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.

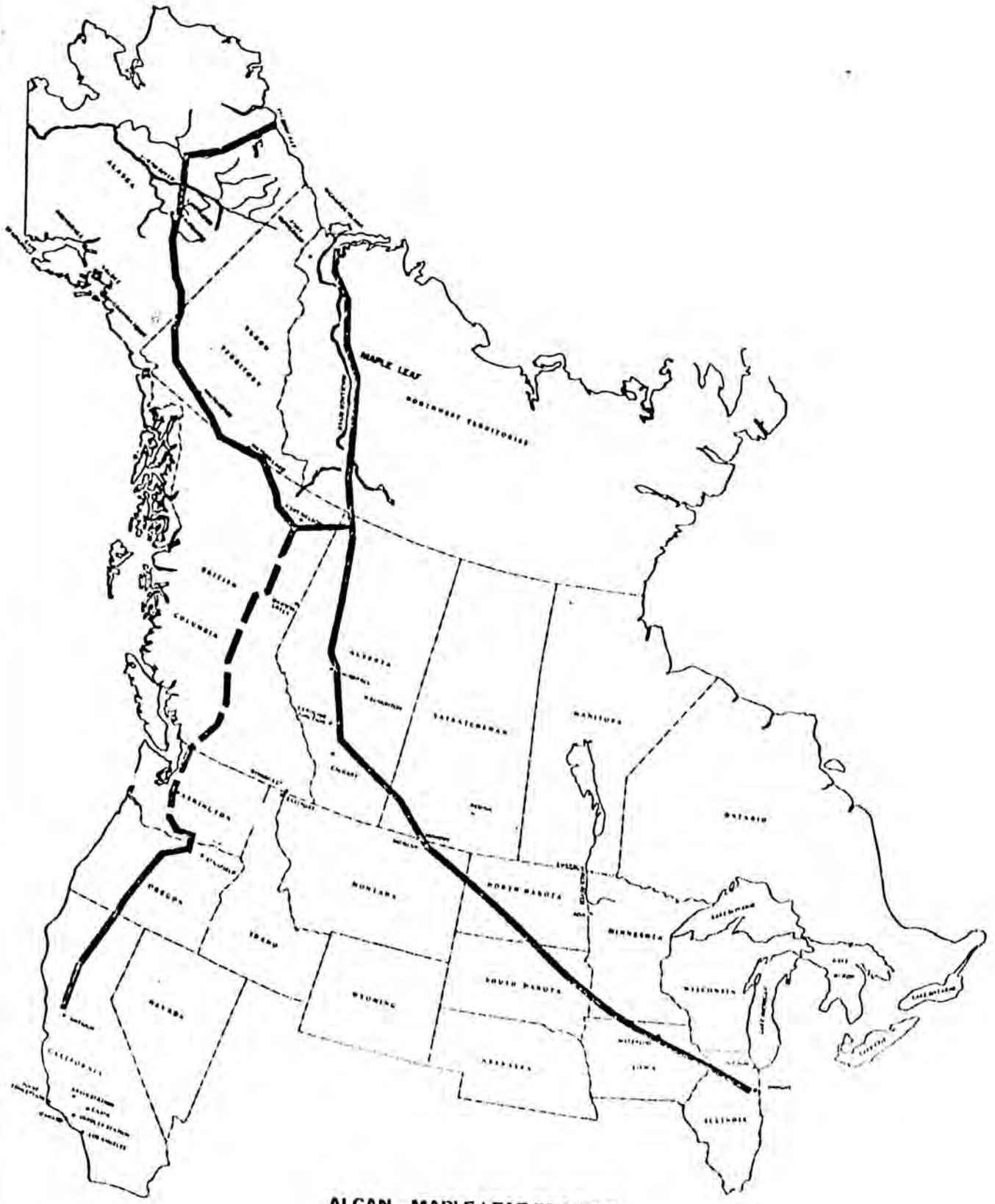
Maps of the three proposed Alaskan natural gas transportation systems accompany this fact sheet.

- 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 financing

⑤ Columbia has $115 million for 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

P10,175 et seq 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. amendt 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	[illegible]	[illegible]	[illegible]
Sohio Petroleum Company	175,000,000	6,000,000,000	--
California Chevron	122,730,499	545,612,780	1,096,405,000
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]
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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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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Attorneys for the People of the State of California and the Public Utilities Commission of the State of California

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)

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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

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Washington, D. C.
December 7, 1976

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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.

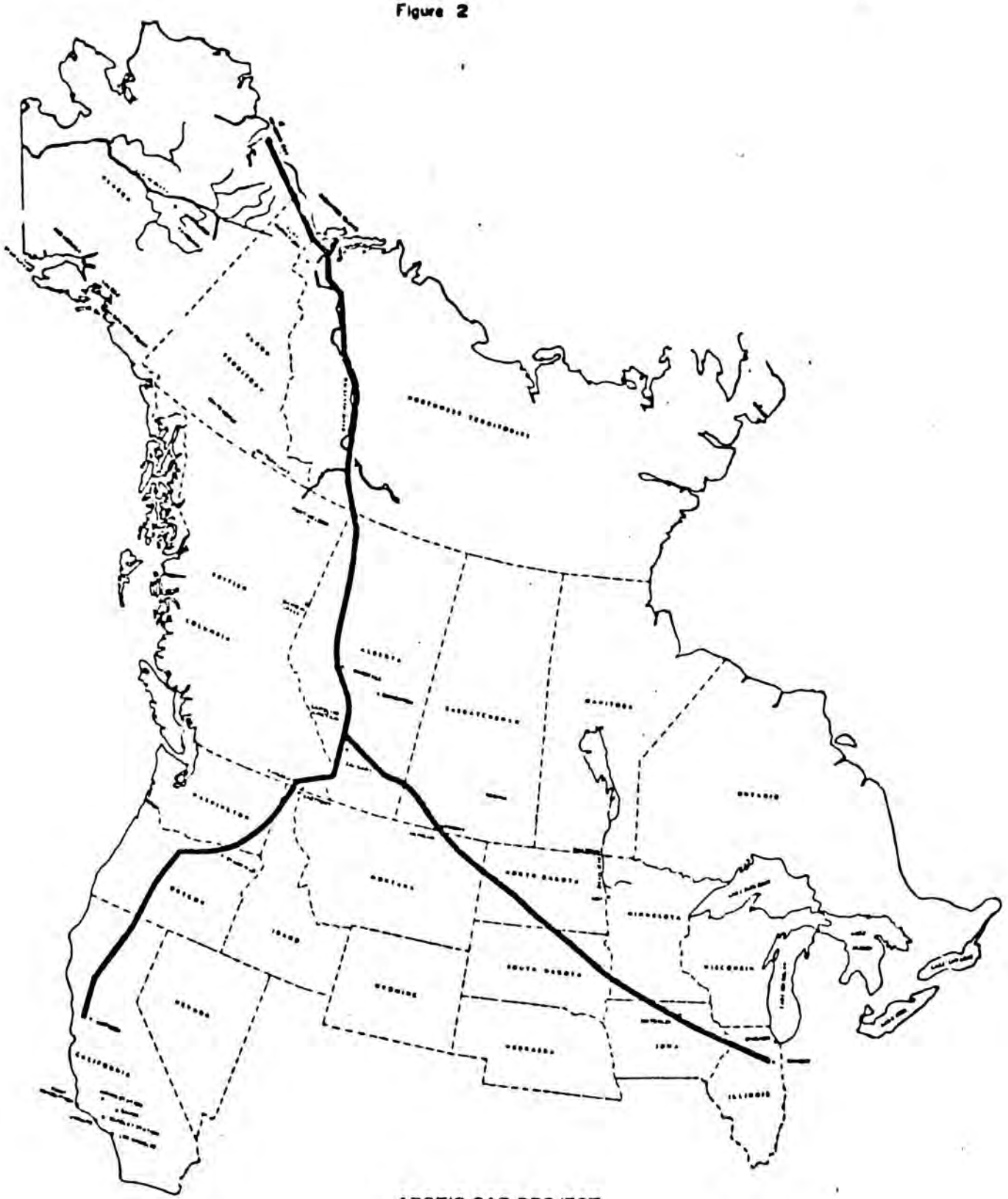
The two above filings went through a long and laborous process of refinement resulting in very tightly reasoned, highly defendable presentations which included the testimony, exhibits, backup studies, and supporting workpapers of the expert witnesses presented.

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

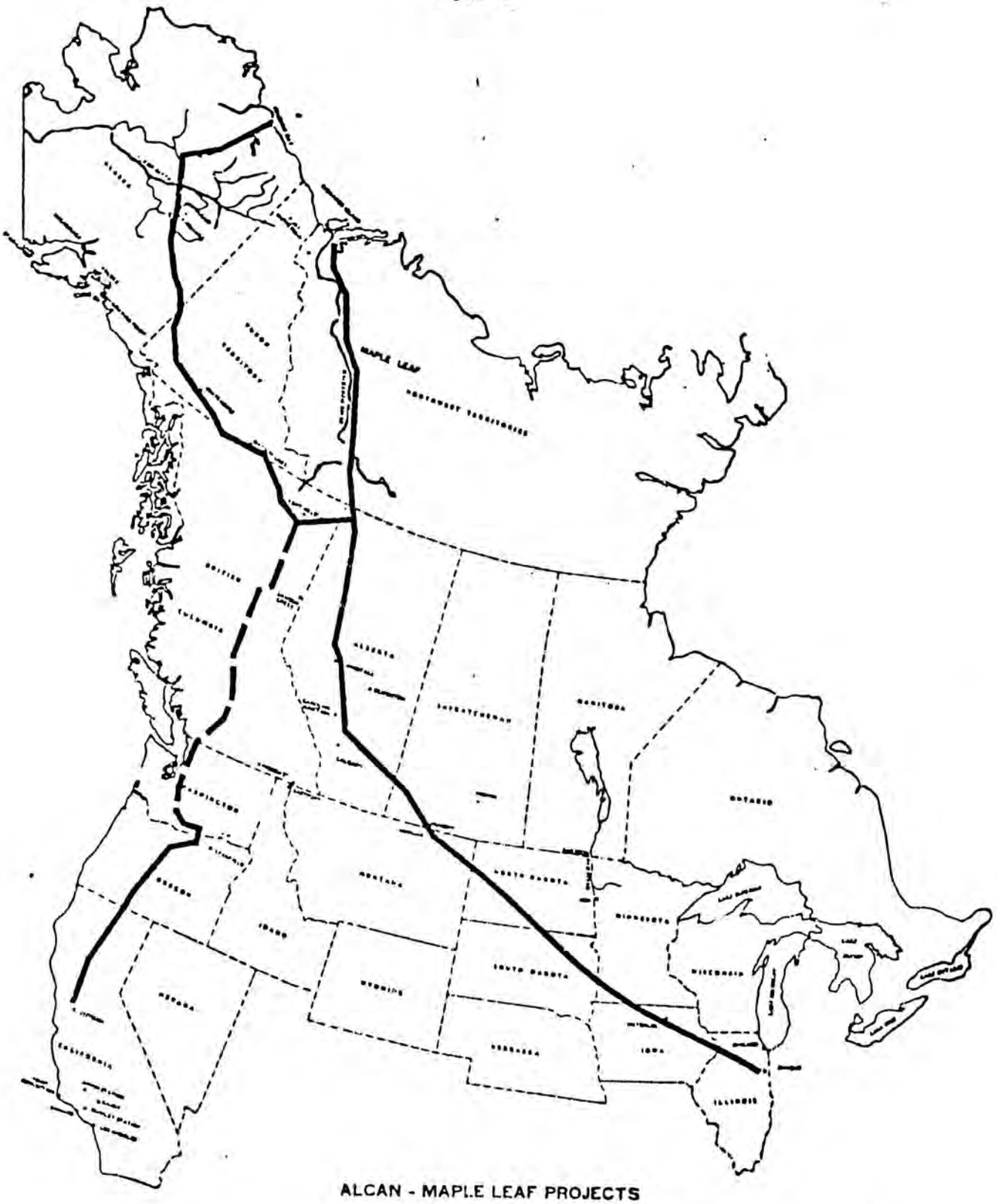


ARCTIC GAS PROJECT

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