas is set, which I am hopeful will happen in the Congress in the next few

days, I have been saying that for about 90 days now and its always the next few days, the State will be in a position to make its own estimates of the size of the benefits which are likely to accrue to the State. At that time, I am hopeful that the State will be able to make some determination on the approximate degree of support, the possible conditions of support, it might make available to the project. Ideally, certain broad terms and conditions associated with any State participation could be worked out and presented for approval before the Legislature adjornes.

The exact benefits and costs to the State from this project would not be known with complete certainty until a number of issues are resolved over the coming months. However, under any plausible set of circumstances the net benefits to the State would be very large. This is well known to the financial community. If the State were to postpone making a decision about financial participation for many months, or to decide not to participate, this may create an atmosphere of doubt and pessimism about the project. It may be difficult, in that event, for Northwest and other project sponsors to overcome this major setback and successfully finance the Alaska Highway Pipeline. I appreciate your interest and I would be glad to try to answer any questions that you might have.

SENATOR TILLION: Mr. Chairman, I certainly don't want to be rude but it sounds to me like your evaluation and recommendation is an exercise in fantisy. It reminds me on the assembly instructions that I get on toys at Christmas time. Whoever writes them finds it very simple, but when I get down to screwing the nuts and bolts, it winds up being very difficult. To say that all of these benefits that are going to inure to the benefits of Alaskans. Are there any rights or benefits that inure to Alaskans that they are not otherwise entitled to, outside of the financing participation?

ADGER: I don't understand what you are driving at.

SENATOR ~~TILLION~~ Sumner: Everything that you have listed as benefits coming to the State, it seems to me that they are entitled to anyway, regardless of whether they enter into or do not enter into this financial agreement. Is that essentially true?

ADGER: I think that right. I think that the key issue here is whether or not the project goes forward now as presently put together.

SENATOR ~~TILLION:~~ Sumner You're here, underscoring the importance of Alaska to participate in regard to the delay. Were those considered at the time the recommendation that was made to the President?

ADGER: Yes.

AGO 668482

SENATOR TILLION: They weren't important then or they are not important now?

ADGER: They were important in putting the decision together on this basis, in the terms and conditions. I think that if we are talking about putting the decision together on a different set of terms and conditions then we are talking about doing it in a different time frame.

SENATOR ~~TILLION~~ SUMNER: In terms of the availability of this sort of an end product in the south 48, in terms of making the finances available to them. Did the Federal Government consider that this project is not important and did not want to participate in the financing? Is that their attitude?

ADGER: The Federal Government says that as a matter of Federal Government policy, it is not the Federal Governments policy to assist in projects of this kind. That's not solely a policy for this project. We went through a very careful evaluation of taxpayer assistance in the Synthetic Fields Commercialization Program and we found that it was not in the taxpayers interest and that analysis hasn't been seen since it was done. In fact, Deputy Secretary O'Leary who, at a meeting of gas industry people just within the last month, has reconfirmed Federal Government policy on that point.

SENATOR ~~TILLION~~ SUMNER: Are you aware that presently process is to move only the gaseous component of the products that are

available at Prudhoe and the solid or the liquids are going to have to be transported in the existing pipeline? Was that considered in part of your evaluation?

ADGER: The question of the natural gas liquid is an issue that is yet to be definitively settled. I think that we have the broad outline of what liquids would be available and we have in broad terms an idea of what the options are for this position of those liquids. Part of the reason for our trip now is to discuss with State people about what their interests are with respect to natural gas liquids and to initiate a proceeding to finally resolve questions associated with the liquids. We spent quite a bit of time with State Administration people yesterday on this question.

SENATOR ~~PELLIAN~~ SUMNER: Would it be appropoirate to discuss with you at this time any rate information as it relates to takeoffs on the line anywhere?

ADGER: If your reference is to the possiblity of a takeoff for communities in Alaska along the routed pipeline, what I can tell you is that takeout policy is a feature of every tariff filing. And we would expect that the Northwest tariff filing would have a expression of their takeout policy as part of that filing. When we get that filing, we would be in aposition to review it in accordance with FERC policies in this area. The other side of the issue from the State of Alaska, which of course, we have to deal

with in these matters is the _____ in the lower 48. I just don't know what I can tell you now about takeout policies but we feel like that the State of Alaska, that the Alaska communities should try to get some benefits from the gas going by, _____ going by and not have it available to the communities, but at the same time the competing interests is what it _____.

SENATOR ~~TILLION~~ SUMNER: I want you, as .ear as you can, to go back and translate for me how in the world you are able to conclude from somebody's interest in this pipeline, that that is, in any way, being a commitment. That's like saying that somebody is a little bit pregnant. Either they're pregnant and interested and committed or they are not and that is what I am concerned about. How in the world could you assume that somebody in the Administration and their interest represented something different from your prospective interests and ours? I don't know how you reached that.

ADGER: I think that my answer would have to be that looking at it from our perspective, one of the few people who were even willing to consider at that point, financing of this statement and the thing, was to say the Legislature had authorized the Administration to study it.

SENATOR ~~TILLION~~ SUMNER: Was that for all the lines or ...

ADGER: For El Paso.

SENATOR ~~TILLION~~ SUMNER: And so you translated that expression of

AGO 668485

interest or investigation to be a possibility of commitment even on other gas lines. Is that correct?

ADGER: I don't think that is what we did. I think that what we did was we made two findings. One was that the Federal Government financing for this project was not appropriate. The second was that we thought that beneficiaries ought to participate. The State of Alaska expressed intentions on this point, notwithstanding, we felt that it was appropriate that beneficiaries would participate. Among those beneficiaries we felt one was the State of Alaska. Now I think when we talk about expectations and who is committed to what and what deals where, I think that those were expectations of the financial community and I think that the expression of some interest, however limited in the El Paso project, was taken by the financial community as an indication that if the terms were acceptable to the State, then the State would consider participation.

_____: Question indiscernible.

SENATOR ~~MILLER~~ Sumner: And as I read that I got the impression that that was intended to express a preference of the line at that point rather than being translated as permission for whatever line was being built. Rightly or wrongly that's how I took it. I was wondering how it is they could wind up in some of the context with it. I'm not critical of the decision made at that time, I'm just saying I don't know how you could jump to that conclusion.

ADGER: Well my point to you is that our finding, I believe, was a narrower one than just, that say "would." Our finding was that it was important to us that beneficiaries should.

SENATOR ~~TILLION~~ SUMNER: In light of some of the severe winters that have been happening and the shortage of heating fuels that existed in the midwest and eastern part of the country. Is the Federal Government saying that it is not interested? Is this decision absolutely irreversable at this point in regards to the financing?

ADGER: In a word, yes.

SENATOR ~~TILLION~~ SUMNER: Thank you.

CHAIRMAN MILES: Representative Chatterton?

REPRESENTATIVE CHATTERTON: Thank you Mr. Chairman. With your permission, and give me a little bit of latitude, I'd like to ask three or four questions. Sir, I have before me what you handed out and it has market values here. Is that what is normally referred to as, $2.62 as the ____ price?

ADGER: Yes.

REPRESENTATIVE CHATTERTON: Now, referring to the same handout I noticed in the title block, it refers to 2.4 billion cubic feet per day deliverability over a twenty year period. Does that mean that each and every day of that twenty year period you want 2.4 billion cubic feet? Is that correct?

ADGER: That throughput is the basis for this set of cost estimates.

AGO 668487

REPRESENTATIVE CHATTERTON: If that through put were to be less or interrupted, this would be completely in error. This would not be correct.

ADGER: Yes, it would be different.

REPRESENTATIVE CHATTERTON: Now, I am paranoid, however, I am told that paranoia is the mother of discretion. Do you interpret the Alaska Gas Transportation Act of 1976 as it or by itself being permissive to the Federal Government to override the Alaska oil and gas conservation package?

ESSLEY: Could you be more specific?

REPRESENTATIVE CHATTERTON: The Title 31 of the Alaska Statute, Chapter 5 thereof, by manditory of our Department of Natural Resources in the esterest of the people and, Article 8 of our Constitution also speaks to it, that we shall maximize the coverage of oil and/or gas or land. Now at this point in time there is no human on earth that can predict, in order to live up fullfill that manhood, that a deliverability each and every day for twenty years of natural gas from the Arctic North Slope can be guaranteed, without possibly and very probably without _____ with ultimate recovery of those reserves. My question is to you, does the Natural Gas Transportation Act of 1976 or is there anything in your knowledge connected with this where the Federal Government believes or feels that they can override, in the national interest, our own statutes or constitution?

ESSLEY: Well to begin with I think we look first at the Natural Gas Act which is the enabling Legislation for the Federal Power Commission, the Energy Regulatory Commission. I think that the Courts have made clear, for a long time, and there have been a number of recent decisions that the Federal Government has a certain relationship with the State Conservation or Railroad Commission, or however you will have it, to respect those decisions but its not total preemption by any means and the decision, the operating decisions of the field really are not in our domain. I don't read anything in the Alaska Natural Transportation Act of 1976 to change that. I think that its the duty and the responsibility of the Government in certificating facilities, especially one that is rather expensive, to make every effort to assure that its within the frame work of the normal and legal responsibilities of the State Commission to assure itself that the reasonable certainty of deliverability at a certain level will be forthcoming. I think, nontheless, there is invariably certain reasons be they force majeure or decisions on the part of the State to alter that deliverability depending on certain operating characteristics of the field. I hope that answered your question and I hope that a lot of the uncertainties can be resolved before the final certificate is...

ADGER: Let me pick up there. I think that the answer was no.

And let me say this on that point. The Regulatory system that we have for natural gas pipeline is fortunately poorly suited to betting on the come, if you will. I'm a geologist by training so I'm a natural optimist. I don't think and I don't believe that very many other people think that the only thing that is up there is the Prudhoe Bay accumulation, but there again, the regulatory system, the financing and tariffs system that we have to put together to make this thing go, is a function discovered in proven reserves. We have a responsibility under our statutes to size the system to the available deliverability. Now I think, today, where we stand is that we've got a state conservation authority's approval of production plans which calls for deliverability of 2 billion cubic feet a day from the main pool reservoir in the Prudhoe Bay field. We have had a estimate from the geological survey and this was in the context of a report to the President in the course of last summer on supply and demand questions in this decision. The geological survey indicated that they felt that it was an additional 3/10 of a billion cubic feet a day of deliverability from other reservoirs in the field and extensions of the main pool reservoir. So between what the State has done in its conservation order last May and what the Geological Survey feels is there in addition to that, in this field, is almost 2.4

AGO 668490

billion cubic feet a day. You know that the Geological Survey is prepared to go on from there and tell you what they think the estimate of speculative reserves are up there. Its rummored that Exxon has got some more discoveries up there and I think that we want to try to get, as we go into some final deliverability finding that is related to the sizing of the system, the best estimate of your Department of Natural Resources, what the deliverability is and try, if we need to change the size of the system then change the size of the system. But based on the evidence that is available to us now, this seems to be the appropriate size of the system.

We've also studied how the economics of various systems changes as you change through put volumes. We haven't studied the downside as closely as we have studied the upside because our most careful studies of the upside were in the course of the negotiations with the Canadians on what the addition of the Canadian McKenzie Delta gas volumes did to our operating efficiencies in the 48 inch 1260 line. On the downside, in the course of the Congressional Hearings process, we did take a quick look at what reduced volumes, reduced through put volume did to operating economies and, if I remember right, we will get you these numbers, reduction of this number by an 1/8, takes it down to 2.1 billion, increases the transportation costs,

AGD 668491

the twenty year average transportation cost, by 10% or 15%. And it starts to really go up if you get that $2.1 billion down to about $1.8. I think that is right. When you get to a 1/4, if you are down a 1/4 from the $2.4 billion then we probably ought to be looking at a different size system.

REPRESENTATIVE CHATTERTON: One final question, somewhat unrelated but from the same page. I noticed down here in footnote 2, when you come up to the severance tax estimate to the State and footnote 3 coming up to the royalty, you use two different prices. I presume and I think that you have already mentioned that the $1.58 is a well head value and the $1.28 obviously subtracts 30¢ from that well head value to give us a royalty value of $1.28 per barrel. I've been told in past practice that on the federal level anyway that field price and well head price are almost interchangeable. Can you give me a little bit of elaboration on why 30¢ in MCF is used and does it make a difference whether it would be used, thats one question. Does it make a difference whether the processing plant is built by the operating company or built by the transmission company?

ESSLEY: Ok, since I prepared that number I think that I should explain why I did it that way. What I found out was that there is some uncertainty as to whether or not the royalty would be caluculated before or after deduction of processing costs. And I decided to be conservative here and not over-estimate the state's royalty revenues

and so I took the interpretation that the processing costs would be deducted before the royalty value. I have since been told by people here in the Administration that, in fact, it needs to be entered in litigation and no one really knows for certain how it will be handled but that is where that number came from.

ADGER: You can look at the number for royalty benefits then as a minimum and then it would go up from there?

ESSLEY: I was, on the other hand, told that the severance tax, that was fairly clear cut, that that would be taken prior to any deductions, at the inlet to the pipeline there would not be any deduction or tailgate.

REPRESENTATIVE CHATTERTON: Very quickly, and you can almost give an answer yes or no. First of all, if my understanding of the federal _____ practice at the well head price and field price are interchangable.

ADGER: Ned, I think you probably know as much as any of us about the FERC practice on this matter.

NED HENGERER: If you are defining field price as the well head price plus additional costs I think it depends on the facts and each situation depending on the location of the plant, the nature of the gas, there are a number of different....

ADGER: It is very hard to find an adequate precedent here because of the gathering and conditioning costs are typical

AGO 668493

in the order of a cent and MCF maybe 2¢ in MCF, and you know, this argument is on all sides of the question of what the approporate precedent is and I think that we are just going to start some sort of inquiry into the question and try to do the best we can.

CHAIRMAN MILES: While we are talking about numbers and this sheet you handed out, you indicated that the Federal Corporate Income Tax seems to be $90 million. Is that... is there any other income for the Fed Gov't?

ADGER: Well I think that there is some money involved for rights of ways on federal lands but I think that the amount of money there...

ESSLEY: I think that we give away the right of way.

ADGER: Do we. Oh, its the state that charges. I think that the federal income taxes is the biggest part of it.

CHAIRMAN MILES: There was an earlier estimate of the total federal income tax which, I just multiplied it out here very quickly here and $90 million times twenty years is a billion eight. And Secretary _____ estimated it at $3.8 billion. I don't understand where that difference comes from?

ADGER: One could be current dollars versus constant dollars, but we'll find that estimate and we can....

CHAIRMAN MILES: Are you in current or constant dollars?

ADGER: This is constant. Constant 1975.

CHAIRMAN MILES: We don't know what the Secretary is referring to?

ADGER: No, I don't. I know who put the estimate together but I don't know how he got it. We will find out what the basis of that estimate was and give you an answer on that.

CHAIRMAN MILES: And then there is no federal right of way fees at all.

ESSLEY: My understanding is that the Federal Government does charge or ask for compensation for monitoring expenses but I don't believe that they charge more than a nominal fee for the right of way. I may be mistaken about that. Other people here know that better than I do. A filing fee or something like that.

CHAIRMAN MILES: Is there an excise tax?

ADGER: Not that I know of. There may be an indirect excise tax on the tires on the truck.

CHAIRMAN MILES: It seems that the theory was that the beneficiaries to be the financial participant, it would seem like, to me anyway, that the Federal Govermnment would be as big a beneficiary as the State of Alaska, if not substantially bigger with all the consumers. But I guess that that is a point that is over the dam already.

SENATOR HUBER: Thank you Mr. Chairman. I have several questions that haven't been answered yet. The first one is your estimate of Alaska net Corporate Income Tax. 1¢ per MCF or $13 million. On what basis is that, how did you arrive at that figure?

ADGER: We just pulled those numbers out of our cost of service estimates that were based in turn on the filings by the project sponsors on this, adjusted for our estimate for cost. But probably the fundmental estimate of the state's corporative income tax comes from the project sponsors.

ESSLEY: I don't know what income tax rates were assumed by the applicants in their cost of service calculations. I could find out but I don't happen to know off hand.

SENATOR HUBER: Well I asked you the question because the same thing was being computed for the Trans-Alaska Oil Pipeline. The financial community and the Federal government both looked at Alaska's tax structure and found that we had a 9.4% corporate income tax in the state of Alaska and this was charged as a contigent liability to the _____ of the line and we found yesterday, we heard there were some other figures that in terms of the _____ and I was trying to find out where it came from. This other figure must of came from Northwest Pipeline, Is that right? What they estimated they would pay?

ADGER: This is based on the Northwest filings with us in March of 1977 and then are adjusted for the cost overruns that we make. In terms of benefits to the State, even if it were two or three times as high. It is overrwhelmed by strictly royalty and severance tax in terms of its size.

SENATOR HUBER: (Indiscernible) That there is a little bit of a misnomer in comparing it with the states. In most of the states the gas is owned by the people that own the property and here, in this particular field, is the property of the people of the State _____, and so you are adding the farmers share into the taxable revenue as though they were in one pot. You realize that you are doing that don't you?

ADGER: Well we were just counting the farmer as a beneficiary.

SENATOR HUBER: Well, but that wouldn't be done in a state where the farmer actually owned the gas. The state's revenues would be in one column and the farmer's share would be in another.

ADGER: I understand that. I think that we want to point out that the state's interest is, in effect, is a producer here. In the royalty share. From our perspective, really adds to the State's interest in having this project go forward sooner.

SENATOR HUBER: I wanted to look into another item and we are having a little trouble getting into it. The Federal Government has decided by some report, I think you mentioned the Synthetic Fuel Study, do you have copies of that? You apparently made some major decisions, the Federal Government to stay of energy financing in spite of its importance to the nation as a whole.

ADGER: We haven't brought that study with us but we can make it available to you.

SENATOR HUBER: Would you make a copy of that.

ADGER: I tell you that its such an incredibly sophisticated study, only PhD type economists can make any sense out of it, I'm afraid. And not many of them.

SENATOR HUBER: I was once told, since I have been involved, that only certain kinds of geologists have enough sense to understand the reservoir studies and that I should shut up and not ask the questions. I usually throw those kinds of reports in the garbage can. If I can't understand them I've found that other people can't understand them either.

ADGER: That's right I think that Bob will tell you that he had a pretty hard time with it.

HUBER: Question Indiscernible

SENATOR RADAR: The expectation that the Vice President advise the financial community that Alaska will participate in financing, no matter how it was developed, it apparently exists. We need to consider, I think, the ability of Alaska to respond to that expectation and be more precise in detail as to the nature of that expectation. For example when we were talking yesterday with the Alcan people, they were talking in terms of the State participating by pledging its royalty in some manner or another on a revenue bond which the state would sell and then reinvest

those funds in either equity or debt position along with all other investors that would like to invest in the pipeline. At the same time we have had people tell us that our general obligation rating, our bond rating, will deteriorate pretty l dly if we go above $270 million a year. At least this is the advice the Administration has received. The Governor, in his State of the State message to us, the budget statement, stated that, and last year, as a matter of fact, vetoed a large number of items that would have called for bonding, in excess of what he considered to be prudent, what $240,$250-$270 million, I guess my equasion breaks down into, does the Federal Government expect us to, if there is an expectation here and by the financial community and by other investors, do they expect us merely to try to take royalties and pledge those to revenue bond issues if that revenue bond issue is unacceptable in the market place, then Alaska would be relieved of its expectation that it would participate or is that expectation that we participate go so far as to expect Alaska to tie up its general obligation bonds in debts. I think clearly, under anybody's analysis, it would mean that we had no bond capacity for any other purchases for schools, highways, roads, ferry systems, airports, whatever the cup of tea is. Or that we take it directly out of our general fund. Does the expectation address itself to those kind of problems or not?

ADGER: I don't think that the expectations, particularly on the part of the Federal Government, is developed nearly to that extent. I think that were it developed to that extent I don't think that the Federal Government expects the State of Alaska to stop everything else in order to do this. I think the Federal Government is pointing out that there are very substantial benefits to be realized here and encouraging the State to participate in realization of those benefits, and suggesting that negotiations with the project sponsors you work out a deal that is consistant with your interests and theirs. I don't really feel that the Federal Government is really adequate for or would it be appropriate for us to really get involved in the nature of your participation. I really think that its up to the State and the project sponsors.

SENATOR RADAR: You're familar I think probably in general terms as to the proposal suggested by Alcan Northwest people as to how the State would get involved by pledging its revenues from its royalty gas to secure these bonds. Do you think that there is expectation by anybody that we would go beyond that?

ADGER: I don't think so at this point. I think that, in fact, listening to Senator Stevens yesterday, that his support for the concept of state participation really is based on the fact that that participation would be supported

by this project. And that seems to me a principle which if acceptable to the lenders, the project and its financial advisors, if its acceptable to them then it seems to me that it is a sound principle for the State to use.

SENATOR RADAR: Getting off that subject a little bit. Going back to something that we discussed before, privately, but I think that it should be discussed here too, and that is the capacity or the ability of the Federal Energy Commission people, your people, to deal with the problem which would arise in the event the State has no market for its gas at the initial stages of the pipeline, but they develop the market five years later, whether or not we can negotiate with you at this time, with Alcan, and with the other sponsors, a tariff which would give the State, in the event the State gas goes through the line but is recalled, under 13(b), recaptured or whatever for instate use and instate processing, whether or not we could expect you to give us some assurance as to the nature of the tarrif that we would pay and whether or not we could expect to negotiate with you or them in any matter which would be firm enough have any meaning. A tarrif which would not include the tariff for the full length of the pipeline, but just Prudhoe Bay to Fairbanks if that were to be the point of takeoff?

ADGER: Let me answer that with two kinds of thoughts. One

is that these would be the kinds of questions that we discussed with the Department of Natural Resources people, a cross section of State Administration people yesterday, in the context of what is the appropriate size of the system. And of course the fundamental issue here, which I'm sure that you recognize, is that when the State takes its royalty gas for its purposes, what does that do to the operating economics of the system. And the way that we talked about trying to get some resolution on the question of the appropriate size of the system was to try to get an expression from the state of expected deliverability, expected gas deliverability which might be available in different time frames and the size of expected or possible demand for gas within the state during those same time frames. Such that we could try in our deliverability findings, in our findings about appropriate sizing of the system, to take the state's intentions with respect to its royalty gas into consideration. We will certainly be glad to send the same kind of enquiry to you all to have you participate in the inquiry to the State Administration.

And the second thing that I would say about this is that I think that this is the point for negotiations betweeen the State and the project sponsors. I think that this is the kind of thing that could be made part of an agreement with the project sponsors. I think that their

primary concern as well is going to be what the State's intentions with respect to the royalty gas due to the economics of the system. We discussed in your office briefly the question of, well, would they really be all that concerned, but as we pointed out, the people who will be the project sponsors are the shipper companies who are involved in selling gas in their market areas in the lower 48, and the impact of the withdrawal of the Alaska gas on the delivery price of the gas in the lower 48 I think is going to be a concern to them. Now on the point of the tariff within the State of Alaska and what the possibilities are there, Ned correct me if I'm wrong, but I think that it, dependent on the nature of the State's participation, it might be able to file its own tariff of the shipper company.

HENGERER: Its a possibility.

RADAR: That's all I have, Mr. Chairman.

Sumner: One comment that I might make to this question. I certainly, at least in my _____, would not want to create the impression or leave the impression in any circumstances whatsoever, that I'm laboring under any implied obligation of the State to participate in this loan, but am at absolute freedom to attempt to negotiate, on a mutual basis, benefits that might inure to the Northwest pipeline people, and benefits for such a loan or such

AGO 668503

financing that might inure to the State of Alaska in terms of employment opportunities and job sharing within the State of Alaska and for the people of Alaska. I see that as maybe the making of such a union. But I certainly am going to question or quiz every time there is that implied obligation. I don't see it, I don't share it, I don't believe it. From your standpoint, so that at least however you compute these into future decisions or recommendations, you can at least be advised, at least from one person.

ADGER: My own view on that, I think, is that we found that the State is a major beneficiary of this and we are hopeful that the State will find a basis on which it would participate. I think that you have perfect freedom to negotiate the deal that you are happy with. My personal plea in this would be that, given that we get resolution of the well head price of the gas issue, that we get resolution of that issue pretty soon, that you enter into active negotiations pretty soon on what form your participation might take.

Sumner: I am concerned about the reaction of what the public might take if they are led to believe or they conclude that somebody has obligated the State either morally or in some other manner to finance this. There is some emotional issues out there that have not been settled

yet and I would hate for a bias to arise that would impede down the road of negotiations, that might in the long run bring some positive benefits to the State and to the people. That's the point that I would like really underscored.

ADGER: I think that I understand that perfectly well and I would only try to add for you that I think it is important for the State to work for a deal that it is satisified with. But I think it is also important for the State to realize a certain amount of down side risk here, that the State has something to lose if it doesn't go forward now. And that is really all that needs to be said.

Sumner: Let's follow that one step further. In terms of what the State has to lose, have you evaluated at all the increase of the gas if it stays in the ground in terms of twenty years down the road. Somebody talked about some figures yesterday. Have you concluded what figures might be available, what price this product might sell for in two years or fifteen years. And compared that and the benefits to be gained against the benefits to be gained at this time?

ADGER: We have not completed our evaluations on that point and as you can well imagine, the ultimate answer to that depends on what sort of price trajectory you want to assume for world oil prices. But our expectation is that on a net present value basis, people who are producers

AGO 668505

would be better off going ahead now. If you want to assume that world oil prices are going to go up faster than we assume they will, then you draw probably a different conclusion. But, our sense now, not having completed those evaluations, is that here again it depends on what kind of discount rate you want to use and the price projectory you want to use for the world oil prices. You are better off going forward now.

?, Sumner: It would tend to minimize the down side risks.

ADGER: Reduce them?

?, Sumner: Reduce them yes.

CHAIRMAN MILES: Why don't we take a break until 3:30.

(BREAK)

CHAIRMAN MILES: We will call the Joint Hearing back to order now.

SENATOR RADAR: Yesterday the Northwest people were talking in terms of a 15% rate of return that would be permitted on the equity owners? Does that jive with your understanding, is that a resonable rate of return to expect in this situation?

ADGER: That has been the basis of all of our calculations is a 15% rate of return on equity. I think that it is recognized that this is a project with substantial risk for equity investors and therefore the rate of return is commensurate with that degree of risk is appropriate.

AGD 668506

SENATOR RADER: The President's finding and the posture that beneficiaries of the line, so to speak, should participate financing of it. Should the beneficiaries not participate in the financing of it, would that effect the setting of wellhead prices in your view or the Administration's posture as a recommendation to Congress? In other words if the beneficiaries are the State of Alaska and the other owners of the gas, in otherwords they get their gas to market this way, they receive the value but they wouldn't have the right _____. If the beneficiaries failed to respond to your thoughts that they should help finance, would it be reasonable then to assume that the Administration, through the Administrative structure or through the organization or otherwise, that that would be taken into consideration in the setting of the wellhead prices or tariffs for future purposes? Or, in otherwords, if this has to be done without the help of the beneficiaries, there is another way to get the beneficiaries help involuntary and that is to set a different tariff or different price on the wellhead.

ADGER: I just don't see how that could be the process. On the one hand the wellhead price will or will not be set by the Congress, probably based on their own set of considerations and I don't think that the wellhead price for the Prudhoe Bay gas will be set for that deposit specifically. I think

it will be captured in a definition that will apply to gas across the country, broadly across the country. Our expectation is that that would lead to a well head price that is related to what the administration has proposed for the categories that I know as "old gas." It is a number now in the $1.45, $1.48 range. And it is related to the national rate set by the Federal Power Commission in 1976. So I think the Congress sets the wellhead price, or they don't. And on the tariffs, I think that we approve or disapprove what is presented to us. I don't think that we get involved in what rate of interest on debt is paid, we have to have some sort of finding on rate of return on equity -- the appropriateness of rate of return on equity. But this finding is completed before money is put up. It is completed after commitment are made on that basis, but before money is actually put up. And if you were an equity investor you wouldn't be the only equity investor. And to try to ratch it down to your rate of return on equity in order to try to press you into some sort of financial commitment, runs off of everybody else, you only have...

SENATOR RADAR: But of course, marking down my wellhead price might not hurt everybody else. It would only hurt other producers.

ADGER: I think the Congress is going to set that though. I

AGD 668508

think your question was that if the federal government, which it does in this instance, is going to take it out on you if you don't participate financially, I think the answer is no. Because a different set of people are going to set that.

SENATOR RADAR: If I was the President and I felt that the producers have an obligation to participate in the financing, and the producers did not rise to that obligation, did not meet that obligation, then I think, if I were the President, and I felt confident in my position, I would look for a way to where they fulfilled that obligation in another way, through a regulatory _____ of some sort, or through Congress, by recommendation of Congress, or something else. And say, you have failed, producers, to meet the obligation that I have printed out here, that I have sent out to you. I have sent my people to Alaska and have talked to Alaskans and have talked to other producers and they haven't responded. Now there is another way to get them to contribute to this and that is to set the wellhead price. That way they contribute to the financing of it because they make it more feasible. The less you have to pay Alaska and the other producers for the gas at the wellhead, the bigger the spread between the market in the southern 48 and the producers in Alaska. Why wouldn't you do that? It seems to me that if you were certain of

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AGO 668510

what you are doing that you would automatically do that. I would. If you refused to share the responsibility that I genuinely thought that you had, voluntarily, I think I would go ahead and say to the Public Service Commission, look, you have a decision here in setting this rate, or wellhead or something else, and those fellows haven't responded. It seems to me like we get their cooperation or assistance in another way.

ADGER: What I started to say was that, Oh no, we wouldn't do that because that's not fair. But if you would do it, I don't want to put that kind of... I wouldn't want to pass judgment on what Senator Stevens says either, but... Hopefully, regulatory determinations are made on the basis of higher considerations. I think regulatory determinations are made on some sort of assessment of the public interest.

SENATOR RADAR: (Question Indiscernible)

ADGER: Well, I think that the fundamental point here is that your financial participation is important to the atmosphere surrounding the project now. And to my way of thinking, that's important to have the project go forward on schedule now. And I guess, I just question the wisdom of posing some kind of a threat that the state might be punished if it didn't step forward.

SENATOR RADAR: Let's not talk about punishing the state, let's

talk about punishing the oil, the producers. That's not hard to conceive. If you said, okay, you producers didn't come through and finance this thing, and so and so forth, so we are going to make it financible by knocking down the wellhead price. That will make it financible.

ADGER: Well, I just don't think we would do that. I think on the one hand we are making some progress with the producers on participation in some way. As I think we discussed in your office earlier today, the producers are not really _____ on this issue, and they have different degrees of interest in this project and different feelings about it. Make no mistake, they have been very stand-offish about the whole thing, at this point. And I don't mean to imply for a minute that any of them are racing to sign up, but we think that we are going to be able to make some progress with the producers when the wellhead price is set.

SENATOR RADAR: Thank you Mr. Chairman.

SENATOR SUMNER: I wanted to talk to one instance; going back to some discussion earlier, that we do look forward to having a petrochemical industry or at least we want to maximize the opportunity of having one in Alaska... (indiscernible) I think that is going to have to be _____ 'n quantitative terms or estimates, or ballpark figures, before there will be a lot of willingness to

commit to funding and and other commitments that are necessary. I think we need to address that and that's the area that you are primarily involved in. Will you respond to what is likely to happen in the future, as to consideration given in terms of tariffs, rates for the _____?

ADGER: There again, I think you said before, the primary responsibility there, I think, is on negotiations between you-all and the project sponsors, as participants in the project in some way. Then you have the right to determine the conditions, the basis on which you would participate. Now, I think that...

SENATOR SUMNER: Suppose we came in with a mutually agreed tariff for this section of the pipeline. Is it reasonable to assume that you would approve that (indiscernible)

ADGER: I think if both sides agreed on a tariff, what we would do would be to send the proposed tariff to a hearing, probably as soon as we could, to find out whether or not there was any opposition to doing it that way.

SENATOR SUMNER: (Question indiscernible)

ADGER: Well, no. I am not sure that...

ADGER: ...accepted to the tariff if Alcan didn't object to it. That would be a major...

SENATOR SUMNER: (Question indiscernible)

ADGER: I think a distinction I want to draw here is that if

something on the tariff is important to the State's decision, on whether or not it would participate, I think we would do everything that we could to expedite a decision from the regulatory body on that point. And you're suggesting that if you didn't do it, we would go the same route. I don't think we'd feel anywhere near the urgency to get that particular point resolved. Am I being clear there?

Sumner: Well, I won't pursue it now, but I want you to know that that is a point that brings to my mind, must be defined in quantitative terms before a commitment would be made.

Senger: One thing that may not be clear is that the case of taking Alaskan royalty gas out of the line before the Canadian border at some point, is not all that new or unprecedented. In the lower 48 gas pipelines, not all the gas is delivered to the ultimate end of the pipeline. It's taken out all the way along the way. So there is an abundance of past techniques that have been used, or procedures, to set the tariff of gas that's taken out at intermediate points.

Sumner: (Indiscernible) In your opinion, can the current gas line meet demands, with conventional financing, if the state does not participate?

ADGER: I'd say that, number one, I would go back to something that you said earlier today about the ease of doing this

at all. I would agree with you 100%, it's going to be very difficult to do, no matter what. Now, having said that...

Sumner: Explain that.

ADGER: Well, it's a whole lot of money. And it's going to have to be done, probably, on a sort of unconventional basis. Maybe somebody back there knows that better than I do.

Sumner: Has any other state been involved in similar sort of financing before?

ADGER: I don't know of another right off hand. I heard rumors for a while that the state of California was toying with the idea of financial participation.

Sumner: (Question Indiscernible)

ADGER: I don't know of any right now.

Sumner: Okay, are you saying it's going to be difficult even with Alaska's participation?

ADGER: Yes. I think I want to emphasize though that it's going to be even more difficult without.

Sumner In your view, is it impossible without Alaska's participation, is it improbable without Alaska's participation?

ADGER: I would have to refer you to Alcan, the project's financial people. Or better yet, probably the State has its own financial people, I'm sure.

Sumner: (Question Indiscernible) President's Decision found that the project could be privately financed. But now you have changed your conclusion, finding that State participation is needed. Why did you initially decide it was privately financeable?

AGO 668515

ADGER: Well, our finding, were that it could be done privately, and that was based on an analysis of the oil pipeline experience, the relevant conclusions, I think, there that are set out in some detail in here, are the relationship of the financing, the size of the financing to the total amount of capital that's raised in any given year, I mean, this would represent about the same proportion of private financing that Alyeska was in its peak years.

Sumner: Is the data that you based your conclusion on then, is that data still active, still current?

ADGER: Well, you're privately financible.

Sumner: (Question Indiscernible)

ADGER: Yes. Let me see what it specifically said. If I may read you this, it would be the largest privately financed energy project ever undertaken requiring between $10 and $15 billion by the time it is completed. To effectuate such a private financing, a plan that equitably and carefully balances the budget, the benefits and risks is required. The conclusion that Alcan can be privately financed is founded on the basic economic desirability of Alaska gas and the desirability of the Alcan transportation system. Nevertheless, skillful financial packaging and risk/benefit balancing will be required. It is therefore necessary to explore the boundaries of the financing problem by considering Alcan's likely capital needs and sources, relating

those needs to the capital market in general and reviewing the list of beneficiaries and examining the roles each might be expected to play in the financing. Then we go into a discussion of those items.

Sumner: (Indiscernible)

ADGER: Well, I think I question your conclusion that the thing is running into some problems. And I would say this about that. We concluded that it was privately financible though difficult to do, but it could be done. And we also proposed that the project's beneficiary should have a big part in that. That would help a lot.

Sumner: When you define private financing, does that include Alaska participation? Is that part of the definition of private financing?

ADGER: Yes. Well, private financing did not, I think, automatically assume that Alaska would participate. I think privately financible was a separate conclusion from Alaska participating.

Sumner: Trying to bring this thing back because I get a little confused. I think you told me just a few minutes ago that it was difficult, even with the State financing, and you would assume even more difficult, if not improbable, if the State does not participate. Now you are saying that it is only difficult if there is private financing involved. So I am trying to determine whether the definition of

private financing includes the State since you said it was difficult for private financing. I'm trying to determine your conclusion. Have you always anticipated that Alaska would have no option but to finance this line. Was that any part of your active conclusion in the Senate?

ADGER: No.

Sumner: Alright. If there has been no new ingredient, are you still under the impression that it is still only difficult to finance it privately?

ADGER: Yes. There are degrees of difficulty.

Sumner: Alright. In your view, how long would it take assuming the State of Alaska did not participate? How long would it take before the project would be under way, in your view, encountering the degree of difficulty as you understand it, to complete this project, to move ahead with it. Move ahead as a result of having obtained private financing?

ADGER: I just have not worked through the set of circumstances that would be involved there. I don't know if I could really speculate on that. I think, as the sequence goes, that the sponsoring company consortium has started to come together now, and we feel like that if the State of Alaska could see its way clear to participate in the financing, then we feel sure that the Province of Alberta would also be willing to participate in the financing. And we think

that we'll get to the producers down the road somewhere and we build on an atmosphere of confidence...

_____: If Alaska financing was part of the game plan all along, and I'm wondering why ~~dosen~~'t argument we told before?

ADGER: I think there's sort of a real distinction between a conscious game plan at the time this was written, and observing how the thing might be coming together now. I would think that it would be a big mistake to assume that this was all planned out when this document was written. I think you'll find that we said in here some things that were not exactly dictating the script. We didn't anticipate that the Province of Alberta.

Sumner: And do you want to restate for me your definition of private financing?

ADGER: Private financing I would say would be the private capital market.

Sumner: Inclusive or exclusive of the State of Alaska?

ADGER: What you are saying to me is, do you think that the implication is that Alaska resources is part of the private capital market, in the sense that Alaska has money available to invest like other private investors.

_____: (Indiscernible)

Adger: Part of this may be the egocentric view of the federal government. Anything that is not the federal government is private. That is sort of the way the term

AGD 668519

was used. And it is quite fairly explicit in the President's decision. Tradition and equity suggests that the parties who tend to benefit directly from a transportation system participate in the financing and share the burden of these risks. The direct beneficiaries include the equity investors, the producers of the gas, and the State of Alaska.

Sumner: You would agree that there are other ways of saying that other than in terms of private financing. I think you will agree. I don't care in the definitions and I don't care in some of the conclusions, and in some of the ways that Alaska got obligated. So I am not going to pursue it any farther. But I think you should, and I'm going to recommend that you seriously reevaluate how you got in the box that you are in and see if you can't find a way out.

ADGER: Okay. Let me just say on this point about what is private financing. I think when we contemplated what private financing is, we think not about the State of Alaska diverting necessarily tax revenues away from schools or this kind of thing. I would consider that private financing, but to the extent that the State of Alaska or the Province of Alberta has investable funds, the Heritage Fund in the case of the Province of Alberta. I would consider them a private investor.

_____: (Indiscernible)

ADGER: We were talking about what is private financing as opposed to what is the obligation of the State. That is what I was talking about. And then you shifted to what the obligations of the State were and the projects.

? Miles: Earlier in the State's testimony, you concluded that or seems to imply though that you didn't expect us to share the same degree of commitment that you had concluded that there was a commitment, an express interest which implied some commitment on the part of Alaska to finance the program.

ADGER: I think that I said that I felt that that was a percep_ tion of the financial commitment. That's what I meant to say.

? Miles: Just so I understand it, you're not saying that the project hinges on investment of Alaska's resource dollars? In your opinion?

ADGER: I think that the financing of the project is made enormously easier if the State of Alaska is a private investor. Make private investment decisions on available investment funds.

Miles: (Question indiscernible)

ADGER: I think I would refer you to the ultimate answer to your own financial advisors and the project. But from my own perspective, I don't think that that is the only consideration. If the only thing that happens is that Alaska does

or does not participate, that is not going to make or break the project. If Alaska does participate, a whole bunch of other things are going to have to fall into place as well.

SENATOR HUBER: (Question indiscernible) Did you consider Alaska's problem of the constitutional... of dedicating resource revenues, except permanent fund money, that it would be competing with...

ADGER: We did not exclusively consider that because we did not get into, except to take note of, take note of Commissioner Gallagher's estimate of what the order of magnitude of the State's participation might be. We just pointed out that the State of Alaska, as a beneficiary, it would be nice if they would participate. other Alaska projects

SENATOR HUBER: (question indiscernible) What are the four portions of the pipeline?

ADGER: The Alaska portion, the Canada portions and the two southern portions?

SENATOR HUBER: (Question indiscernible)

ADGER: I don't know about that. I think that you would have a difficult time buying a piece of the Canadian segment. Actually I think you could buy a piece of the Canadian segment, you just couldn't buy a majority.

SENATOR HUBER: (Question indiscernible) ... then you would have to deal with how desirable this investment is. How does the desirability of the Alaska portion of the pipeline segment stand up with the desirability of the other two segments?

? Adger: Well, I think this is t... ... thing that you have got to take up with the project sponsors. I just

AGO 668522

can't really do any good in terms of telling you how it ought to go. You all have got to come up with a basis on which it's satisfactory to you, and if it is put to you in a way that this looks better than that, and you don't have a shot at that, then I think that is something that you take up with them.

SENATOR HUBER: (Indiscernible)

ADGER: Well, I would absolutely suggest that this investment ought to be evaluated against all of the other possibilities that the State has got. But I suspect that this investment would be an attractive one, relative to some of the others, and I would point out to you that this investment, there's always the possibility of very substantially enhancing the amount of money that are in the permanent fund. I think there is a pretty substantial amount of benefit there to be had.

SENATOR HUBER: (Indiscernible)

ADGER: Yes. I think what you are talking about is the constraint on the amount of participation, the availability of funds through the proportion of the funds that are allocated to the permanent fund. Certainly the size of that fund and the prospective size of that fund, given the additions to it of the proceeds from the sale of gas, are going to limit the degree of your participation.

SENATOR HUBER: (Indiscernible)

AGO 668523

Rep.

Gruening: Senator Radar asked a question earlier about... Producers would want to wait to see what the wellhead price will be. (Indiscernible) In consideration, do you think that is a reasonable stance?

ADGER: Yes. I said that I thought that the state would likely want to wait for the setting of the wellhead price before making its decision.

Gruening: When is that likely to transpire. I missed your presentation.

ADGER: Well, what I said there, we've been saying for 90 days now that it would be any day now. We still expect that it would be any day now. That's under the legislation that's before the Congress. I think, in the alternative, that if a decision on gas pricing is not forthcoming out of the Congress then we're all on a whole different time scale.

Gruening: If it were to arrive in 90 days, do you (INDISCERNIBLE) think producers would start negotiating gas sales contracts?

ADGER: We would certainly expect them to start negotiations on the gas sales contract. I think that some aspects of the gas sales contracts might well affect the financibility of the project. Now, I'm not sure exactly what the nature of their spectrum might be and wouldn't want to speculate on it. But I think that negotiations over the gas sales contract are...

_____: (Indiscernible)

ADGER: Well I just think that -- I'm afraid I know where you are leading me because I'm afraid I know that conclusion of

AGD 668524

that sales contract for the State's royalty share can't finally be concluded until the next session of the legislature, isn't that right.

_____: (Indiscernible)

ADGER: I think that the negotiations over the gas sales contract, the setting of the wellhead price, is going to fundamentally determine the producer's interest in this whole thing. But then the producers also have expenses associated with producing the gas that they've got to consider. The allocation of costs associated with some sort of conditioning facility which is to be considered as well. I think it's going to be hard for the producers to really establish where their interests lie before they know some more on those things.

_____: (Indiscernible)

ADGER: You mean on the state's conservation?

_____: (Indiscernible)

ADGER: I guess so, yes. My only hesitation is that I'm not sure what... Well, I think it's a level of the ceiling process. I think that we anticipate that the ceiling price for that gas would be set at the old gas price, which is about $1.48 now, I think. And we just assume, our marketability studies are not completed but we assume that the producers would be able to sell it at that price. There the open question...

Gruening: You use the contract after its financed, to help

AGO 668525

finance. And I'm wondering whether that doesn't have some parallel with the State of Alaska... (Indiscernible)

ADGER: I'm sorry that I'm not enough of a financial expert to know whether or not that is a possibility. We hope to have a financial guy on our staff sometime soon that would be able to speak to that. I can't.

Butrovich (Conversation Indiscernible)

? Adger: It's on page 115, if you have access to a copy. It is simply tradition and equities suggest that the parties who stand to benefit directly from a transportation system participate in the financing and share the burden of these risks. The direct beneficiaries include the equity investors, namely, a consortium of gas transmission companies, the producers of the gas and the State of Alaska with its royalty interests in the gas.

Butrovich: (Question indiscernible) Would producers participation be just as important as State participation? Perhaps we should put more emphasis on the producers.

ADGER: We've got a little problem here with the Justice Department and the Justice Department has put some pretty severe limits on the ability of the producing companies to participate in the thing. I think it is spelled out in here some, but they generally prohibited the producers from equity participation in the thing and pretty much limited their participation to debt guarantees. So they're sort of working out of producer participation. It's going to be a complicated matter.

AGO 668526

SENATOR ~~HUBER:~~ Butrovich (Indiscernible)

ADGER: Well, the statement was that the beneficiaries should participate. And what I'm saying is that the Justice Department has put some unusual conditions on the participation of the producers who are named by President Carter as a beneficiary. I think President Carter still believes that they ought to participate, but... (Indiscernible) The Justice Department just hasn't put as much in the way of constraints on the nature of your participation as they have on those who are the producers.

SENATOR ~~HUBER:~~ Butrovich Would you repeat that please.

ADGER: The Justice Department has not put as much in the way of constraints on the nature of the State of Alaska's participation as they have on the nature of the possible producers participation.

? SENATOR ~~HUBER:~~ Butrovich (Indiscernible)

ADGER: Well, I'm just not, by any stretch of the imagination, an anti-trust expert, and I know that the Justice Department's concerns are rooted in anti-trust considerations. I'm sorry. I'm just inadequate on that.

? SENATOR ~~HUBER:~~ Butrovich (Indiscernible)

REPRESENTATIVE CHATTERTON: Thank you Mr. Chairman. Mr. Adger, I could not help but catch the Nixoneze you used quite a while ago. But I'd like to change a little bit there, the line of questions. Do I understand correctly that you are

AGO 668527

in charge, you and your staff, in effect, is this right, _ to come up, sooner or later, with a (Indiscernible) I gather that you are still in the fact gathering mode. Is that right?

ADGER: That's right.

REPRESENTATIVE CHATTERTON: And why we're here right now is the fact gathering mode on the financibility situation?

ADGER: Yes. I was up here talking to the State Administration people and we thought it would be useful for me to come and talk to you all as well.

REPRESENTATIVE CHATTERTON: Do you feel that even beyond the financibility, so to speak, because I gather that you are going to have to be sure, before you issue a certificate, that there is indeed a viable project that can be properly funded in some form or another and _____?

ADGER: Right.

REPRESENTATIVE CHATTERTON: Okay. Now, are you planning to gather facts on other things other than financing? Do you still have many facts left to gather?

ADGER: Yes. And I wish that I had said that more completely in my opening statement. I am really here to find out the facts on a lot of things.

REPRESENTATIVE CHATTERTON: You are still willing to, and in fact are seeking more facts upon assurances of the daily rate of deliverability uninterruptable over a 20 year period? You are seeking facts now, right?

ADGER: The one word answer is yes. We are scheduled to meet with the State Conservation people in Anchorage tomorrow.

REPRESENTATIVE CHATTERTON: Now did you have, in this fact finding PROCESS, where you were out _____, and by so doing though why you can fairly well select with whom you talk. Did you ever come to a point in a public hearing, in the process before you made your determination on whether or not to issue a certificate of Necessity and Public Convenience?

HENGERER: I think we are, at this stage, gathering information as compared to facts. There will be a public hearing on the record with full adjudication of the issues, assuming that they are contested. I think maybe information gathering is a better... Just for the benefit of the Commission at this point, just to help it understand the issues, there will be public notice, obviously. And I know the state has participated accurately in prior proceedings and they would have notice as all other potential parties.

REPRESENTATIVE CHATTERTON: Do you gentlemen have a rough guestimate of the time frame as to when you will be in a position to make a judgment decision as to whether or not to issue a certificate?

ADGER: Ned, here again, my understanding is that we are shooting for final filings. We would like to try to get the final filings for the Certificate of Public Convenience and Necessity sometime during the first quarter of 1979, about

a year from now, or since the wellhead price _____ 90 days, but once we have the final filing then we go to hearings on the complete package. Now, between now and then there may be issues that we turn up that we need to get some resolution on in order to proceed to the next step. And we might have to go to a formal proceeding and some more narrowly defined issues, between now and the first quarter of 1979 when a public on the record proceeding would start on the whole package.

REPRESENTATIVE CHATTERTON: Am I clear in gathering from what you say, that the earliest would be the first quarter of 1979 before you would feel in your own mind,...

ADGER: I suspect that final filings on the whole thing could not be completed before the first quarter of 1979.

REPRESENTATIVE CHATTERTON: May I ask you one last question. Can construction or even any scratching of the earth... along whis petrochemical right of way that the President selected take place until the issuance of the Certificate of Public Convenience and Necessity?

ADGER: Yes. There is some project development expenditure contemplated between now and then in anticipation that the certificate will be granted. We have, in fact, granted a conditional certificate. But I think that the major commitments to the project, the ordering of the pipe, for instance, will wait for the issuance of the final Certificate of

Public Convenience and Necessity.

REPRESENTATIVE CHATTERTON: Any expenditures at this point in time are pure and simple risk?

ADGER: They are at risk.

HENGERER: There will be certain geotechnical work done on the right of way which would go through the Department of Interior and through the State perhaps, but as far as actual construction, no.

REPRESENTATIVE CHATTERTON: Thank you. Thank you, Mr. Chairman.

? Sumner: (Question Indiscernible)

ADGER: Well, alternatively there is a possibility of commitment of gas funds, which you wouldn't put out any money for in quite some months. Probably not until...

? Sumner: (Indiscernible)

ADGER: I think the project development expenditures between now and the time of issuance of the final Certificate are a little over $200 million. And if you would come in as an equity participant now, you might be involved in some sort of pro-rata share of those project development expenditures. But unless there was that kind of a circumstance, they are not, as I understand it, going to draw against... The final financing commitments are not binding until the Certificate is issued. Is that right? Equity is considered the first money spent.

? Sumner: In your information gathering, is there question

of any possibility that as you gather this additional information you will find that indeed you can't honestly issue a Certificate? Have you ever considered that possibility, that your findings may be such that you can't issue a Certificate?

ADGER: I think that we just, right now, can't conceive of a situation where we wouldn't be able to issue any certificates. Certainly, there are uncertainties in the area of deliverability which might affect the sizing of the system, but we would just anticipate the ultimately certificated system, it would just be a different size.

Sumner: My mind is not closed, but it's only a narrow crack.

Adger: It's not within the first choice at this point because we do have the Congressional Act which says you shall issue a Certificate. You may quibble about exactly what is in the Certificate but we are sort of obliged to issue it. Unless Alcan just doesn't ask for it.

Sumner: Thank you, Mr. Chairman. I apologize for interrupting.

SENATOR POLAND: What is the feasibility of taking out royalty gas somewhere else besides Prudhoe Bay? You have mentioned several times today and many of us up here are... (Indiscernible)

Essley: Before I start, let me say that I wear a hearing aide and I tend to speak to my hearing aide sometimes and my voice drops off. So if it does, please don't hesitate to tell me to speak up. The system was designed to the

AGD 668532

1260 psi maximum operating pressure. And with the 1260 maximum operating pressure we cannot get all of the gas liquids through the line at that pressure without actually having liquids drop out which could actually destroy the turbines and the compressors. So, given the 1260 psi maximum operating system, we are limited to pretty well taking out the liquids at Prudhoe Bay, at least some of the liquids. We can get all the propane through and a little bit of the butane, but we can't get the rest of the liquids through. So, if we start with a limitation that we are going to go with the 1260 psi system, then we have no choice but to remove some of the liquids at Prudhoe Bay. The pentanes plus can go through the oil lines, and all the propanes can go through the gas lines. That leaves the problem of the butanes. Now, to address your specific question, could we take them out elsewhere. Yes. It is technically feasible to take the liquids out elsewhere. We have 12%, 13% CO_2 in this gas and CO_2 has no heating value. And we didn't, particularly the project sponsors, do not want to move a large volume of the CO_2 to the states because automatically that creates a fuel penalty, moving something all the way down to the states. But, theoretically, if we were to put a high enough pressure line in we could move all the gases, other than dehydrated them initially, we could move all the gases to

the states. And remove all the liquids and the co_2 at that point. Or, alternatively, we could move all the gases, except for the dehydration facilities which were necessary on the slope, we could move all the gas to, say, the Fairbanks area and process it at that point, and remove the co_2 and all the liquids at the Fairbanks area and then process the gas. So, specifically, your question, could we process it elsewhere, yes, we could. If we altered the design of the line and go to higher pressure system to the point of processing.

?, Miles: Im order to get the co_2 out, you've got to go ahead and take the liquids out.

Essley: So this is one of the problems we are looking at right now and several people have brought it up. To remove the co_2 from the Slope, the process that the producers are looking at right now involve first removing the water. Secondly, removing the gas liquids. We are going to take them out as a whole, not try to separate them. Amd thirdly, then we would take out the co_2. Now, at that point, we either separate the liquids, the gas liquids, and move some of them through the pipeline and burn some of them on the Slope, and put some of them with the gas, or we can put them all back into the gas if we have a high enough pressure system. At that point we bring the process to Fairbanks. Now, at this point, if the State of Alaska wishes to extract some of the ethane

and set up a petrochemical plant, we would have to again extract the liquids. After we extract the liquids, we go through a further extraction where we take the heavier part out which leaves the ethane. We put the heavier liquids back in the line and then the propanes and butanes back in the line, which would then be transported to the United States, at which point we would again extract the liquids. We are talking about where do we take these liquids out and how would the most economical, where would the most economical point of extraction be? We are looking at the pressure of the system. If we go with the 1260 psi system, it puts very severe restrictions on where we can extract these liquids. We have to take some of them out of the North Slope with the 1260 psi system. Did I confuse you or help you?

SENATOR POLAND: Can you have one pressure for part of the line and then reduce it to a lower pressure? What I am thinking of is could we have a high pressure line in Alaska, and as I understand it, Canada builds its lower?

Eccles: Yes. It would be technically quite feasible to move all the gas, including the liquids to Fairbanks through a high pressure line, reduce the pressure at that time and move just the gas the rest of the way to the states, take the liquids which are extracted at Fairbanks and either utilize them there or move them to the coast.

AGO 668535

SENATOR HUBER: Mr. Chairman. Let me ask a question. By a high enough pressure line, do you mean talking about liquifying everything and bringing it down as far as the point where you extract (cough)?

Essley: Well, gasifying everything. You could.

Huber: What do you mean liquifying everything? If you go to a high pressure line, all the liquids would be in a vapor phase.

SENATOR HUBER: I'm sorry, my physics is giving me some problems. I have got some real problems with physics because the higher the pressure we put on a gas, the closer it is to turning into a liquid. For instance, the methane is something over 3,000 pounds per square inch, while the propane is about, at room temperature, or less than 200 pounds per square inch, before it turns to a liquid. Now, can you explain that to my... What you are telling me is contrary to my physics and I'd like to know why.

Essley: Well you get into a phenomenon known as retro-grade condensation. And it is called retro-grade because it is contrary to what you learn in beginning physics. But what we are getting into is, at a high pressure we have a single phase, and if we drop the pressure and at a certain temperature we reach a point where we call the dew point and some of the liquids will condense and will form two phases then, both a gas and a liquid. Now, the

peculiar nature of any gas is that we can make laboratory experiments, or if we know the composition of the gas from previous laboratory experiments, we can determine very closely what the pressures and temperatures are in which we will have those two phases. And what it amounts to in this system, that with the operating temperatures that we are going to be bringing this gas down -- in other words, we are going to bring it down below 32 degrees to avoid melting the permafrost. So with these type of temperatures we have, for any given composition of gas, a certain envelope which we have to stay outside of. Basically, this means we have to stay at a fairly high pressure. I know this is contrary to your basic physics and this is why we call this particular phenomena retro-grade condensation.

SENATOR HUBER: Rather than confining it to self supporting laws and a few other such things, does it have to do with the fact that it is a mixture of gases?

Essley: It is a mixture of gases and we depart from ideal gases. We can take a liquid and we can, through manipulating temperature and pressure, we can take a substance and we can go from a gas and put the pressure up to real high value then drop the temperature, then drop the pressure back down, we can go from a gas to a liquid without ever seeing a phase change. Or we can go back from a liquid

to a gas. Now, instead of going that route of going to the real high pressure and dropping the temperature and coming back down, if we just went straight across at a lower pressure, we'd go through a very definite phase change at some point where we would have liquids formed and then the amount of liquids would continually increase, and we reach another point where we would have the bubble point when we would have all the gas disappear and we would have a single phase of liquids. So we are getting into some phenomena of how we transfer from a liquid to a gaseous state.

SENATOR HUBER: Within a mixture of gases.

Essley: Within a mixture, yes. But what we are talking about here is if we are going to carry all of the liquids, we have to go to fairly high pressure. If we carry just part of the liquids, we can get a lower pressure and end up fine.

SENATOR HUBER: That clarifies something that has never been clarified before. Thank you.

Chmn. Miles: Mr. Adger, the questions surrounding the conditioning plant hasn't really been brought up and we really couldn't get an answer because there apparently is no answer to the question. Who is going to build the conditioning plant? (Indiscernible) Where does it stand now, and if your agency is going to make a ruling on it, what

AGO 668536

factors are going to be important in that?

ADGER: I'm sorry that I'm not right up to speed on what the precedents are in the lower 48 on processing and conditioning facilities. I am informed by the producers that there is a dramatically different set of precedents for conditioning facilities than those for processing facilities, but I haven't been too thick to understand what the difference is between the precedents on those things. One of the things that we have been trying to do while we're up here was to start an inquiry, an informal inquiry, into what the issues are associated with the gas liquids and try to define better for ourselves what those issues are and set up a procedure for getting those issues resolved. We talked to the state people yesterday, really kicking off our inquiry into these matters, and we will be proceeding to talk to the producers and the pipeline company in the coming weeks in order to try to get this thing resolved and find out who it is that ought to pay for it. Ned, do you know enough about conventions in the lower 48 to sort of know what the precedents are?

NED HENGERER: I am not totally conversant with the specific applications of the rules, but I do know that they really do depend on the specific factors of the case at hand, depending on the location of the plant and the characteristics of the gas and the relative interests of the parties as

AGO 668539

to the liquids and such matters as that. At this stage, I really couldn't give a definitive answer. I don't think anybody could.

ADGER: I think we have a closet expert.

Essley: I wouldn't say I am an expert but we have a little different problem here than the commission is normally used to addressing. In most of the plants in the lower 48 states we are quite often dealing with multiple owners, and if any processing is... Generally when we have a processing plant, we quite often have quite a few owners, the processing plant will be built separately and process gases from different owners, and we quite often have quite different ownership in the processing plant than we do in the gas and the oil. And so these kind of conditioning costs will almost always be excluded from the consideration of the costs of the owner of the gas. And only those conditioning costs that are done before it leaves the lease, will be considered part of the conditioning. And the processing will be, normally, considered separately. Here we have a different situation. Previously, in all the rate cases before the Federal Power Commission, we were dealing with non-associated gas. Associated gas was always just handled to fall under the rules that they set for non-associated gas. And here, for the first time, the FPC, now the FERC will

be dealing with setting a rate, or setting a conditioning and processing for an associated field, gas, where the gas is a by-product of producing the oil. We are going to be getting into totally new grounds here and we are going to be closer to the precedent where in the state where the processing costs may have been associated with producing the gas, other than the conditioning cost where there was a separate plant with separate ownership. It's really undetermined yet how this is going to rule, but we're on new ground as I understand it. Is that correct?

Chmn. Miles: Well what this comes down to then is a $2 billion precedence.

Adger: That's right.

Chmn Miles: This is roughly a $10 million project. If the $2 billion precedent added on to it, this is a tremendously significant factor. Equally significant fact as the pricing determination.

ADGER: Well, let me just refer you to the numbers here. I think that the order of magnitude of the wellhead price, in that determination, is on the order of $1.50. Whereas the order of magnitude in comparable terms of the conditioning costs, I think is on the order of 30¢. And 30¢ is a smaller number that $1.50.

Chmn Miles: Yes. But it is still quite substantial.

Adger: That's right.

Chmn. Miles: That is a substantially significant factor. When might this decision be made? It will obviously be made by FERC.

Adger: Not obviously. It is conceivable that legislation now before the Congress would decide whether or not the gas processing costs were included within the set wellhead price or in addition to the wellhead price.

Chairman Miles: If Congress doesn't resolve it, roughly how long would it take your shop to resolve that question? I realize it is a ballpark shot, but...

Adger: I addressed this same question to the professionals at FERC who actually make this determination. And they said that once the decision is made to go ahead and we know for sure that we have to make such a determination, it would probably take a minimum of three months.

Chmn. Miles: And a maximum?

Adger: Well, he didn't say, but he thought we could do it in pretty close to three months. We have quite a bit of information on the previous commission. It would be three months from the time we get the data from the producer on the cost of this. And that may be, the way the schedule is now, it would look like it will be at least August or September before we get information from the producers on the cost conditioning.

AGO 668542

ADGER: But we've got some things that we can do on that issue between now and then.

Chairman Miles: If Congress does not come to terms on the pricing bill, that will also fall into your hands. How long do you figure, again ballpark figures?

ADGER: Would you care to guess on that one?

?. Hengeveld: On what?

ADGER: On the wellhead price. At least the end of the summer?

?. Hengeveld: The gentleman I addressed the question to at the FERC, was up to his ears in making that determination, said that it would take at least a year.

Chairman Miles: (Indiscernible)

?. Hengeveld: Now they are doing a study on that. Conditioning facilities could go on simultaneously.

_____: Yes, but no resolutions would be made. (Indiscernible)

ADGER: Updating an estimate of the basic costs involved in a conditioning facility is going on now. And the producers have a study of that going on, sort of in parallel with this whole wellhead pricing thing. We would have to come up with our own process to satisfy ourselves that their estimates of the cost of gathering and conditioning were the right ones. But the timing of the variance, the ultimate resolution of the gathering and conditioning cost thing is probably related to the timing of that study. The wellhead pricing question, on the other hand,

is either related to the _____ of the Congress or the FERC proceeding and the problem there is the difficulty of the allocation issue. Allocation of expenses between oil production and gas production. If we had to set a cost base rate.

Senator Sumner: (Indiscernible) lead to the conclusion that there is too many variables and too many decisions yet to be made. (Indiscernible) I don't know how one could be expected to make an intelligent decision unless one wants to assume that _____ sort of all work out in the end.

ADGER: I think that what we've said all afternoon is that you really are not in a position to decide unless the wellhead price is roughly settled. We wouldn't argue with that at all. And if the wellhead price is not settled by the Congress, I think we all recognize that all of us are on a different time frame. The project sponsors, I don't think would argue with that. They know that the FERC and the price setting under that then becomes a critical _____, and it's just a matter of how fast we can do that. But our stance is that when the wellhead price issue is settled, the State can come up with a fair estimate of what's in it for the State and have a fair idea of just how important it is to the State for the thing to go ahead now. I think that the kind of commitment

AGO 668544

to the project that even the project sponsors would like to have within the next few months is not one where everything is finally said and done. I think that is more an expression of intent which is related to computations of a benefit that is available in the time frame of the commitment is made or expression of intent is given.

Senator Sumner: That question was pursued yesterday and they said that they would like to have some sort of a commitment of expression or interest this session and it seems to me like the only thing they could get from us is that maybe we are interested if the following _____.

ADGER: Well I think that you would be in a position to do a pretty good job of enumerating those ifs in the wellhead prices is settled. In my own, and I haven't talked him in any detail about this, you know, its none of my affair, something where you were to assess the order of magnitude of interest in this thing and make some sort, give them some sort of an indication based on that assessment. I think that that would be what it would take.

Senator Sumner: (Indiscernible). You're saying now as well that there are many other things that may cause delay.

ADGER: The wellhead pricing thing could certainly cause delays.

Rep. Osterbock: I have a couple of questions that I would like to ask. Suppose that we give them $1.4 billion for the

AGO 668545

pipeline and a large part of the pipeline won't be in Alaska. Suppose Canada struck a big oil or gas flow there. What assurance would we have that we could still run our Alaska gas through that gas pipeline ...(indiscernible).

ADGER: The decision and the agreement between the United States and Canada is for a joint system that contemplates them hooking up McKenzie delta reserve to the system shortly after the Alaska gas reserve. The Alaska portion of the system is completed and in the agreement we made provisions for a higher capacity system between the portions of the system that would transport both Alaskan and Canadian gas volumes. That was a feature of the agreement and we will be a part of the system that's built. There will be extra capacity in the system for that part which carries Canadian gas.

Rep. Osterback: (Question Indiscernible) Trading North Slope royalty gas for Cook Inlet gas

ADGER: The State Department of Natural Resources has mentioned to us a scheme whereby the State would trade their North Slope royalty gas for Cook Inlet gas. And I just told you everything about it that I know. They have explored this, I guess, in a bit more detail and ought to be able to tell you what the benefits and costs associated with that are.

SENATOR RADER: Mr. Chairman. I don't have a question but, aside from the grilling, I want you to know that we

appreciate you coming here. We are really merely fishing for information, but we understand that you are here really at our invitation, and we appreciate that.

ADGER: Let me just say for all of us that we are delighted to have the opportunity to come up here. I wish I had ended up with more output but our mission in coming up was really an information gathering one. We came up at the invitation of the Executive Branch to discuss a whole range of mutual interests with them, and they suggested that we have a session with some of the important legislative people and I am delighted that you all had the time to spare.

CHAIRMAN MILES: Thank you very much.

(END OF MEETING)

AGO 668547

APPROXIMATE DISTRIBUTION OF BENEFITS AND COSTS FROM ALASKA HIGHWAY GAS PIPELINE ($ 1975, 2.4 BCF/D, 20 Yr. Average)

	Per 1000 cubic feet ($/MCF)	Annual Total (Millions $)
Market Value	$2.62	$2,295
- Federal Corporate Income Taxes	0.10	90
- State Corporate Income Taxes		
Alaska*	0.01	13
Other	neg.	4
- State Property Taxes		
Alaska*	0.05	46
Other	0.03	22
- Other Transportation Costs[1/] including cost overruns	0.84	736
= Prudhoe Bay Value	1.58	1,384
- Processing Costs	0.30	263
- 10% Severance Tax*[2/]	0.14	121
- 12½% Royalty*[3/]	0.16	140
= Producers Net Revenue	0.98	860
* Alaska Revenue Total	$0.37	$ 320

1/ $1.04/MCF total transportation costs, President's Report to Congress

2/ .10 X .875 X $1.58

3/ .125 X $1.28

AGO 668548

Alaskan Pipeline

THWESTALASKA
PELINE COMPAN

ALASKA HIGHWAY PIPELINE PROJECT

Alaska Financial Participation

Fact Sheet

BENEFITS TO ALASKA

Economic Benefits*

- Royalty Income of $10 Billion
- Severance Tax of $7 Billion
- Other Taxes (Ad Valorem and Income) of $1 Billion
- Total Royalties and Taxes (Including Taxes Related to Gas Processing Plant and Corporate Income Taxes Related to Sale of Gas) Would Exceed $20 Billion

25 years

*Amounts represent estimates of minimum benefits based on assumed production of 2 billion cubic feet of natural gas per day at a wellhead price of $1.45 per Mcf escalated at 6% per year over 25 years.

Employment Benefits

- During Construction Years 1979-1982 Jobs Created Will Range From 1,300 to Over 10,000
- Project Is Committed to Hiring Qualified Alaskans
- After Completion Project Will Employ a Permanent Staff in Alaska

Development Benefits

- Project Will Stimulate Further Development of Alaska's Natural Gas
- Project Will Allow for Distribution of Prudhoe Gas to Alaskan Communities Along the Route Thus Providing for Future Industrial Development

Indirect Benefits

- Housing, Communications, Transportation and Other Services Supporting the Project Will Provide Additional Employment and Revenues
- All Economic Benefits Will Be Multiplied as They Circulate Through State's Economy

NEED FOR FINANCIAL PARTICIPATION

- No New Energy Supply Will Be Financed on the Basis of Federal Government Guarantees
- Capital Funds to Be Raised on a Project Financing Basis - Cash Flow Generated From the Project Will Service Debt and Equity Requirements
- State's Participation Would Assist in Demonstrating to Financial Community that Project Is Economically Viable. A Negative Response Would Hinder Efforts to Develop Confidence in Private Capital Markets

HOW STATE CAN PARTICIPATE

- General Financing Plan Contemplates a Committed Pool of Capital Large Enough to Assure All Investors and Lenders that There Are Sufficient Funds to Complete the Project. Committed Pool of Capital Would Consist of Equity (Approximately 25%) and Remainder in Debt
- Project Encourages State's Financial Support in the Amount of $1.2 - $1.4 Billion Consistent With Support Previously Suggested by State for the El Paso Project, Adjusted for Inflation
- Commitment Would Include Purchases of Both Debt and Equity
- Project Also Plans to Offer Equity Participation to State's Citizens, Native Regional Corporations and Other State Organizations
- State Will Receive a Rate of Return on Its Investments Identical to All Other Lenders and Investors
- State's Commitment Will Not Be Binding Until All Capital Necessary to Assure Completion of the Project Has Been Committed
- Ultimate Backing for State's Participation Will Be Revenues Generated From the Project

STATEMENT OF JOHN G. MC MILLIAN
CHAIRMAN & CHIEF EXECUTIVE OFFICER, NORTHWEST ALASKAN PIPELINE COMPANY
BEFORE A JOINT MEETING OF THE HOUSE SPECIAL COMMITTEE
ON ROYALTY OIL AND GAS AND THE SENATE RESOURCES COMMITTEE
OF THE STATE OF ALASKA, JUNEAU, ALASKA
FEBRUARY 15, 1978

My name is John G. McMillian. I am Chairman and Chief Executive Officer of Northwest Alaskan Pipeline Company. As you know, our company, which was formerly Alcan Pipeline Company, has been selected by the President of the United States with the approval of Congress to design, construct and operate the Alaskan segment of the Alaska Highway Pipeline Project.

I'm very pleased to be here with you today and to have the opportunity to report on the status of our project and discuss ways in which we can work together to assure its success.

Since I was last in Alaska, several positive developments have taken place. Both the Canadian and the United States federal, state and provincial governments are continuing to demonstrate their commitments to the Project by organizing to expedite the Project's completion.

On December 16, 1977, the Federal Energy Regulatory Commission (FERC) issued Conditional Certificates of Public Convenience and Necessity to Northwest Alaskan Pipeline Company, Northern Border Pipeline Company and Pacific Gas Transmission Company, thereby clearing the way for us to move forward with our scheduled planning, design and engineering work. For example, our geotechnical exploration program, which will emphasize a great deal of field work in Alaska, is scheduled to begin about March 1, 1978. Plans are also underway for full-scale frost heave tests near Fairbanks and pipe burst tests in northwestern Alberta.

These two programs, which will begin late this year or early 1979, will be carried out in cooperation with U.S. and Canadian government agencies.

U.S. Federal agencies have commenced working together in order to develop the necessary plans that will allow for timely permitting and monitoring of construction. FERC has created a new Alaska Gas Project Office to facilitate the entire certification process and named John B. Adger, Jr. as Director. Mr. Adger's function is to assist in expediting the project by gathering necessary information required by the Commission to rule upon future applications for permanent certification. He will also represent the Department of Energy on the Executive Policy Board.

Also, over the last two months we have had a series of very positive meetings with Governor Jay Hammond and other officials of the State of Alaska. Our discussions have centered around such issues as Alaska local hire, use of the North Slope haul road and, of course, possibility of state participation in the financing of our project. We are pleased and encouraged by the cooperative spirit demonstrated by the State of Alaska and its officials.

On the Canadian front, legislation was introduced in the Canadian Parliament on February 3, 1978, to provide the approvals and centralization of authority necessary to permit the Project to go forward. Furthermore, Prime Minister Lougheed has indicated that the Province of Alberta is interested in participating in the financing of the Project.

Concurrent with the Government's efforts, our company is moving forward in

organizing the partnership group that will form the foundation for the equity financing of the Alaskan segment. In that regard, I am pleased to announce that final negotiations are currently underway with a number of the U.S. gas transmission companies, and we expect to announce the formation of this partnership within the next few weeks.

Now let me turn to the subject that brings all of us together - financing. I'd like to outline briefly why we want your support, the benefits to Alaska and her people that your support would produce, and the opportunity for investment by the State which would permit it to realize the same return that all other investors will receive.

The Need for Alaska's Participation

The capital for our Project will be raised on a project financing basis. That is, the Project will stand as an independent entity. The service for the Project's debt and the return to its equity investors will be provided by the cash flow generated by the Project.

This financing concept is different from that employed in connection with the Alyeska crude oil line. The financial strength of the U.S. gas transmission companies which will participate in the Project does not match that of the major oil companies involved with the crude line and therefore requires that funds be raised for the gas pipeline on a project financing basis. Successful utilization of this financing approach will be achieved by demonstrating the economic viability of the Project. We are confident this can be done.

Because the private capital markets must provide most of the financing, it

will be necessary to erase any doubts that may possibly exist and in turn generate a continuing interest in our Project. This can be accomplished best through education of the financial community and through your active and early commitment to participate in the Project.

The educational process already is under way. A team of the Project's managers and financial advisors is conducting a series of meetings with representatives of major financial institutions that focus on the many significant differences between our Project and the Alyeska line.

These include such vital factors as the existence of the haul road to the North Slope to provide access; the existence of the work pad which will be utilized wherever possible; the existence of camp facilities; and fewer major river crossings, including the now operating Yukon River bridge which can accommodate the gas pipeline. In other words, a basic infrastructure already exists. Major facilities now in place will simplify the preparation for construction of the gas pipeline.

The construction requirements will also be simplified. For example, the refrigerated buried gas pipeline will mean substantially fewer miles of insulation compared with the hot oil line. Also, most of the gas line will be buried as compared with about half of the oil pipeline. Consequently, the problems of providing structural support for the line and the frequency of going from above ground to below ground modes are avoided.

Construction experience is also an important factor. A number of pipeline contractors have benefited from the oil line experience are prepared to apply

that knowledge to our Project. This experience will materially improve efficiency and should reduce construction costs. These are but a few examples of the striking differences that will help us in planning and constructing the system.

The initial results of our educational efforts indicate that we are on the right track. However, we must now submit to the financial community tangible evidence of Alaska's conviction that our Project is economically sound and its construction fundamentally distinct from the Alyeska line.

Alaska's participation would demonstrate that you have recognized the differences between our Project and Alyeska's. Moreover, responsive and effective government involvement will help keep our Project on schedule and ensure its timely completion. Alaska's financial participation will not only serve to reassure the financial community, but it will also add an important element to the success of the Project.

Finally, given the very substantial financial benefits our Project would provide Alaska and the support that was suggested for the El Paso Project, a negative response from Alaska would seriously hinder our efforts to develop confidence in private capital markets.

threat

Benefits to Alaska

Let's now briefly review some of the benefits to Alaska and her people that would derive from timely completion of our gas line. These benefits can be classified as direct economic and employment benefits, indirect economic and employment benefits and development benefits.

Accordingly to our estimates, Alaska will receive the following direct

economic benefits: Approximately $10 billion in royalty income over 25 years; approximately $7 billion in severance taxes over 25 years; and approximately $1 billion from other taxes, including ad valorem and income taxes. Total royalties and taxes (including taxes in connection with the gas processing plant as well as corporate income taxes related to the sale of gas) would substantially exceed $20 billion for this Project.

It should be noted that these are only minimum benefit estimates, based on production of 2 billion cubic feet of gas per day at a wellhead price of $1.45 mcf per thousand cubic feet escalated at 6% per year.

Now let's look at direct employment benefits. During construction of the Project from 1979-1982, the number of jobs created will range from 1,300 to more than 10,000. The Project is committed to hiring qualified Alaskans; and after its completion, the Project will employ a permanent staff in Alaska.

Indirect economic and employment benefits include the various other services necessary to support the Project. These services will provide Alaska with additional employment and revenue stemming from housing, communications, transportation, etc. Also, all of the benefits directly and indirectly related to the Project will be multiplied as they circulate through Alaska's economy.

With respect to development benefits, our Project will stimulate further exploration and development of Alaska's natural gas, and it will allow for the distribution of Prudhoe gas to Alaskan communities along the pipeline route, thus providing an energy supply for future industrial development.

In summary, we believe our Project generates substantial and continuing

economic benefits for Alaska. By providing early financial support for the Project, Alaska would accelerate the realization of these benefits. If the Project is not built, none of the benefits will be realized by the State.

How Alaska Can Help

Before discussing how Alaska can support the Project, let me state that the position of the current administration in Washington, D.C. is that no major new energy project will be financed on the basis of Federal guarantees. This includes LNG projects, coal gasification projects, SNG projects and nuclear projects as well as our gas pipeline.

As mentioned previously, funds for the Project will be raised on a project financing basis. Our general financing plan contemplates a committed pool of capital sufficiently large to assure all investors and lenders that there are sufficient funds to complete the Project. This committed pool of capital would consist of equity (approximately 25%) and the remainder in debt.

Most of the equity component of this pool will be invested by gas transmission companies. However, we welcome equity participation by the State of Alaska as well as her citizens, native regional corporations and other organizations.

Most of the Project's debt financing will be provided by the private capital markets, principally banks and insurance companies. However, we expect that the Project's major beneficiaries also will participate in this segment of the financing.

Now let's get specific: The Project encourages Alaska's financial support in the amount of $1.2 - $1.4 billion. This commitment would include purchases of both debt and equity and is consistent with the support the State suggested for the

El Paso Project, adjusted for inflation.

Alaska's commitment will be limited to a fixed amount.

Alaska will receive a rate of interest on its debt purchase and a return on its equity investment identical to those received by any other investor.

Alaska's commitment will not be binding until all of the capital necessary to assure completion of the Project has been committed.

The ultimate backing for Alaska's financial participation will be revenues generated from the Project, including gas royalties and severance, ad valorem and income taxes. Interim backing could come from a number of different sources. The Project's financial and legal advisors are examining the alternatives, and we hope to discuss these with you in subsequent meetings.

We hope that by appearing here today we have helped bring about a better understanding of the economics and employment benefits of our Project that will accrue to the State of Alaska and its people. We are looking forward to cooperating with you during this legislative session to achieve a form of participation in our Project that will be to our mutual benefit and assist its timely completion.

Finally, on behalf of all of us who are working on the Project I wish to thank you for this opportunity to meet with you today. At this time we'll be happy to try to answer your questions.

Thank you.

HOUSE CALENDAR

OFFICIAL BUSINESS OF THE HOUSE

FIFTY-THIRD DAY

Thursday

March 2, 1978
Convenes: 10:00 a.m.

Chaplain: Reverend Robert McNabb
United Methodist Church

SECOND READING OF HOUSE BILLS

HB 642 "An Act making a special appropriation to the mortgage insurance fund of the Alaska Housing Finance Corporation; and providing for an effective date."
(State Affairs report w/CS (same title), p. 162, 1978 journal;
Finance report w/CS (Finance) (same title), p. 373, 1978 journal)

HB 744 "An Act making a supplemental appropriation to the Department of Natural Resources for the Iditarod Trail Race; and providing for an effective date."
(State Affairs report, p. 416, 1978 journal;
Finance report, p. 435, 1978 journal)

ANNOUNCEMENTS

Republican Luncheon Senator Tillion, Speaker	Sally's Kitchen	Noon March 2
U of A Alumni Association Board of Directors Cocktail Party	Gold Room	6-7:30 p.m. March 2

Committee Announcements on back -- Subject to change

AGO 668559

SENATE CALENDAR

OFFICIAL BUSINESS OF THE SENATE

THURSDAY March 2, 1978
10:00 a.m.

Chaplain: Father John Larsen, Church of the Holy Trinity

FIFTY-THIRD LEGISLATIVE DAY

HB 613 Supplemental appropriations to Department of Labor, workmen's compensation & local hire
(Labor & Man. report pg 222,
Finance offered SCS (new title) pg 327)

SPECIAL BUSINESS- For Friday Calendar - March 3, 1978

Legislative Citation (Senate) - Commending the Metlakatla Chiefs
by Senator Ziegler

AGO 668560

Original sponsors: Meekins, Dankworth, Gruening, et al

Offered: 2/22/78
Referred: Rules

IN THE HOUSE BY THE FINANCE COMMITTEE

CS FOR HOUSE BILL NO. 642 (Finance)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making a special appropriation to the mortgage insurance fund of the Alaska Housing Finance Corporation; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $1,720,000 is appropriated from the general fund to the mortgage insurance fund of the Alaska Housing Finance Corporation for the period beginning with the effective date of this Act and ending December 30, 1978 to be paid to the mortgage insurance fund in the amounts requested by the corporation as necessary in connection with the issuance of insured mortgage program bonds of the corporation.

* Sec. 2. This Act takes effect immediately in accordance with AS 01.10.-070(c).

AGO 668561

Original sponsors: Meekins, Dankworth, Gruening, et al

Offered: 1/27/78
Referred: Finance

IN THE HOUSE BY THE STATE AFFAIRS COMMITTEE

CS FOR HOUSE BILL NO. 642

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making a special appropriation to the mortgage insurance fund of the Alaska Housing Finance Corporation; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The legislature wishes to recall that the serious shortage of residential housing available to persons of lower and moderate incomes in remote, underdeveloped or blighted areas which motivated the creation of the Alaska Housing Finance Corporation still exists. Accordingly, the legislature directs that all appropriations are to be used with strict regard to the purposes expressed in AS 18.56.010.

* Sec. 2. The sum of $1,720,000 is appropriated from the general fund to the mortgage insurance fund of the Alaska Housing Finance Corporation for the period beginning with the effective date of this Act and ending December 31, 1978 to be paid to the mortgage insurance fund in the amounts requested by the corporation as necessary in connection with the issuance of insured mortgage program bonds of the corporation.

* Sec. 3. The sum of $2,880,000 is appropriated from the general fund to the mortgage insurance fund of the Alaska Housing Finance Corporation for the period beginning July 1, 1978 and ending December 31, 1979 to be paid to the mortgage insurance fund in the amounts requested by the corporation as necessary in connection with the issuance of insured mortgage program bonds of the corporation.

* Sec. 4. Sections 1 and 2 of this Act take effect immediately in accordance with AS 01.10.070(c). Section 3 of this Act takes effect July 1, 1978.

Introduced: 1/17/78
Referred: State Affairs and Finance

BY MEEKINS, DANKWORTH, GRUENING, HAYES, LETHIN, MALONE, OSTERBACK, PHILLIPS, RHODE, SNIDER AND SWANSON

IN THE HOUSE

HOUSE BILL NO. 642

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making a special appropriation to the mortgage insurance fund of the Alaska Housing Finance Corporation; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $1,720,000 is appropriated from the general fund to the mortgage insurance fund of the Alaska Housing Finance Corporation for the period beginning with the effective date of this Act and ending December 30, 1978 to be paid to the mortgage insurance fund in the amounts requested by the corporation as necessary in connection with the issuance of insured mortgage program bonds of the corporation.

* Sec. 2. The sum of $2,880,000 is appropriated from the general fund to the mortgage insurance fund of the Alaska Housing Finance Corporation for the period beginning July 1, 1978 and ending December 31, 1979 to be paid to the mortgage insurance fund in the amounts requested by the corporation as necessary in connection with the issuance of insured mortgage program bonds of the corporation.

* Sec. 3. Section 1 of this Act takes effect immediately in accordance with AS 01.10.070(c). Section 2 of this Act takes effect July 1, 1978.

AGO 668563

Introduced: 2/7/78
Referred: State Affairs and Finance

BY NAKAK, AKERS, BUCHHOLDT, COTTEN, COWPER, DUNCAN, GUY, LETHIN, MCKINNON, MALONE, MILES, MILLER, OSE, OSTERBACK AND SNIDER

IN THE HOUSE

HOUSE BILL NO. 744

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making a supplemental appropriation to the Department of Natural Resources for the Iditarod Trail Race; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $20,000 is appropriated from the general fund to the Department of Natural Resources for support of the Iditarod Trail Race to be expended upon recommendation for expenditure by the Iditarod Trail Committee, Inc., for the fiscal year ending June 30, 1978.

* Sec. 2. This Act takes effect immediately in accordance with AS 01.10.-070(c).

AGO 668564

Alaska State Legislature

SENATE CALENDAR

OFFICIAL BUSINESS OF THE SENATE

THURSDAY March 2, 1978
10:00 a.m.

Chaplain: Father John Larsen, Church of the Holy Trinity

FIFTY-THIRD LEGISLATIVE DAY

HB 615 Supplemental appropriations to Department of Labor, workmen's compensation & local hire
(Labor & Man. report pg 222,
Finance offered SCS (new title) pg 327)

SPECIAL BUSINESS- For Friday Calendar - March 3, 1978

Legislative Citation (Senate) - Commending the Metlakatla Chiefs
by Senato Ziegler

AGO 6618565

Original sponsor: Rules Committee by Request of the Governor

Offered: 2/23/78
Referred: Rules

IN THE HOUSE BY THE FINANCE COMMITTEE

SENATE CS FOR HOUSE BILL NO. 613

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making supplemental appropriations to the Department of Labor; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $39,300 is appropriated from the general fund to the Department of Labor for the purpose of fiscal year 1978 supplements to permanent injury weekly wage compensation benefits.

* Sec. 2. The sum of $110,000 is appropriated from the general fund to the Department of Labor for the purpose of providing enforcement of the Alaska Local Hire Act.

* Sec. 3. The sum of $4,000 is appropriated from the general fund to the Department of Labor for fiscal year 1978 for the purpose of providing employment offices in Petersburg and Tok.

* Sec. 4. This Act takes effect immediately in accordance with AS 01.10.-070(c).

AGO 668566

Original sponsor: Rules Committee by Request of the Governor

Offered: 1/23/78
Referred: Rules

IN THE HOUSE BY THE FINANCE COMMITTEE

CS FOR HOUSE BILL NO. 613

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making supplemental appropriations to the Department of Labor, workmen's compensation, local hire and second injury fund; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $39,300 is appropriated from the general fund to the Department of Labor for the purpose of fiscal year 1978 supplements to permanent injury weekly wage compensation benefits.

* Sec. 2. The sum of $110,000 is appropriated from the general fund to the Department of Labor for the purpose of providing enforcement of the Alaska Local Hire Act.

* Sec. 3. The sum of $70,130 is appropriated from the general fund to the Department of Labor, second injury fund, for the purpose of contributing to a lump sum settlement for injuries to Peter J. Tremont.

* Sec. 4. This Act takes effect immediately in accordance with AS 01.10.-070(c).

AGO 668567

Introduced: 1/11/78
Referred: Labor & Management and Finance

IN THE HOUSE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

HOUSE BILL NO. 613

IN THE LEGISLATURE OF THE STATE OF ALASKA

TENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making supplemental appropriations to the Department of Labor, workmen's compensation and local hire; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $39,300 is appropriated from the general fund to the Department of Labor for the purpose of FY 78 supplements to permanent injury weekly wage compensation benefits.

* Sec. 2. The sum of $110,000 is appropriated from the general fund to the Department of Labor for the purpose of providing enforcement of the Alaska Local Hire Act.

* Sec. 3. This Act takes effect immediately in accordance with AS 01.-10.070(c).

AGO 668568

SCOMM
#21:34

Sen. Rader

PROPOSED

EXCESS ROYALTY RESIDUE GAS

SALES AGREEMENT

AGO 668346

Dois D. Dallas
705 A Tanana Drive
University of Alaska
Fairbanks, Alaska 99701

January 26, 1977

Representative Clark Gruening
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Representative Gruening:

It was most gratifying to hear you discuss the royalty gas question on T.V. last night. The contract as now written is certainly open to criticism by our sister 48 states. You pointed out that this could embarrass us and we readily agree.

We have prepared a revised contract (a copy of which is enclosed) which accomplishes what you have suggested. Under this revision, the state would sell to these companies only the excess residue gas (methane) from a gas processing plant. The state would retain title to the valuable liquid products and sell them separately, but not at the low FPC regulated price for methane.

We are looking forward to meeting you at the hearings in Juneau next week.

Very truly yours,

Dois D. Dallas

Dois D. Dallas

xc: Senator John Rader
Representative Carpenter
R. H. Dempsey
Enclosure

AGO 668347

PROPOSED

EXCESS ROYALTY RESIDUE GAS SALES AGREEMENT

January 9, 1977

DOIS D. DALLAS

R. H. (BOB) DEMPSEY

AGO 668348

705A TANANA DRIVE
FAIRBANKS, ALASKA 99701

January 5, 1977

Representative Larry Carpenter
403 Lignite
Fairbanks, Alaska 99701

Dear Representative Carpenter:

We have had an opportunity to study the material you forwarded to us on December 8, 1976. This material included the proposed Royalty Gas Sales Agreement, Commissioner Martin's statement to the Royalty Board, and other miscellaneous items relative to the sale of Alaska's share of the Prudhoe gas.

We have prepared and are enclosing what we believe to be essential revisions to this contract. It is inconceivable that officials supposedly would present to the legislature a proposed gas sales agreement which does not specifically "exclude" at least enough methane and propane to satisfy the needs of the residential and commercial users in Fairbanks and the North Star Borough where roughly 20% of the population of the State of Alaska resides. Further, it is also inconceivable that they would present a proposal which would allow the ethane, propane, butane and pentanes plus to be sold at the same price per BTU as methane. In the words of one petrochemical company representative, these products (ethane and propane) are "real gems". Hopefully, you will be instrumental in getting the legislature to make the revisions we have recommended.

It would appear that the State has made no positive plans to solicit bids for a petrochemical complex in the Fairbanks area. Under our recommendation this would become mandatory.

It should also be pointed out that under our proposal the State's royalty gas would still be delivered to the Fairbanks area even if the arctic route is eventually selected by the Federal Government. A study we have made indicates that the Fairbanks proposal is feasible.

We fully realize that our proposal constitutes a major revision in the State's Royalty Gas Sales Agreement and the three gas transmission companies favored in this agreement may no longer be interested if the contract is revised according to our recommendation. If so, other companies will be interested and the dollar loss to the State of Alaska by not revising the contracts advanced to the Royalty Board on November 22, 1976 by the Commissioner of Natural Resources will approach one (1) billion dollars.

We will be more than happy to assist you or other members of the legislature in any way possible as you give further consideration to this question.

Very truly yours,

Dois D. Dallas

Robert H. Dempsey

AGO 668349

STATEMENT

The State of Alaska has entered into an agreement to sell its Royalty Gas from the Prudhoe Bay field. The stated purpose of this agreement was to gain support for the All-Alaskan (El Paso) route.

There is no intent in our work to criticize the State's motives, only the methods used. Quite frankly we believe a brief, uncomplicated and well thought out political document could have accomplished the State's end. One which would have set levels of performance for prospective buyers in the political arena, and reward their efforts if successful with a first option to negotiate for our Royalty Gas.

The State, however, chose to use a contract to achieve these ends and in doing so, we believe has come up short. We have, using the same format, modified and inserted what we believe to be necessary safeguards for the State in dealing with the sale of Royalty Gas.

ABSTRACT - IMPORTANT REVISIONS CONTAINED IN "PROPOSED EXCESS ROYALTY RESIDUE GAS" SALES AGREEMENT

	CHANGE	EXPLANATION
GENERAL		
(1)	"Gas" to "Residue Gas"	This makes it mandatory now (not at some future possible time) to remove the valuable liquids and LPG (Propane, Butane, and Pentanes, plus)
(2)	"Royalty Gas" to "Excess Royalty Residue Gas"	This change accomplishes two essential factors: 1. Sells only excess residue gas not needed for petrochemical production in Alaska. 2. The valuable liquids and ethane will not be sold at the low controlled price for methane.
New Definitions	ADD: "Residue Gas" "Excess Royalty Residue Gas" "Acid Gas"	These definitions are needed to clearly establish what is being sold.
SPECIFIC		
(1)	Paragraph 1.2, 1.3	These two sections emphasize that nothing in this agreement will adversely affect the intrastate u or sale of the liquefiable hydrocarbons or export of same.
(2)	Section 3.1	Introduces a gasoline plant.
(3)	Section 3.4	Changes 24 months to 12 months the time the state has to wait to change volumes of residue gas it wants to use in Alaska.

(4)	Section 3.5 adds petrochemical to in state use and deletes "reserved gas". Also Section 7.1, General Terms and Conditions.	Since under this revised contract the state sells only its excess royalty residue gas there is no need to include "reserved gas".
(5)	This change deletes Sections 3.7 (a) and (d)	There is no reason for the state to commit "yet undiscovered gas reserves" to these or any other "bonafide interstate purchasers".
(6)	This change deletes Sections 3.10 and 3.11	There appears to be something hidden in this Section 3.10. The FPC will control what is "reasonable" in this area. Section 3.11 concerns reserved gas which is now deleted.
(7)	Delete a portion of Section 4.2	If Buyer is required to accept the State's gas where the state receives it then there is no reason to include any other consideration for "reserved" gas which is now deleted.
(8)	Section 4.4 located the gasoline plant near Fairbanks	If a gasoline plant is located near Fairbanks and all the liquids are removed leaving only methane and a small amount of ethane then it follows that a petrochemical complex will of necessity be constructed in the general area and further that some of the residue gas may also be needed for the manufacture of petrochemicals.
(9)	Section 5.1 ties the heating content to 1000 Btu (equivalent) exclusive of "acid gas".	Specifying the quality to the "raw gas" specifications for the working interest owners is (or could be) detrimental to Alaska.

(10)	Section 6.2 deals with price as set by the FPC	This change adds a statement about arm's length agreement which protects the State of Alaska from the possibility of sister company type agreements.
(11)	Article IX concerns the state's reservation	Since under this contract revision the state will be selling only its excess residue gas there is no reason to talk about "reservation".
(12)	Adds to section 10.1 (old section 11.1) a statement about a separate line if the governments selection does not bring the gas to at least Fairbanks	This change gives the buyer the option of building a separate line to Fairbanks if the arctic route is selected but if it does not want to build the separate line then the contract is terminated and the state is free to contract with anyone else to build a separate line to Fairbanks.

P R O P O S E D

EXCESS ROYALTY RESIDUE GAS SALES AGREEMENT

THIS AGREEMENT, made and entered into as of this _____ day of _____, 197 , by and between the Commissioner of Natural Resources of the STATE OF ALASKA, acting pursuant to AS 38.05.183(d), hereinafter referred to as "Seller", and Tenneco Alaska, Inc., an Alaskan 1/ corporation, hereinafter referred to as "Buyer";

WITNESSETH:

WHEREAS, Seller hereby represents to Buyer that Seller has the right under each of the leases identified in Exhibit A to this Agreement to be paid by the lessee thereunder a royalty of twelve and one-half percent (12.5%), unless otherwise stated in Exhibit A, in-kind (amount) or in value of the natural gas produced and saved and sold or used off of the lands covered by each such lease; and

WHEREAS, Seller hereby represents to Buyer that under each of the leases identified in Exhibit A to this Agreement Seller has reserved the right to elect to take either in-kind (amount) or in value its royalty gas; and

WHEREAS, Seller represents to Buyer that Seller is authorized by AS 38.05.183(d) to sell royalty gas surplus to the intrastate domestic and industrial needs of the State of Alaska; and

WHEREAS, Buyer represents to Seller that it is or will be a natural gas company subject to the jurisdiction of the Federal Power Commission and desires to purchase residue gas from Seller so as to increase the supply of residue gas available to its customers or its affiliated pipeline companies in the contiguous 48 states; and

WHEREAS, Seller desires to sell excess royalty residue gas to Buyer and Buyer desires to purchase excess royalty residue gas from Seller under the terms and upon the conditions hereinafter set forth; and

WHEREAS, Buyer and Seller each desire certification and construction of a trans and/or interior Alaska gas pipeline system for movement of natural gas from Prudhoe Bay, Alaska to the contiguous 48 states;

NOW, THEREFORE, in consideration of the representations, covenants, and conditions herein contained, Seller and Buyer hereby agree as follows:

ARTICLE I

SUPPORT FOR TRANS AND/OR INTERIOR ALASKA PIPELINE

1.1 In consideration of the obligations assumed by each, herein, Buyer and Seller agree to actively support and seek before the Federal Power Commission, and any and all other involved federal, state and local authorities, representatives and individuals, the ultimate selection and implementation of a trans and/or interior Alaska gas pipeline system. "Pipeline" shall mean a large diameter gas pipeline (including expansion thereof) commencing at Prudhoe Bay, crossing Alaska in

approximately the same route as the present Trans-Alaska Oil Pipeline, with gasoline plant access at a point no closer than ten miles or more than 25 miles from Fairbanks, Alaska. From Fairbanks, Alaska, the pipeline route will be as designated by the Federal Power Commission unless the arctic route is selected by the Federal Power Commission, in which case Section 10.1 will apply.

1.2 Buyer and Seller, given the considerations as set forth in Article I, Section 1.1, agree that no article, provision, or section of this agreement shall in any way adversely affect the use, sale, or disposal of liquefiable hydrocarbons and non-excess gas as may be necessary for intrastate domestic, commercial, or industrial use of said liquids and gas.

1.3 Both parties further agree that no article, provision, or section of this agreement shall adversely affect the use, sale, disposal or export of any products resulting from the processing of or manufacturing from said liquefiable hydrocarbons or gas.

new paragraphs

ARTICLE II

SELLER'S ROYALTY GAS

2.1 Seller warrants that under the leases identified in Exhibit A of this Agreement, Seller has the right to take its royalty natural gas in-kind which amount it represents is twelve and one-half percent (12.5%), unless otherwise stated in Exhibit A, and agrees that it will exercise this right at the time sufficient to deliver gas to Buyer on the date the pipeline is ready to receive

gas. If the laws, rules or regulations of the United States of America, or any agency thereof, prevent Seller from exercising its right to take its royalty gas in-kind, this Agreement shall be void.

2.2 In addition to the price as provided in Article VI hereof, Buyer shall reimburse Seller for Buyer's pro rata share of any costs attributable to the preparation and transportation of gas to be delivered hereunder which costs Seller may incur as a result of Seller's election to take its royalty gas in-kind and which costs would not have been incurred by Seller if Seller had not elected to take its royalty gas in-kind. Seller shall use its best efforts to minimize any costs incurred by Seller by reason of Seller's taking royalty gas in-kind, such best efforts shall include but not be limited to litigation in cooperation with Buyer to the extent necessary to contest the imposition of unwarranted and/or improper charges.

2.3 In the event Buyer is unable to obtain approval of the Federal Power Commission (or any successor governmental agency having jurisdiction in the premises) to include in Buyer's cost of service the costs Buyer is obligated to pay Seller under Section 2.2 herein, Buyer may terminate this Agreement six (6) months after receipt by Seller of written notice of Buyer's termination notice; provided, however, that any costs identified in Section 2.2 herein becoming due and payable by Seller prior to termination of this Agreement shall be reimbursed to Seller by Buyer regardless of approval of the Federal Power Commission to

AGO 668357

include such costs in Buyer's cost of service.

ARTICLE III

QUANTITY

3.1 Subject to the terms and conditions set forth in this Agreement, Seller hereby agrees to sell and deliver or cause to be delivered to Buyer and Buyer hereby agrees to purchase and receive or cause to be received from Seller on each day commencing with the date of first delivery hereunder and continuing during the term of this Agreement, fifty percent (50%) 2/ of Seller's excess royalty residue gas available at Buyer's gasoline plant.

3.2 It is agreed that the base volume of residue gas to be sold by Seller and purchased by Buyer during the term of this Agreement Delete may be less than but under no conditions shall it be in excess of one (1) trillion, three hundred (300) billion cubic feet. 3/

3.3(a) Commencing on the date of first delivery of excess royalty residue gas hereunder and continuing each day thereafter until the fifth (5th) anniversary date thereof, Seller shall have the right to reduce the quantity of excess royalty residue gas otherwise available for sale and delivery to Buyer under Section 3.1 above up to and including twenty-five percent (25%).

3.3(b) Commencing on the fifth (5th) anniversary date of first deliveries and

AGO 668358

and continuing each day thereafter until the tenth (10th) anniversary date thereof, Seller shall have the right to reduce the quantity of excess royalty residue gas available for sale and delivery to Buyer as set forth in Section 3.1 by up to and including fifty percent (50%).

3.3(c) Commencing on the tenth (10th) anniversary date of first deliveries and continuing each day thereafter until the fifteenth (15th) anniversary date thereof, Seller shall have the right to reduce the quantity of excess royalty residue gas available for sale and delivery to Buyer as set forth in Section 3.1 by up to and including seventy-five percent (75%).

3.3(d) Commencing on the fifteenth (15th) anniversary date of first deliveries and continuing each day thereafter until termination of this Agreement, Seller shall have the right to reduce the quantity of excess royalty residue gas available for sale and delivery to Buyer as set forth in Section 3.1 by up to and including one hundred (100%) percent.

3.3(e) Reductions by Seller of the quantity of excess royalty residue gas as provided in this Section 3.3 shall not become effective prior to twelve months following Seller's written notice to Buyer thereof.

3.4 Buyer agrees that Seller shall have the right and power at any time during the term of this Agreement to change the percentages set forth in Subsections 3.3(a), 3.3(b), 3.3(c), and 3.3(d) above; provided, however, that no such change

or changes shall become effective prior to twelve (12) months following Seller's written notice to Buyer thereof.

3.5 The reservation of residue gas by Seller by way of its exercising its rights of gas reductions pursuant to Sections 3.3 and 3.4 hereof shall be for the sole purpose of Seller meeting the intrastate domestic, industrial, and petrochemical needs of the State of Alaska. Delete

3.6 Seller agrees that reservations similar to those available to Seller under Sections 3.2, 3.3, 3.4 and 3.5 shall be made in any contract providing for the sale of Seller's excess royalty residue gas from the leases identified in Exhibit A under contract for sale outside of Alaska and that the changes, up or down, in the amount of residue gas reserved for use in Alaska, pursuant to this article shall be made ratably from all such contracts.

Delete 3.7 A+B

3.7 Buyer hereby acknowledges that at any time after the effective date of this Agreement and prior to the date of first deliveries hereunder, Seller shall have the right and power to initiate the taking of its excess royalty residue gas in-kind under the leases identified in Exhibit A hereto and to utilize, market or otherwise dispose of all or any portion of said excess royalty residue gas in any manner as Seller in its sole discretion, and at its sole expense, may determine; provided, however, that Seller agrees that any such arrangement shall not prevent Seller from making available for sale to Buyer on the date of first deliveries the quantity of residue gas committed to Buyer hereunder and not reserved by Seller pursuant to Sections 3.3 and 3.4.

3.8 Seller will provide Buyer at the beginning of each calendar year its best estimate of volumes under this Agreement which will be available during each calendar year of the next succeeding five (5) calendar years. This estimate shall not constitute the notices required by Subsection 3.3(e) and Section 3.4.

ARTICLE IV

DELIVERY POINT(S) AND DELIVERY PRESSURES AND GASOLINE PLANT

4.1 Delivery of Seller's royalty gas shall be at the point(s) the working interest owners of the leases identified in Exhibit A make delivery of gas to their purchasers or at any other point mutually agreed upon by the parties hereto.

4.2 Should Seller be required to take delivery of its royalty gas from the working interest owners of the leases described in Exhibit A at a point upstream from the delivery point as determined in Section 4.1 after exerting its best efforts to receive such gas at the delivery point as determined in Section 4.1, Buyer shall accept delivery at the point Seller receives its royalty gas.

Delete

4.3 Residue gas sold and delivered by Seller to Buyer hereunder shall be received by Buyer at the delivery point at the same pressure as the pressure the working interest owners deliver their residue gas to their purchasers, or at the pressure Seller receives its gas from the working interest owners if delivery is made under Section 4.2 hereof.

AGO 668361

4.4 Buyer will construct and operate a gasoline plant at a point not closer than ten miles or more than 25 miles from Fairbanks, Alaska. Such gasoline plant will be capable of processing at least .3 mmmcf of gas per day. All liquefiable hydrocarbons obtained by processing gas through the gasoline plant shall be placed in storage to be erected by buyer at the plant site and shall be of sufficient capacity to contain a ten day supply. Ownership of all liquefiable hydrocarbons shall remain with the seller, however nothing in this Agreement will prevent the buyer from bidding for the purchase of the liquefiable hydrocarbons and non-excess methane for use in intrastate, domestic, industrial, and/or a petrochemical industry in Alaska. Ownership of such methane as may be required in intrastate, domestic, industrial, and/or a petrochemical industry in Alaska will remain with the seller and shall be delivered to the Seller at the tail gate of the gasoline plant. Any excess royalty residue gas shall be sold to buyer(s) in accordance with section 6.1. Seller will allow buyer to deduct a processing and transportation charge of 13(?) ¢ per gallon for all liquefiable hydrocarbons removed and 46.2¢ per mcf for all non-excess residue gas retained by Seller, or if there is a net deficiency owed by the Buyer to the Seller then the Seller will remit to the Buyer the deficiency.

amend paragraph

ARTICLE V

QUALITY

5.1 The residue gas to be delivered by Seller to Buyer at the delivery point(s) hereunder shall have a heating content of not less than one thousand (1000) British Thermal Units per cubic foot excluding any acid gas remaining in the excess gas stream.

amend para

AGO 668362

ARTICLE VI

PRICE

6.1 Buyer and Seller recognize that as of the date of this Agreement the price which Buyer may be allowed to pay and include in its jurisdictional resale rates has not been determined. In consideration thereof, the price which Buyer shall pay Seller for residue gas purchased hereunder shall be determined in accordance with Section 6.2 or Section 6.3 or Section 6.4 or Section 6.5 and shall be subject to the adjustment as provided by Section 6.6, however, the price paid Seller for residue gas which Buyer reflects in its rates to jurisdictional customers shall never be higher than the price Buyer is permitted to retain in its jurisdictional resale rates as long as such rates are subject to regulation by the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises).

6.2 Seller represents that Seller is not a "Person" as defined in the Natural Gas Act and therefore not subject to the provisions of said Act. Buyer is a natural gas company subject to the regulations of said act. If at the time of first deliveries of gas hereunder the price of residue gas purchased hereunder is subject to the regulation of the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises) because of the Commission's authority to regulate the rates at which Buyer resells such gas, then the initial price to be paid by Buyer to Seller hereunder shall be the highest area, national or ceiling rate allowed to be paid by any interstate gas purchaser to any working interest owner in the leases identified in Exhibit A under contracts

AGO 668363

of at least fifty (50) billion cubic feet and providing for substantially the same quality and conditions of delivery as in this Agreement, providing, however, that Seller reserves the right to make an independent determination as to the arm's length validity of transactions between any interstate gas purchaser and any working interest owner in the leases identified in Exhibit A. If such transaction is not at arm's length then the price paid to Seller will be determined by arbitration. (See Section 7.1) The price to be paid thereafter shall be subject to all periodic changes permitted in accordance with the applicable and governing portions of the Rules and Regulations of the Federal Power Commission, (or any successor governmental authority having jurisdiction in the premises), or such other changes in price as may be permitted by any new area, national or ceiling rates applicable to the gas sold under the leases identified in Exhibit A, which may subsequently be established. Such price shall include all applicable adjustment provisions prescribed or permitted; provided, however, such price adjustment provisions which relate to charges for which Seller is reimbursed pursuant to Article II hereof shall be excluded. If Buyer is subsequently unable to obtain approval of any portion of such price in Buyer's cost of services and and required to refund that portion of such price to its customers, Seller shall refund such portion of the price to the Buyer, and at the sole option of the Seller this contract may then be terminated. In the event gas sold by a producer or producers from the leases identified in Exhibit A is permitted a price higher than the area, national or ceiling rates, under Federal Power Commission regulations related to Optional Pricing, Temporary or Emergency Sales, Commission Order Nos. 481 or 533, as amended, or to other similar regulations or orders, then the

AGO 668364

price paid for Seller's excess royalty residue gas attributable to such production will be increased to that higher price, corrected only for Btu adjustments. In no instance shall the price paid Seller on a Btu basis be less than the price paid producers for their gas from the same reservoir for same or similar sales in interstate commerce.

6.3 If at the time of first deliveries of residue gas hereunder the price of gas sold from the leases identified in Exhibit A is not regulated by the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises), then the initial price for residue gas delivered hereunder shall be the highest price being paid by any interstate gas purchaser for gas under contracts of at least fifty (50) billion cubic feet and providing for substantially the same quality and conditions (adjusted for Btu content only) of delivery as in this Agreement and produced from the leases identified in Exhibit A.

6.4 If the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises) shall at any time after commencement of the first delivery cease (after commencing) to regulate the price applicable to natural gas of any vintage produced from the leases identified in Exhibit A and sold in interstate commerce, which deregulation would prevent the Federal Power Commission from excluding the price Buyer pays under this Agreement from its cost of service and would have applied to Seller had Seller been subject to governmental regulation, then upon notice of written election given

AGO 668365

by Seller or Buyer to the other not later than sixty (60) days after the effective date of such deregulation, the price of residue gas sold by Seller to Buyer hereunder shall be redetermined in accordance with the provisions of Section 6.5.

The redetermined price shall be agreed to by the parties and become effective within ninety (90) days after the notice has been given as aforesaid, or if the parties shall fail to agree, the redetermined price shall be established by arbitration. The redetermined price shall remain in effect until later changed in accordance with the pricing provisions of this Agreement.

6.5 Seller or Buyer shall have the option to cause the price being paid for the residue gas sold hereunder to Buyer to be redetermined every twelve (12) months, such to be effective on the anniversary of such redetermination under Section 6.4 hereof. The request for a price redetermination shall be given in writing not later than one hundred twenty (120) days prior to the beginning of the period for which the price redetermination is requested.

Within the same one hundred twenty (120) days following such request for a price redetermination, the parties shall meet to redetermine such price. Such redetermination price shall be the higher of (1) the highest price being paid for residue gas sold in interstate commerce from the North Slope of Alaska set out in a contract selling at least fifty (50) billion cubic feet executed in the one (1) year period immediately preceding said notice and providing for substantially the same quality and conditions (adjusted for Btu content only) of delivery and having a term of at least five (5) years, or (2) the highest price being paid under a renegotiation or price redetermination clause of any contract for residue gas sold in interstate

commerce from the North Slope of Alaska selling at least fifty (50) billion cubic feet and providing for substantially the same quality and conditions (adjusted for Btu content only) of delivery and having a term of at least five (5) years. In the event there are no comparable contracts executed in the one (1) year period, or no contracts under which the price has been renegotiated or redetermined, the parties shall meet to agree upon a price. If the parties are unable to agree, the matter shall be submitted to arbitration as provided in Article VII.

It is agreed that the parties shall have the full one hundred twenty (120) days to reach voluntary agreement on the redetermined price. However, at any time after negotiations have been in process more than thirty (30) days but less than one hundred twenty (120) days, either party may request in writing that the matter be submitted to arbitration as provided in Article VII of this Agreement.

A redetermined price established by artbitration shall become effective as of the later of (1) the date the Board renders its decision, or (2) one hundred twenty (120) days after the giving of notice of the request for a price redetermination.

In no event shall the redetermined price be less than the price being paid to Seller by Buyer immediately preceding the initial redetermination.

6.6 If it is found upon tests that the residue gas being delivered hereunder shall have a gross heating value of more or less than one thousand (1000) British

thermal units per cubic foot, then the price payable for such residue gas shall be increased or reduced. Such increased or reduced price shall be determined by multiplying the price otherwise payable for such residue gas by a fraction the numerator of which is the actual gross heating value of the residue gas delivered, expressed in British thermal units per cubic foot, and the denominator of which is one thousand (1000).

ARTICLE VII

ARBITRATION

7.1 In the event either party shall request arbitration of any dispute arising under this Agreement, there shall be established a board of three (3) arbitrators to be selected as follows: either Seller or Buyer may, at the time such board of arbitration is desired, notify the other of the name of an arbitrator, and such other party shall, within ten (10) days thereafter, select an arbitrator and notify the party desiring arbitration of the name of such arbitrator. If such other party shall fail to name a second arbitrator within ten (10) days, then the party which first served the notice may, on three days (3) notice to the other party, apply to the person who is Chief Judge of the United States District Court for the District of Alaska for the appointment of such second arbitrator. The two (2) arbitrators chosen as above shall, within ten (10) days after the appointment of the second arbitrator, choose a third arbitrator, and in the event of their failure to do so within said ten (10) days, either of the parties hereto may in like manner, on three days (3) notice to the other party, apply to the person who is such Judge for the appointment of a third arbitrator and in such case the arbitrator appointed shall act as the the third arbitrator. The arbitrators selected hereunder shall be qualified by education and

AGO 668368

experience to consider the question involved. The Board shall promptly fix a reasonable time and place for the hearing, at which time each of the parties hereto may submit such evidence as it may see fit. If within such thirty (30) days a decision is not rendered by the board, new arbitrators may be named, at the election of either Seller or Buyer, and shall act hereunder in like manner as if none had been previously named. The action of a majority of the members of the board shall govern and their decision in writing shall be final and binding on the parties hereto. Each party shall pay the compensation and expenses of its own counsel, witnesses and employees. All other costs of the arbitration shall be equally divided between Seller and Buyer.

ARTICLE VIII

TERM

8.1 This Agreement shall become effective upon the execution and approval as provided in Section 10.4 hereof and,

shall continue and remain in force and effect for a period of twenty (20) years from the date of first deliveries or until the base volume of residue gas as set forth in Section 3.2 hereof has been delivered, whichever is earlier; provided that if, prior to the expiration of the term hereof, the volumes of residue gas available for delivery hereunder shall be so reduced by the decline in production that further production of residue gas for delivery hereunder would be no longer profitable for Seller or that further operation of the facilities used to transport such residue gas by or for the account of Buyer would no longer be profitable to Buyer, then the party for whom continued operation under this Agreement is no

longer profitable may give notice to the other, which notice shall give the reason for such non-profitability and on the two hundred tenth (210) day after the giving of such notice this Agreement shall terminate unless the parties before that time agree to extend the terms hereof prior to the end of that two hundred ten (210) day period.

ARTICLE IX was artical X

NOTICES

9.1 Notices to be given hereunder shall be deemed sufficiently given and served when and if deposited in the United States mail postage prepaid and certified or registered, addressed to the Seller at _____ _____, or to the Buyer at _____ _____, as the case may be, or to such other address as either party shall respectively hereafter designate in writing.

9.2 Routine communications, including monthly statements and payments shall be considered as duly delivered when mailed be either registered mail or ordinary first class mail, postage prepaid.

ARTICLE X was artical XI

CONDITIONS PRECEDENT

10.1 if the ultimate pipeline route selected by the Government does not essentially parallel the present Alyeska Oil Pipeline route to

at least Fairbanks, Alaska, then Buyer may at its sole risk and expense elect to construct a separate pipeline of sufficient diameter to transport the Seller's share of royalty gas to Fairbanks. If Buyer does not elect to construct said pipeline then this contract in its entirety will be terminated.

10.2 In the event that on or before December 31, 1978, all regulatory approvals have not been issued and been accepted by Buyer or the applicant to construct the Pipeline which Buyer or Seller deems necessary to enable Buyer or Seller to perform its obligations under or receive the benefits of this Agreement, either party may thereafter terminate this Agreement by giving written notice to the other party not less than ten (10) days prior to the effectiveness of said action.

10.3 Promptly after approval of this Agreement by concurrent resolution of a majority of each house of the Alaska State Legislature, Buyer shall proceed with diligence in the preparation, filing and prosecution of such applications, petitions, pleadings and other filings with the Federal Power Commission as may be required to obtain all necessary rate, tariff, and/or certificate authorizations, approvals and rulings, as the case may be, related to Buyer's undertakings set forth in this Agreement.

Delete old 11.5-11.6

10.4 This Agreement shall not take effect until approved by concurrent resolution of a majority of each house of the Alaska State Legislature.

ARTICLE XI was article XII

EXHIBITS AND GENERAL TERMS AND CONDITIONS

11.1 Exhibit A and the General Terms and Conditions attached to this Agreement are by this reference incorporated into and made a part of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in four original counterparts on this day and year first above written.

"BUYER"	COMMISSIONER OF NATURAL RESOURCES OF THE STATE OF ALASKA
_____	_____
ATTEST:	ATTEST:
_____	_____

AGO 668372

This "General Terms and Conditions" is attached and made part of Royalty Gas Sales Agreement dated _____ 1976, by and between _____ as Buyer, and _____ as Seller.

SECTION 1	Definitions	2
SECTION 2	Responsibility.	4
SECTION 3	Meters.	4
SECTION 4	Units of Volume	7
SECTION 5	Gas Measurement	8
SECTION 6	Billing and Payment	11
SECTION 7	Receipt of Available Gas.	12
SECTION 8	Title	12
SECTION 9	Force Majeure	13
SECTION 10	Rules and Regulations	15
SECTION 11	Successors and Assigns.	16
SECTION 12	Conformity with Producer Sales Contract.	16
SECTION 13	Miscellaneous	17

I. DEFINITIONS

The following terms, when used in this General Terms and Conditions and in the foregoing portion of this Royalty Gas Sales Agreement, shall have the following meanings, regardless of capitalization:

1.1 The term "lease or leases" shall mean the oil and gas leases and portions thereof which are described in Exhibit A hereto attached and made a part hereof.

1.2 The term "lessee" shall mean the party or parties owning working interest in the lease or leases.

1.3 The term "gas" shall include casinghead gas produced with crude oil, gas well gas, and residue gas resulting from processing either casinghead gas or gas well gas or both.

1.4 The term "casinghead gas", as used herein, excludes gas cap gas and shall mean gas produced with crude petroleum from an oil well, all or substantially all of which is indigenous to the oil strata from which such crude petroleum oil is produced, together with gas lift gas produced with oil whether originally produced from the same oil stratum or not.

Change to Excess Royalty Residue Gas

1.5 The term "gas well gas" shall mean all other gas, including gas cap gas, or the mixture of hydrocarbon gases produced from the leases other than that includable within the definition of casinghead gas.

1.6 The term "day" shall mean a period of twenty-four (24) consecutive hours beginning at 7:00 o'clock A.M. Alaska Standard Time. The reference date for any day shall be the date of the beginning of such day.

1.7 The term "month" shall mean the period beginning at 7:00 o'clock A.M. Alaska Standard Time on the first day of a calendar month and ending at the same time on the first day of the next succeeding calendar month.

1.8 The term "cubic foot of gas" means the volume of gas contained in one cubic foot of space at a standard pressure base and a standard temperature base. The standard pressure base shall be fourteen and sixty-five one hundredths (14.65) pounds per square inch absolute and the standard temperature base shall be sixty (60) degrees Fahrenheit.

1.9 The term "year" shall mean each successive period of twelve (12) consecutive months beginning on the first day of the month in which deliveries of gas are commenced to Buyer hereunder and any anniversary of such date.

1.10 The term "anniversary date of first delivery" shall mean the same date of each succeeding year as the date of first deliveries.

1.11 The term "domestic and industrial needs of the State of Alaska" shall mean those present and projected residential, commercial and industrial uses for gas within Alaska as determined by the Alaska Royalty Oil and Gas Development Advisory Board in accordance with AS 38.05-.183(d).

1.12; 1.13; 1.14 SEE ATTACHED ADDENDUM

2. RESPONSIBILITY

2.1 Buyer shall not be responsible for the gas prior to its delivery hereunder and Seller shall hold Buyer harmless against any damage or injury caused thereby until same has been delivered to Buyer at the delivery point or points hereunder, after which delivery Buyer shall be deemed in exclusive control and possession thereof and responsible for said gas and shall hold Seller harmless against any injury or damage caused thereby, except that while the gas is being processed by or on behalf of Seller, Buyer shall not be deemed in control or possession thereof and shall not be responsible for said gas.

3. METERS

3.1 Buyer, at its sole cost and expense, shall install, maintain and operate, or cause to have installed, maintained, and operated, at each delivery point, a standard

type orifice meter or meters for the measuring of the quantity of gas delivered hereunder. Orifice meters shall be installed and operated in accordance with the specifications prescribed in Gas Measurement Committee Report No. 3, as revised and reprinted September 1969, of the Natural Gas Department of the American Gas Association, as supplemented and modified from time to time. Buyer shall cause the charts on such meters to be changed each day, or at such other times as may be agreed upon by the parties hereto. The meters, meter readings and meter charts shall be accessible at all reasonable times to inspection and examination by Seller.

3.2 From time to time and at least once each month, the accuracy of Buyer's measuring equipment shall be verified by and at the expense of the Buyer. If either party at any time shall notify the other that it desires a special test of any meter, the other party shall cooperate to secure an immediate verification of the accuracy of such meter and joint observation of any adjustments. If any such test shall be requested by Seller and upon such test, the measuring equipment shall be found to be registering correctly, the cost of such test shall be charged to Seller, otherwise the cost of all such tests shall be borne by Buyer. Buyer shall give notice to Seller of the time of all tests made pursuant to this Section in order that Seller may conveniently have its representative present. Calibration and

AGO 668377

adjustment of Buyer's meters and changing of charts shall be done only by Buyer.

3.3 If, upon any test, the percentage of inaccuracy shall be two percent (2%) or more, the registration of such meter shall be corrected at the rate of such inaccuracy for any period which is definitely known or agreed upon, but in case the period is not definitely known or agreed upon, then for a period extending back one-half (1/2) the time elapsed since the date of the last calibration. Following any test, metering equipment found inaccurate shall be immediately restored by Buyer as closely as possible to a condition of accuracy. If, for any reason, any meter is out of service or out of repair so that the amount of gas delivered cannot be estimated or computed from the reading thereof, the amount of gas delivered through the period such meter is out of service or out of repair shall be estimated and agreed upon by the parties hereto upon the basis of the best available data, using the first of the following methods which is feasible:

a. By using the registration of Seller's check meter if installed and accurately registering.

b. By correcting the error if the percentage of error is ascertainable by calibration test or mathematical calculation.

c. By estimating the quantity of deliveries by deliveries during preceding periods under similar conditions when the meter was registering accurately.

3.4 Seller may, at its option and expense, install and operate or cause to be installed and operated check meters to check Buyer's meters, but measurement of gas for the purpose of this Agreement shall be by Buyer's meter, except as hereinabove specifically provided to the contrary. Such check meters and equipment shall be so installed as not to interfere with the operation of the meters to be installed and maintained by Buyer at or near the points of delivery.

4. UNITS OF VOLUME

4.1 The unit of volume for all purposes hereunder (except as otherwise specified in Subsection 4.2 of this Section 4) shall be one thousand (1000) cubic feet at an absolute pressure of fourteen and sixty-five hundredths (14.65) pounds per square inch at a temperature of sixty (60) degrees Fahrenheit.

4.2 The unit of volume for the determination of the gross heating value of the gas purchased hereunder shall be the amount of gas, saturated with water vapor, which would occupy a volume of one (1) cubic foot at a temperature of sixty (60) degrees Fahrenheit and under a pressure equivalent to thirty (30) inches of mercury at thirty-two (32)

degrees Fahrenheit. Such gross heating value shall be expressed in British thermal units per cubic foot.

5. GAS MEASUREMENT

5.1 The volumes of gas delivered hereunder shall be computed in accordance with the specifications prescribed in Gas Measurement Committee Report No. 3, as revised and reprinted September, 1969, of the Natural Gas Department of the American Gas Association, as supplemented and modified from time to time, applied in a practical and appropriate manner, and appropriate correction shall be made for deviation of the gas from Boyle's Law in accordance with said Gas Measurement Committee Report No. 3. Any additional data required to be developed in accordance with recommendations contained in such report shall be jointly determined by the parties hereto in a manner mutually agreeable.

5.2 For the purpose of measurement, the absolute atmospheric (barometric) pressure shall be agreed upon for each point of delivery hereunder based on the actual elevation or location of the delivery point above sea level and shall thereafter be deemed to remain constant regardless of variations in the actual barometric pressure from time to time.

For meters of the orifice type the following factors shall be given due consideration:

a. The temperature of the gas flowing through Buyer's meters shall be obtained by the use of a recording thermometer so installed by Buyer that it may properly re-record the temperature of such gas. The arithmetical average of the hourly temperature during the period gas passed shall be used to make proper computations of volumes hereunder.

b. The specific gravity of the natural gas shall be determined by Buyer by calculation (compensated for any difference between the specific gravity in the ideal state and in the real state in accordance with published procedures adopted by the Gas Measurement Committee of the American Gas Association) utilizing the analysis of the natural gas determined in accordance with Subsection 5.3 of this Section 5. The specific gravity so determined shall be utilized during the applicable period of time referred to in said Subsection 5.3.

5.3 Each three (3) months or as near the first of each three (3) months' period as practicable, Buyer shall sample and analyze the gas delivered hereunder at each delivery point for determination of its constituents and the total gross heating value thereof. The "Method for Natural Gas Analysis by Gas Chromatography, Revised and Adopted as Standard, 1964, by the Natural Gas Processors Association,"

as supplemented and modified from time to time, shall be used in making such determination. Copies of each such analysis shall be furnished by Buyer to Seller. Should Seller not be satisfied with the results of such analysis, it shall notify Buyer in writing. Promptly thereafter, representatives of the parties shall obtain simultaneously under normal operating conditions two (2) samples of the gas delivered hereunder at the point of delivery in question in appropriate sampling devices of the same type. Each of the parties shall take one (1) such sample and subject it to appropriate laboratory analyses to determine the total gross heating value thereof, reporting the results thereof in writing to the other. The average of the total gross heating value shown by such two (2) analyses shall be used for all purposes of this Agreement for the period covered by the analyses made by Buyer which gave rise to the joint determination.

5.4 Buyer reserves the right to install and utilize recording gravitometers and/or calorimeters at any and all delivery points for the determination of specific gravity and gross heating value in lieu of the testing procedures provided in Subsections 5.2(b) and 5.3 of this Section 5.

5.5 Buyer shall give notice to Seller of the time of all tests of gas delivered hereunder or of any equipment

used in measuring or determining the nature of quality of such gas, in order that Seller may conveniently have its representative present. Should Seller not be satisfied with any such tests, it shall so notify Buyer and Buyer shall perform such retests as may be necessary to assure an accurate test.

6. BILLING AND PAYMENT

6.1 On or before the fifteenth (15th) day of each month after deliveries of gas are commenced hereunder, Buyer shall render to Seller a statement showing the amount of gas delivered by Seller and the amount of gas purchased by Buyer hereunder during the preceding calendar month and payment for gas sold hereunder by Seller shall be made by Buyer to Seller on or before the twenty-fifth (25th) day of the calendar month in which such statement is rendered.

6.2 Upon request, Buyer shall furnish or cause to be furnished Seller the measurement charts applicable to any monthly statement. Seller shall return to Buyer all charts after thirty (30) days.

6.3 Any error or discrepancy in charts or statements furnished pursuant to the above shall be promptly reported to Buyer and Buyer shall make proper adjustment thereof within forty-five (45) days after final determination of the

correct volumes or values involved; provided, however, that if no such errors or discrepancies are reported to Buyer within two (2) years from the date of such chart or statement the same shall be conclusively deemed to be correct.

6.4. Seller shall have access to Buyer's records and books at all reasonable hours so far as they affect measurement and settlement for gas sold hereunder.

7. RECEIPT OF AVAILABLE GAS

7.1 In accordance with the provisions hereof, Buyer shall proceed diligently to seek such authorization as required to receive gas then available for delivery by Seller hereunder. Delete

8. TITLE

8.1 Seller hereby warrants title to the gas sold by it hereunder and its right to sell the same and warrants that all such gas is owned by Seller free from all liens, encumbrances and adverse claims.

• Change "gas" to "residue gas".

AGO 668384

9. FORCE MAJEURE

9.1 In the event of either Buyer or Seller being rendered unable by force majeure to perform a duty or an obligation under the Royalty Gas* Sales Agreement, the performance of said duty or obligation by the party affected by such force majeure shall be suspended without liability to the other party to the Royalty Gas* Sales Agreement during the continuance of the period of inability caused by force majeure but for no longer period, and the party whose performance is thus suspended shall, so far as possible, take all actions within its control to remedy the cause of its non-performance with all reasonable dispatch.

The term "force majeure" as employed herein shall mean acts of God, strikes, lockouts or other industrial disturbances, acts of the public enemy, wars, blockades, military action, insurrections, riots, epidemics, landslides, lightning, earthquakes, fires, storms, or storm warnings, crevasses, floods, washouts, arrests and restraints of governments and people, civil disturbances, explosions, breakage or accident to machinery or lines of pipe, or making repairs or alterations to machinery or lines of pipe, the necessity for testing (as required by law, governmental regulation or for safe operation thereof, in the judgment of the testing party), freezing of wells or lines of pipe, partial or entire failure of wells, inability of any party

* Change "Royalty Gas" to "Excess Royalty Residue Gas".

AGO 668385

hereto to obtain necessary materials, supplies or permits due to existing or future rules, regulations, orders, laws or proclamations of governmental authorities (both Federal and State), including both civil and military, any inability on the part of any purchaser or purchasers to receive gas from Buyer by reason of force majeure affecting such purchaser or purchasers, provided that such inability of Buyer to take gas because of force majeure affecting its purchasers, shall be fairly apportioned among its various sources of gas supply, and any other causes, whether of the kind herein enumerated or otherwise, not within the control of the party claiming suspension, and which by the exercise of due diligence such party is unable to prevent or overcome; such term shall likewise include (a) in those instances where either party hereto is required to obtain servitudes, right-of-way grants, permits or licenses to enable such party to fulfill its obligations hereunder, the inability of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such servitudes, right-of-way grants, permits or licenses, and (b) in those instances where either party hereto is required to furnish materials and supplies for the purpose of constructing or maintaining facilities, or is required to secure permits or permission from any governmental agency to enable such party to fulfill its obligations hereunder, the inability of such party to acquire, or the delays on the part of such party in acquiring, at reasonable cost and after the exercise of

AGO 668385

reasonable diligence, such materials and supplies, permits and permissions; provided, however, Seller shall have the right but not the obligation to sell on a day to day basis free from this Agreement any gas which is committed to Buyer hereunder but which Buyer does not take because of force majeure. The word "party" as used in this Section 1 shall mean and include any person or persons, corporate or otherwise, with whom Seller enters into or has agreements for the conditioning, processing, compressing, or transportation, for its account, of the gas to be delivered hereunder from the point of delivery hereunder to Buyer's facilities.

9.2 It is understood and agreed that the settlement of strikes or lockouts shall be entirely within the discretion of the party having the difficulty, and that the above requirement that any force majeure shall be remedied with all reasonable dispatch shall not require the settlement of strikes or lockouts by acceding to the demands of the opposing party when such course is inadvisable in the discretion of the party having the difficulty.

10. RULES AND REGULATIONS

10.1 This Agreement is subject to all present and future valid laws and valid orders, rules and regulations of the United States, the State of Alaska, or any duly constituted agency thereof.

11. SUCCESSORS AND ASSIGNS

11.1 This Agreement shall bind and benefit the parties hereto and their respective successors and assigns, provided that no conveyance or transfer of any interest of either party shall be binding upon the other party until such other party has been furnished with written notice and true copy of such conveyance or transfer; provided, further, that either Buyer or Seller, or both, may assign its right, title and interest in, to and by virtue of this Agreement, including any and all extensions, renewals, amendments and supplements thereto to a trustee or trustees, individual or corporate, as security for bonds or other obligations or securities, without such trustee or trustees assuming or becoming in any respect obligated to perform any of the obligations of the assignor, and if any such trustee be a corporation, without its being required by the parties hereto to qualify to do business in the State of Alaska, but no such assignment shall serve to relieve the assigning party of its obligations hereunder.

12. CONFORMITY WITH PRODUCER SALES CONTRACT

12.1 Seller and Buyer recognize that this Agreement is being entered into prior to sales agreements by the working interest owners. Each party further recognizes that Seller's royalty gas will be commingled with the gas of the working interest owners and that consequently Seller's gas will be produced, gathered and treated identically with the

gas of the working interest owners. It is therefore agreed between the parties that if terms, conditions, or clauses are included in contracts for the sale of gas from the leases identified in Exhibit A by the working interest owners which terms, conditions, or clauses are more favorable to the vendor than the terms, conditions or clauses of Sections 3, 5 and 6 of these General Terms and Conditions herein, Seller shall at its sole option have the right to include such term, condition or clause into this Agreement by giving Buyer written notice within ninety (90) days after approval by the Federal Power Commission of said working interest owner's contract for the sale of its gas.

13. MISCELLANEOUS

13.1 No waiver by either party of one or more defaults by the other in the performance of any of the provisions of this Agreement shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or of a different character.

13.2 This Agreement, and the construction and interpretation thereof, shall be governed by the laws of the State of Alaska.

13.3 Article headings used in this Agreement are for convenience only and shall not affect the construction of this Agreement.

13.4 This Agreement may be supplemented, amended or modified only by a written instrument duly executed by the parties hereto.

13.5 Except in the cases for which arbitration is specifically provided herein, if either party shall fail to perform any of the covenants or obligations imposed upon it by this Agreement (except where such failure shall be excused under the force majeure provisions hereof), then and in that event, the other party may, at its option (without waiving any other remedy for breach hereof), by notice in writing specifying wherein the default has occurred, indicate such party's election to terminate this Agreement by reason thereof. The party in default shall have sixty (60) days from the receipt of such notice to remedy such default and to pay or indemnify the other party all loss or damage incurred as a result thereof, and upon failure so to do, this Agreement shall terminate from and after the expiration of such sixty (60) day period. Any such termination shall be an additional remedy and shall not prejudice the right of the party not in default to collect any amounts due it hereunder for any damage or loss suffered by it and shall not waive any other remedy to which the party not in default may be entitled for breach of this Agreement.

13.6 If any provision or clause of this Agreement or application thereof to any person or circumstances is held

AGO 668389

invalid, such invalidity shall not affect other provisions or applications of the Agreement which can be given effect without the invalid provision or application.

13.7 Seller and Buyer shall each preserve all test data, charts and other similar records as required by the Federal Power Commission.

AGD 668390

ADDENDUM to General Terms and Conditions, Section I, Definitions:

1.12 The term "residue gas" shall mean that portion of the gas entering the plant which remains after the extraction of plant products and used as process fuel and treating fuel in said plant.

1.13 The term "excess royalty residue gas" shall mean any of Seller's royalty residue gas remaining after Seller completes contracts for intrastate domestic, industrial and/or petrochemical uses within the state of Alaska.

1.14 The term "acid gas" shall mean the carbon dioxide, nitrogen and hydrogen sulfide.

new definitions

Exhibit A

Attached to and Made a Part of a Royalty Gas Sales Agreement dated _____, 1976, Between _____ "Buyer" and _____ Seller", With Respect to Certain Royalty Gas Owned and Taken In-Kind by _____ _____ Under the Leases Described Herein Covering Lands in the State of Alaska.

Each of the following described Leases reserves to the State of Alaska a one-eighth (1/8) royalty interest, unless otherwise stated.

Lease Serial No.	Legal Description	Gross Acres

EXPLAINATION OF FOOTNOTES

The preceding agreement for the sale of royalty gas is a copy of the Agreement between the State of Alaska and Tenneco Alaska, Inc. The Agreements between the State and El Paso Natural Gas Co. and the State and Southern Natural Gas Company are virtually identical. The differences which exist have been footnoted in this contract and the changes which are appropriate to the El Paso and Southern contract are explained in each footnote.

The contract is being made available in this manner as it facilitates comparison of the three contracts and avoids the necessity of distributing widely three copies of contracts which are virtually identical. These footnotes, of course, do not appear in the original contracts.

Footnotes:

1/ Instead of the words "Tenneco Alaska Inc., an Alaskan corporation" substitute the words "El Paso Natural Gas Co., a Delaware corporation" for the El Paso contract and the words "Southern Natural Gas Company, a Delaware corporation" for the Southern contract.

2/ Instead of the words "fifty percent (50%)" substitute the words "twenty-five percent (25%)" for both the El Paso and Southern contracts.

3/ Instead of the words "one (1) trillion, three hundred (300) billion cubic feet" substitute the words "six hundred fifty (650) billion cubic feet" for both the Southern and El Paso contract.

4/ An additional sentence is added at the end of Section 3.7(b) to the El Paso and Southern contracts. For the El Paso contract that sentence reads as follows:

> Buyer's right under this Section shall apply only to surplus royalty gas available after Seller has satisfied its obligations under Subsections 3.7 (a) and 3.7 (b) of that Agreement between the State of Alaska and Tenneco Alaska, Inc. dated_____.

For the Southern contract the added sentence reads as follows:

> Buyer's right under this Section shall apply only to surplus royalty gas available after Seller has satisfied its obligations under Subsections 3.7 (a) and 3.7 (b) of that Agreement between the State of Alaska and Tenneco Alaska, Inc. dated_____, and that Agreement between the State of Alaska and El Paso Natural Gas Co. dated_____.