

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 86/2

512 SCOM15: HOUSE/SEN. SP. COMM. SALE ROYALTY GAS 1977-78 12

Exhibits

JOINT PUBLIC HEARINGS
of the
ALASKA STATE LEGISLATURE
on

SCR 3, 4, 5 and HCR 11, 12, 13

"THE PROPOSED SALE OF ROYALTY GAS"

January 31, 1977 - February 7, 1977

Juneau, Alaska

VOLUME VI
EXHIBITS

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4. Letter to Senator John Rader from Congressman Young dated January 28, 1977.
5. Letter to Senator John Rader from Senator Mike Gravel
6. Letter to Senator John Rader from William H. Kumm of K M Associates dated January 27, 1977, with attachments.
7. Telegram to Senator John Rader from Hall Green dated January 31, 1977.
8. Letter to Mr. Richard Maullin from Robert C. Thomas of Tennessee Gas Transmission Company, dated January 18, 1977.
9. Amendment to Application or Report - Securities and Exchange Commission.
10. Statement of Southern Natural Gas Company before Special Committee of Alaska Legislature.
11. "An Inkling of the Long Journey" by Arlon R. Tussing, Northern Perspectives, Volume four, number four, 1976.
12. Summary of Comments by Arlon R. Tussing at National Economic Research Associates, Inc. Workshop on Economic Growth in the West and Related Energy Problems.

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- 1 13. El Paso Natural Gas Company - Natural Gas Consumption
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- 5 14. "The Alcan Pipeline Project - A Realistic Solution to
- 6 the Transportation of Alaskan Gas."
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- 9 to Interior Alaska, prepared by Robert Dempsey.
- 10 16. "Economic Analysis of Alaskan Royalty Gas Contracts"
- 11 a report to the State of Alaska: Legislature by Jensen
- 12 Associates, Inc.
- 13 17. United States of America Federal Power Commission,
- 14 Report to the Commission signed by Judge Nahum Litt
- 15 April 27, 1976.
- 16 18. Two-page document dated February 4, 1977, from Jerry
- 17 McCutcheon to Senator Rader
- 18 19. Report dated January 28, 1977, to Committees from
- 19 Vinson, Elkins, Searls, Connally & Smith
- 20 20. Letter to Honorable John Rader from Senator Mike Gravel
- 21 21. Group of documents consisting of:
- 22 a. Letter from Honorable Jere Beasley, Lt. Governor
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- 1 Associated General Contractors.
- 2 c. Letter from Robert L. Hardick, Anchorage Chamber
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- 4 d. Telegram from A. L. Swalling, Anchorage, Alaska
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7 Energy Commission.
- 8 g. Letter from Mrs. Jeanne Wilson, Pres., Greater
9 Fairbanks Chamber of Commerce.
- 10 h. Letter from George W. Easley, Pres. G.W. Easley
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- 12 i. Telegram from James T. Jefferson; James T. Jefferson
13 enterprises, Detroit, Michigan
- 14 22. Mailing list of invitations by Senator Rader's office.
- 15 23. Mailing list of invitations by Representative Gruening's
16 office.
- 17 24. Newspaper ads in Daily News Miner, Anchorage Times
18 and Daily News.
- 19 25. Report by Department of Natural Resources
- 20 26. Statutes relevant to sale of royalty gas.
- 21 27. Group of documents consisting of:
- 22 a. Telegram from Lynn Chrystal, Mayor of Valdez.
- 23 b. Telegram from Barney Neyring, Valdez
- 24 c. Telegram from C. W. Ellis, Valdez Airport Terminal
- 25 d. Telegram from James C. Manley

- 1 e. Telegram from Mr. and Mrs. Ervin Michael
2 f. Resolution of January 26, 1977, by Greater Anchorage
3 Chamber of Commerce
4 g. Telegram from Paul and Ellen Foster, Valdez
5 h. Letter from Mrs. Jeanne Wilson, President, Greater
6 Fairbanks Chamber of Commerce.
7 28. Federal Power Commission news release from Washington,
8 D.C., No. 22868, dated February 1, 1977
9 29. Federal Power Commission news release from Washington,
10 D.C., No. 22869, dated February 1, 1977
11 30. Letter of January 30, 1977 from Ruth A. M. Schmidt, Ph.D.
12 31. Letter and Resolution from John W. Pemberton, Clerk,
13 Alabama House of Representatives.
14 32. Letter of February 3, 1977 to Honorable Lowell Thomas, Jr.
15 from Evelyn Gandy, Lt. Governor, State of Mississippi
16 33. Letter of February 7, 1977 to Committees from Don Dickey,
17 President, Alaska State Chamber of Commerce.
18 34. Resolution No. 76-1117-13 by State of California State
19 Energy Resources Conservation and Development Commission
20 35. Letter of February 3, 1977 to Honorable John L. Rader
21 from K.E. Showalter of Sohio Pipe Line Company, enclosing
22 copy of letter of March 10, 1976 to Honorable John L.
23 Rader from C. E. Spahr of Sohio
24 36. Letter of February 7, 1977 to Senator John Rader from
25 Eric Eckholm of Anchorage, Alaska

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- 1 37. Telegram from Dave Rose, Chairman, Anchorage Assembly
- 2 38. Telegram from Doug Bechtel, President, Cordova
- 3 Chamber of Commerce
- 4 39. Telegram from Ron Moore, Levance Forsythe, Les Reynolds,
- 5 Richard J. Sears, John Berggren and Teri Young
- 6 40. Telegram from F. W. Catalano, President, Home Builders
- 7 Association of Alaska
- 8 41. Letter from Axel (Bud) Janson, Vice-Mayor, City of Cordova
- 9 42. Resolution of February 15, 1977, from Juneau Chamber of
- 10 Commerce
- 11 43. Telegram from Fairbanks Clinic, Abram H. Cannon, M.D.,
- 12 Gary L. Walkup, M.D., Glen W. Straatsma, M.D., James N.
- 13 Bertelson, M.D., H. James Jordan, M.D., Joseph M. Rebar,
- 14 M.D., Robert D. Hanek, M.D., Joseph K. Johnson., M.D. and
- 15 Donald A. Denneson, Administrator
- 16 44. Letter of February 8, 1977, together with attachments
- 17 to Honorable John Rader and Honorable Clark Gruening
- 18 from Michael C. Holland, Assistant to the Vice President,
- 19 El Paso Alaska Company
- 20
- 21
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2

FEBRUARY 1, 1977

1
2 SENATOR RADER: The Joint Committee will come to order. Some
3 of our people are not yet here. I have a communication
4 from Congressman Don Young which will be made an exhibit
5 but I did agree with him that I would read it to the
6 committee. Because it will be a part of the exhibit,
7 I thought I might go ahead and read it now even though
8 some of our committee members are not here.

9 (Whereupon Exhibit 4 was duly read
10 into the record)

11 SENATOR RADER: Exhibit 4 will be Congressman Young's letter.
12 Exhibit 5 is a Friends of the Earth communication.

13 SENATOR HUBER: Can we have theirs read to us, Mr. Chairman?

14 SENATOR RADER: We certainly can if you wish, sir. All
15 exhibits can be read if any member of the committee wants
16 to. I only read Congressman Young's because I agreed
17 with the Congressional Delegation that I would read
18 theirs.

19 SENATOR HUBER: I thought with the testimony coming up it
20 might be good to hear what some of the environmental
21 groups have got to say before we read it afterwards.
22 It might affect some of the questions that I want to ask
23 of some of the people that are testifying so I request
24 that it be read if it isn't too long.

25 SENATOR RADER: Exhibit 6 will be K M Associates' communication

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AGO 800530

1 dated January 27th addressed to me, with attachments.
2 Exhibit 7 will be a wire addressed to me from Alaska
3 Farmland International Energy Company dated January 31st.

4 SENATOR HUBER: What is the address on that, Senator?

5 SENATOR RADER: I have only Anchorage. I hand the exhibit
6 to Senator Huber, I'm not able to determine for certain
7 what it is.

8 SENATOR HUBER: May I look at it now?

9 SENATOR RADER: Certainly. Do we have any further exhibits?
10 Exhibit 8 is a copy of a letter from Robert C. Thomas
11 to Mr. Richard Maullin dated January 18.

12 (Whereupon Exhibits 4, 5, 6, 7, and
13 8 were duly marked)

14 SENATOR RADER: Any exhibits can be read although I do want
15 to -- frankly, some of these are quite lengthy. If it
16 looks like it is going to delay us too much, I'll leave
17 it up to the committee and we'll take some votes on it.
18 Otherwise though, if we have miscellaneous exhibits you
19 wish to read why we'll go ahead with that.

20 SENATOR HUBER: I would request, Senator, that we read the
21 one from the Friends of the Earth, which apparently is
22 quite short, and this telegram from Alaska Farmlands
23 that I have briefly skimmed over. I think it is very
24 pertinent and should be read.

25 SENATOR RADER: I'll ask Mr. Gruening if he would read it.

1 My voice is going to give out before I get through with
2 this.

3 SENATOR HUBER: It does, Mr. Chairman, it does tie in with
4 questions I asked about what groups were sold or had
5 chances to bid on it yesterday, and I think this is
6 quite important.

7 SENATOR RADER: I want to make only one point and that is
8 that we have a great number of out-of-town witnesses
9 here and matters which can be read by members later on,
10 unless it is pertinent I'd prefer to take our out-of-town
11 witnesses first and our written communications at the
12 end of the hearings. But, at your request, Senator,
13 we'll make an exception in this instance.

14 SENATOR HUBER: I would appreciate it if you would on those
15 because I think they'll affect the --

16 REP. GRUENING: Okay. Mr. Chairman, on the Friends of the
17 Earth statement, I think we'll have somebody reading
18 that later.

19 SENATOR RADER: Mr. Gruening informs me that someone will,
20 at a later date in the hearings, read the Friends of the
21 Earth statement.

22 SENATOR HUBER: In that case I will withdraw my request.

23 REP. GRUENING: All right.

24 REP. SWANSON: Mr. Chairman, will we also hear the letter
25 from Farmland Incorporated?

1 REP. GRUENING: I'm about to read that.

2 SENATOR RADER: Yes, Mr. Gruening is going to read that right
3 now.

4 (Whereupon Exhibit 7 was duly read
5 into the record)

6 SENATOR HUBER: Mr. Chairman?

7 MR. HUBER: Inasmuch as they -- in that telegram they did
8 mention certain communications between them and the
9 Department of Natural Resources which they said is the
10 reason for them taking this stand, I would request that
11 the committee, through you -- through the joint chairmen,
12 request from the Department of Natural Resources as a
13 part of our record, such correspondence. I mentioned
14 yesterday that there was a complete turndown in cor-
15 respondence from certain other companies too, so I would
16 request that you do request the Department of Natural
17 Resources their correspondence with Farmland, Inc. which
18 is mentioned in the telegram. Also, correspondence
19 with Wentworth and Signal Burma groups in regard to
20 purchases.

21 SENATOR RADER: Senator, we'll certainly consider that but
22 I don't want the committee at this time to be diverted
23 from the taking of testimony from persons who are out
24 of town. We'll have an opportunity after they leave.
25 We're going to have a hard time getting them into the

✓

1 schedule we've already proposed. I think your point is
2 well taken and we'll consider it at later times with your
3 permission.

4 SENATOR HUBER: Maybe, Mr. Chairman, if you'll bear with me
5 just a moment, it may be that the accusations these
6 people raise have absolutely no bearing whatsoever and
7 that they are not worthy of it but certainly by seeing
8 all of the record in the Department of Natural Resources,
9 in their letters and requests and in the answer to them
10 we'll be able to make our determination of it.

TELEGRAM

BCA ALASKA COMMUNICATIONS, INC.

PHONE: 586-6440

DUNEAU, ALASKA 99801

1977 JAN 28 PM 7 25

02036 NL ANCHORAGE ALASKA 51 01-28 0345P AST

EXHIBIT# 1

PMS SEN JOHN RADER

JUN - 1296

I URGE PROMPT CONSIDERATION AND APPROVAL OF THE ROYALTY GAS
CONTRACTS FACING THE LEGISLATURE
EXPEDITIOUS ACTION ON THE LEGISLATURES PART WOULD
ACCURATELY REFLECT THE VAST MAJORITY OF PUBLIC OPINION
ON THIS ISSUE IN THE STATE. IT WOULD ADDITIONALLY
HELP IN WASHINGTON THE CHANCES FOR APPROVAL OF AN ALL ALASKA
GAS PIPELINE.

MIKE GRAVEL USS

1977 JAN 28 PM 7 42

TELEGRAM

RCA ALASKA COMMUNICATIONS, INC.

PHONE: 586-6440

JUNEAU, ALASKA 99801

AAX

EXHIBIT # 2

IPMAFUB AHG

1-035734A023 01/28/77

ICS IPMNAWB WSH

SUSPECTED DUPLICATE

09027 GOVT NEWASHINGTON DC 460 01-28 710P EST

PMS HONORABLE JOHN RADER

PRESIDENT

1297

ALASKA STATE SENATE

POUCH V

JUNEAU AK 99811

I APPRECIATE YOUR REQUEST FOR MY VIEWS ON THE PROPOSED
CONTRACTS FOR THE SALE OF THE PRUDHOE ROYALTY GAS TO EL PASO,
SOUTHERN AND TENNECO.

AS YOU KNOW, LAST YEAR I URGED GOVERNOR HAMMOND TO NEGOTIATE
A SALE OF THE ROYALTY GAS FOR SEVERAL REASONS. I FELT THAT A
SALE WOULD CLEARLY ASSERT THE STATES RIGHT TO CONTROL THE GAS
AND WOULD, THEREFORE, PREVENT DEDICATION OF THE GAS TO
INTERSTATE COMMERCE. THAT ARGUMENT IS STILL VALID IN SPITE OF
THE AMENDMENT TO PUBLIC LAW 94-586, GIVING ALASKAS GAS SPECIAL

2.1
PROTECTIONS. I ALSO ASKED THE GOVERNOR TO SELL THE GAS FOR THE ADDITIONAL HELP SUCH A SALE WOULD BRING TO THE APPROVAL PROCESS IN WASHINGTON. THE ASSISTANCE SOUTHERN AND TENNECO CAN GIVE HAS ALREADY BEEN DEMONSTRATED IN WASHINGTON. THEY HAVE INTERVENED BEFORE THE FEDERAL POWER COMMISSION AND HAVE INITIATED CONTACTS WITH OTHER MEMBERS OF THE HOUSE AND SENATE. ALSO THE SALE REPRESENTS THE FIRST CONCRETE COMMITMENT OF GAS TO EITHER PROJECT AND, THEREFORE, AFFECTS THE ECONOMICS OF THE PROPOSALS.

SOME OF THE SPECIFIC CONTRACT PROVISIONS CAUSE ME SOME CONCERN, BUT, I FEEL THE CONTRACTS SHOULD BE APPROVED.

TO REJECT THE CONTRACTS NOW WOULD BE A SERIOUS BLOW TO THE ALL-ALASKA LINE. THOSE WHO FAVOR OTHER ROUTES WOULD SEIZE ON FAILURE TO APPROVE AND MAKE MUCH OF IT. THE COMPETITION BETWEEN THE PROPOSALS IS INTENSE AND WILL GROW MORE SO. I THINK THERE IS A GENERAL CONSENSUS IN THE STATE THAT THE ALL-ALASKA LINE IS PREFERABLE. IT WOULD PROVIDE BENEFITS TO MOST AREAS THAT WOULD BENEFIT FROM ANY OTHER LINE AND WOULD BENEFIT OTHER AREAS, AS WELL. THE ECONOMIC IMPACT ON THE STATE AND THE IMPACT ON STATE REVENUES IS GREATER FOR THE ALL-ALASKA LINE. REJECTION OF THESE CONTRACTS COULD STALL EFFORTS TO HAVE THAT LINE APPROVED.

ALSO, THERE IS SIMPLY NOT ENOUGH TIME TO RENEGOTIATE THE CONTRACTS. LAST YEAR THE CONGRESS ADOPTED LEGISLATION SETTING FORTH A TIMETABLE FOR APPROVAL. UNDER THAT LEGISLATION, THE INITIAL DECISION OF THE FPC ADMINISTRATIVE LAW JUDGE WILL BE ANNOUNCED BY FEBRUARY 1ST. THE FINAL COMMISSION DECISION WILL BE REACHED BY MAY. THE PRESIDENT MUST REACH A DECISION BY SEPTEMBER

1ST, ABSENT UNUSUAL CIRCUMSTANCES. THE CONGRESS WOULD THEN HAVE 60 DAYS TO ACT ON THE PRESIDENTS PROPOSAL.

IN VIEW OF THE LENGTH OF TIME THAT WAS REQUIRED TO NEGOTIATE THESE CONTRACTS, I DO NOT FEEL THAT WE CAN AFFORD TO DELAY FINAL APPROVAL OF THE SALE. FURTHER NEGOTIATIONS WOULD RESULT IN NO AGREEMENT UNTIL IT WAS TOO LATE TO BE OF ANY ASSISTANCE.

IN SUM, ALTHOUGH I HAVE CONCERNS ABOUT SOME PROVISIONS, I FAVOR APPROVAL OF THE CONTRACTS. THEY ARE IN THE INTEREST OF THE STATE AND ITS PEOPLE, IN MY OPINION.

PLEASE LET ME KNOW IF I CAN BE OF ANY ASSISTANCE.

TED STEVENS

UNITED STATES SENATOR

2240 EST

IPMAFUB AHG

IPMAFUB AHG

EFFECT OF ALASKA'S ROYALTY GAS ON NATURAL GAS SUPPLY:

TENNECO MARKET AREA (25 states)

Prudhoe Bay natural gas production rate is assumed to be
2.0 Bcf/day

Yearly Prudhoe Bay natural gas production 730 Bcf.

Royalty Share of Prudhoe Bay production = $1/8$ of 730 Bcf = 91.25 Bcf/Year

Tenneco Share of Royalty Gas = 50 % of 91.25 Bcf = 45.625 Bcf/year.

Tenneco Summary of Operating Data (from "Tenneco Statistics 1975")

Volume of Gas sold and transported: 1,634 Bcf
Volume of Gas purchased: 1,459 Bcf

Tenneco's share of 25-state gas market:
1,284 Bcf
9.9 %

Tenneco's share of royalty gas as a per cent of Tenneco's
share of 25-state gas market:

$$(45.625 \text{ Bcf/year} / 1,284 \text{ Bcf/year}) = 3.55 \%$$

Tenneco's share of royalty gas as a per cent of total
25-state gas consumption:

$$(45.625 \text{ Bcf/year} / 12,879 \text{ Bcf/year}) = 0.35 \%$$

Total U.S. Consumption of Natural Gas in 1975 (rounded): 19,000 Bcf

Yearly Royalty Gas Production as a percent of total U.S. Consumption:

$$(91.25 \text{ Bcf/year} / 19,000 \text{ Bcf/year}) = 0.48 \%$$

Yearly Prudhoe Bay gas production as a percent of total U.S.
Consumption:

$$(730 \text{ Bcf/year} / 19,000 \text{ Bcf/year}) = 3.84 \%$$

Note: Above calculations do not take into account shrinkage of
natural gas through transportation (e.g. 6% loss in liquefaction
and deliquification).

TABLE I

3.1

EFFECT OF ALASKA'S ROYALTY GAS ON NATURAL GAS SUPPLY:
TENNECO MARKET AREA

STATE	1975 Consumption (Bcf)	Tenneco % Share of Market	Tenneco Share of Market (Bcf)**	Tenneco Royalty Gas Share of Market (%)***
*Alabama	260	10	26	.36
Arkansas	270	41	42	4.03
Connecticut	64	46	29	1.63
Illinois	1130	16	181	.57
Indiana	488	41	44	4.03
Kentucky	208	13	27	.46
Louisiana	1376	41	413	4.03
Maine	2	91	2	3.23
Maryland	147	20	29	.71
Massachusetts	153	53	81	1.88
Michigan	902	6	54	.21
Minnesota	318	2	6	.07
*Mississippi	208	4	8	.14
N. Hampshire	8	72	6	2.55
New Jersey	279	6	17	.21
New York	571	27	154	.96
No. Dakota	26	21	5	.75
Ohio	951	21	200	.75
Pennsylvania	698	27	188	.96
Rhode Island	22	23	5	.82
*Tennessee	255	39	99	1.39
*Texas	3911	41	439	4.03
Virginia	123	20	25	.71
W. Virginia	172	19	33	.68
Wisconsin	367	14	51	.50
TOTAL 25 STATES	12,879	9.9	1284	.35

Notes to Table I:

- * indicates state will receive additional royalty gas supplies from Southern Natural Gas:

Alabama receives 66% of supply from Southern
Mississippi receives 13% of supply from Southern
Tennessee receives 8 % of supply from Southern
- ** Tenneco share of market expressed in Bcf was calculated by multiplying each state's 1975 consumption by Tenneco's percentage share of market (Source of these figures was Table II from "Why Tenneco", published by Tenneco). Minor inaccuracies may have occurred due to rounding.
- *** Figures for Tenneco Royalty Gas share of market assume equal distribution among states by relative share of consumption

Tenneco was chosen as an example of the impact of royalty gas commitment because original data was readily accessible. Figures for 1976 consumption among the states served by Southern Natural Gas indicate similar results. El Paso service area figures were not available.

The calculations indicate that the addition of Alaska's royalty gas to U.S. supply will increase total U.S. supply by less than 1/2 of one percent.

Prepared for House Special Committee on the Sale of Royalty Gas

TENNECO'S INTERSTATE NATURAL GAS PIPELINES

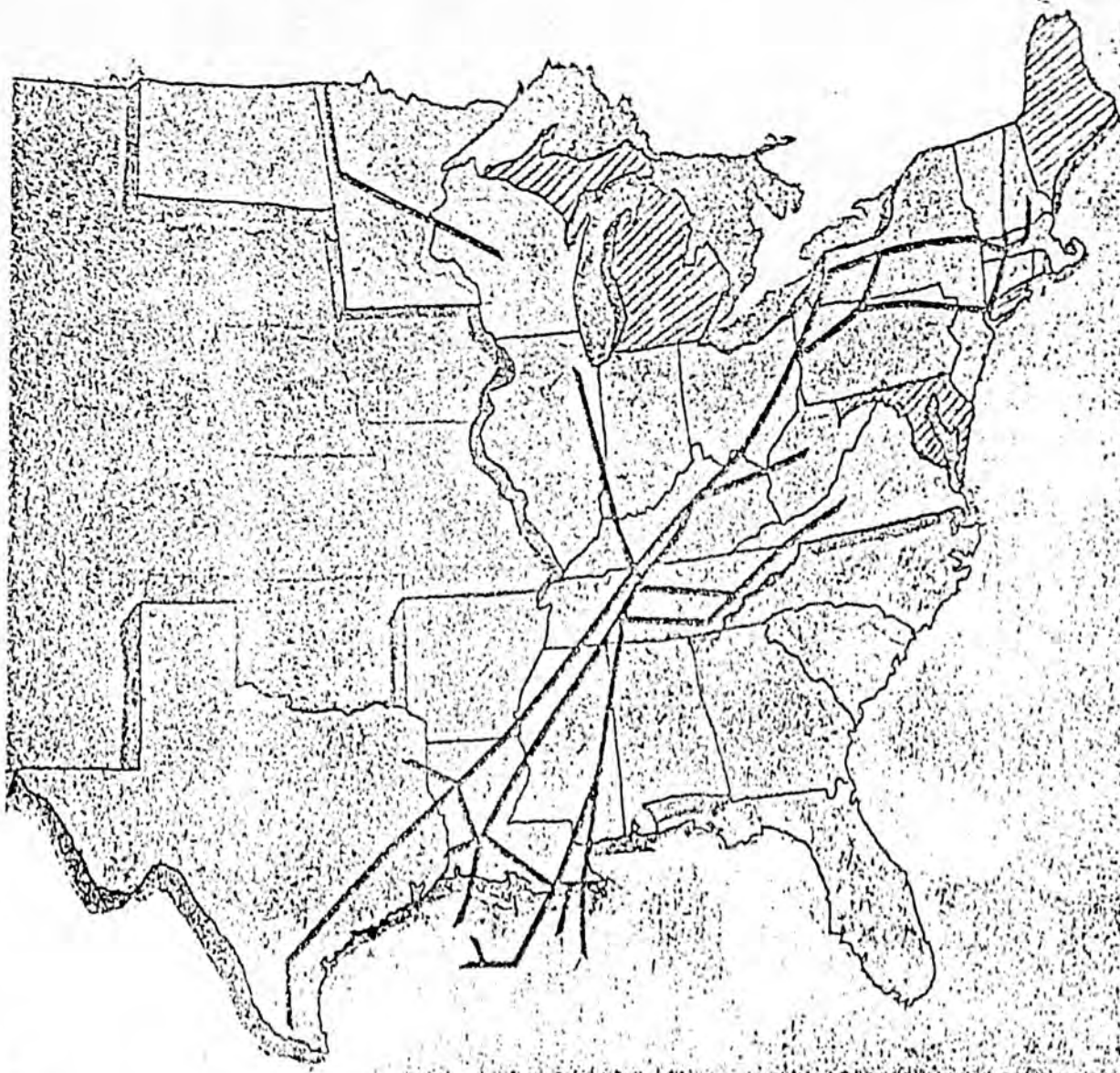
MARKET AREA

Market Impact

State	1975 ¹ Natural Gas Consumption (Bcf)	Tenneco's Share of Total State Gas Market	Population ²
Alabama	260	10%	3,577,000
Arkansas	270	<1	2,052,000
Connecticut	64	46	3,088,000
Illinois	1,130	16	11,131,000
Indiana	488	<1	5,330,000
Kentucky	208	13	3,357,000
Louisiana ³	1,376	<1	3,764,000
Maine ²	2	91	1,047,000
Maryland ²	147	20	4,094,000
Massachusetts	153	53	5,860,000
Michigan ²	902	6	9,098,000
Minnesota	318	2	3,917,000
Mississippi	208	4	2,324,000
New Hampshire	8	72	808,000
New Jersey	279	6	7,330,000
New York	571	27	18,111,000
North Dakota	26	21	637,000
Ohio	951	21	10,737,000
Pennsylvania	698	27	11,835,000
Rhode Island	22	23	937,000
Tennessee	225	39	4,129,000
Texas ³	3,911	<1	12,050,000
Virginia	123	20	4,908,000
West Virginia	172	19	1,791,000
Wisconsin	367	14	4,566,000
TOTAL	12,879		136,428,000

% of
United States 68% 65%

¹Gas consumption based on Gas Requirements Committee, September, 1976 Report. Population data based on 1975 Statistical Abstract of the United States.
²Served indirectly through another wholesaler.
³Louisiana provides 75% of Tenneco's gas. Texas provides 16%.



Source: "Why Tenneco" published by Tenneco
1976

DON YOUNG
CONGRESSMAN FOR ALL ALASKA

COMMITTEES:
INTERIOR AND INSULAR
AFFAIRS
MERCHANT MARINE AND
FISHERIES

Congress of the United States

House of Representatives

Washington, D.C. 20515

January 28, 1977

WASHINGTON OFFICE

1210 LONGWORTH BUILDING
TELEPHONE 202/225-5765

DISTRICT OFFICES

115 U.S. FEDERAL BUILDING
ANCHORAGE, ALASKA 99501
TELEPHONE 907/279-1587

202 U.S. FEDERAL BUILDING
FAIRBANKS, ALASKA 99701
TELEPHONE 907/456-6949

Exhibit 4

The Honorable John Rader
President, State Senate
Juneau, Alaska

Dear President Rader,

Thank you for your letter of January 13 requesting my views on the approval of the contracts for the sale of the State's royalty gas to Tenneco Alaska, Southern Natural Gas and El Paso Natural Gas. I welcome the opportunity to respond to these agreements and hope they will receive speedy approval by the legislature.

The sale of the State's royalty gas is a unique and highly significant element in the final decision for a route for the transportation of the North Slope natural gas to the lower fortyeight states. The difficult task of gaining first Congressional approval for Section 13(b) of the Alaska Natural Gas Transportation Act and later presidential approval for the Act will only be brought to fruition upon the successful sale of the State's royalty gas. I have reviewed the contracts at some length and would like to comment on several points contained in them.

I am impressed with the straightforward approach of the contracts. An acknowledgement of the State's desires and expectations to the purchasers of the gas will insure a well understood relationship between the parties. The people of Alaska can only benefit from this relationship.

Next, and this should be carefully considered by the Legislature, the price of the State's gas has not been established and will be subject to change by the Federal Power Commissions actions on the price of natural gas in the rest of the nation.

Overall, the protection of the State's interest is impressive throughout the contracts and is the basis for my support for the mechanics of the contracts.

The current natural gas shortages in the lower forty-eight states is firm evidence of the possible reconsideration of the comprehensive deregulation of natural gas by the Federal Power Commission and the Congress. The greater awareness of the Nation's reliance on natural gas as a result of the shortages will only heighten the controversy surrounding the selection of a route for the delivery of North Slope natural gas. Since the announcement of the sale of the State's royalty gas to Tenneco, Southern and El Paso, it has been my view that the deliberations might have been forced off center in favor of the an All-Alaska route with the entry into the lobbying effort of two more established natural gas distribution firms. With the addition of Tenneco and Southern, both of which distribute natural gas to the Southern United States, key members of the House and Senate can be convinced of the favorable aspects of the All-Alaska route and the direct benefits to their constituents. Greater National interest in the North Slope gas question can only improve the chances for the selection of an All-Alaska route.

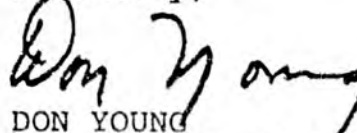
It is imperative that this effort not be jeopardized by lengthy discussions of the Legislature over the approval of these contracts. This is not to suggest that the Legislature should fail to carefully consider the proposed contracts. I would hope that upon examination of the contracts the Senate Special Royalty Gas Review Committee will conclude as I have that the sale should be approved and the Legislature will follow suit. If the joint efforts of the Congressional Delegation, the State and the people of Alaska are to meet with success, the existing momentum generated from the sale of the royalty gas should be allowed to continue.

One last point is of some importance to your consideration of the royalty gas sale. As you know, last Friday a gas treaty was signed between Canada and the United States. It is my hope that the U.S. will continue its good relations with Canada in this regard but one shouldn't reach false conclusions from the type of diplomatic exchange which is a part of our ongoing relationship with Canada. For example, the recent treaty which was signed by low-ranking officials of the State Department does not resolve critical questions which must be addressed should an overland pipeline be built through Canada. The questions of expanding the capacity of the line; the protection of U.S. equity in the line; the rate base; the Canadian native land claims; etc. have not been answered.

The two issues which we touched on in the treaty, the non-intervening of through-put and the non-discrimination of taxation are questions which in the long run will have to be answered by the Provinces and not by the U.S. All in all, the greatest obstacle to a Canadian pipeline is Canada and it is my hope that the Legislature will approve the contracts so that we can get on with it down here in Washington, and let the Canadians haggle among themselves.

Thank you for the opportunity to express my views on this important issue. I look forward to continuing my efforts to gain approval of an All-Alaska route for the natural gas line.

Sincerely,



DON YOUNG

Congressman For All Alaska

RUSSELL B. LONG, LA., CHAIRMAN

ARMAN E. TALMADGE, GA.
NCE HARTKE, IND.
ABRAHAM RIBICOFF, CONN.
BRY F. BYRD, JR., VA.
CLYDE NELSON, WIS.
VICTOR P. MONDALE, MINN.
FRANK GNAYEL, ALASKA
OTTO BENTSEN, TEX.
LESLAM D. HATHAWAY, MAINE
JOHN K. HASKELL, COLO.

CARL T. CURTIS, NEBR.
PAUL J. FANNIN, ARIZ.
CLIFFORD P. HANSEN, WYO.
ROBERT J. DOLE, KANS.
BOB PACKWOOD, OREG.
WILLIAM V. ROOTH, JR., DEL.
BILL BROCK, TENN.

United States Senate

COMMITTEE ON FINANCE
WASHINGTON, D.C. 20510

MICHAEL STERN, STAFF DIRECTOR
DONALD V. MOOREHEAD, CHIEF MINORITY COUNSEL

Exhibit 5

Honorable John Rader
Alaska State Senate
Pouch V
Juneau, Alaska 99811

Dear John:

Thank you for writing me on January 13 to solicit my views on (1) the proposed contracts for sale of Alaska State's royalty natural gas from the Prudhoe Bay field to Tenneco Alaska, Inc., El Paso Natural Gas Company and Southern Natural Gas Company, and (2) Senate Concurrent Resolutions Nos. 3-5, to approve these sales.

I find the contracts attractive in that they require the buyers to support a trans-Alaska route for a natural gas line from Prudhoe Bay, thereby building into the contract a strong incentive to work hard for such a line. In the event, however, than any other route is chosen and certified for gas from Prudhoe Bay, the Governor may terminate the contracts.

Furthermore, the provision whereby the State has the right to take back whatever gas it needs for in-State use is of obvious merit. This provision, I understand, includes the exchange of Prudhoe Bay gas for gas located elsewhere in Alaska if the exchanged gas is used in Alaska.

Commissioner Martin assures me that although the price provision in the contract is complex, the basic principle behind the term is simple: under all "reasonably foreseeable circumstances" the State will receive the highest price being paid for gas from the same reservoir and never less than would have been received had the State taken its royalty-in-value.

It also is possible under the contracts for the State, should the situation ever arise where it is advisable, to switch its position on the gas line route. If this occurred, the buyer may either terminate the contract or shift its support to the new route supported by the State.

5.1

page two

The contracts clearly recognize the Legislature's authority to approve or disapprove, as provided for in AS 38.06. The review and approval by the Legislature are both necessary and desirable actions.

Lastly, these contracts would see Alaskan gas potentially reaching consumers in 42 of the lower 48 states, since the three purchasers combined have markets in 42 states. This major concern, that Alaska's gas abundance reach as much of the rest of the United States as possible, cannot be overstated with my colleagues in the Congress.

I concur wholeheartedly in these contracts and in the Senate Concurrent Resolutions Nos. 3-5 and add my support to them all.

Thank you for the opportunity to express my views to you as Chairman of the Alaska Senate Special Royalty Gas Review Committee.

Sincerely,



Mike Gravel

cc: Honorable Clark Gruening
Chairman, House Special Committee
on Sale of Royalty Gas
Pouch V
Juneau, Alaska 99811

K M ASSOCIATES
Consultants
511 HEAVITREE LANE
SEVERNA PARK, MD. 21146

January 27, 1977

Exhibit ^d 6

Senate President John Rader
Alaska State Legislature
Pouch V
Juneau, Alaska, 99811

Dear Senator Rader:

Thank you for the invitation to testify before your Special Senate Royalty Gas Review Committee.

Westinghouse Electric Corp. has not been involved in any aspect of Alaska natural gas since mid-1976, but my consulting organization, KM Associates, is.

We do not now have adequately documented material sufficient for submission for the public record. We believe oral testimony, unsupported by data, is insufficient for your committee's purpose.

We do, however, feel the gas rights applicants have been less than candid about the pipeline proposals. Without intending any presumption, we ask the committee to find out several crucial details about the applicants' view of a new trans-Alaska gas pipeline. Specifically, we think well supported answers should be obtained for a number of questions which are contained in the attached list.

The questions are quite detailed and specific and, while the applicants may not be prepared for them, the applicants should have enough information to reply within a few weeks. The issues of a well defined market for the gas, a respectable wellhead value to the Alaska royalty gas and a supportable gas transmission cost estimate must be faced. Please pardon our scepticism about the applicants' plans but other applicants in other contexts (notably before the Canadian National Energy Board) have not been candid or straightforward.

We have been doing an intense study of the Prudhoe Bay associated gas issue and some of our observations will shortly be released in a brochure. We will forward this brochure to you as soon as it is available.

Although the entire story is not in on the gas pipeline proposals, a mounting collection of evidence suggests the pipelines

6.1

K M ASSOCIATES
Consultants
511 HEAVITREE LANE
BEVERNA PARK, MD. 21146

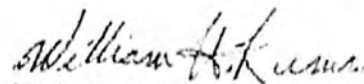
Senate President John Rader
January 27, 1977
Page 2

have very serious problems. We believe the wisest course for Alaska is to do nothing about gas rights sale at this time. We realize Alaska does not want to be steamrolled by the FPC and the lower 48 interests but the Alaska royalty share is protected somewhat from sequestration by PL 94-586. A more important point, perhaps, is that the pipelines are a very long way from being operational. Enclosed are some of the illustration from our forthcoming brochure.

We have also taken the liberty of advising Dr. Sullivan S. Marsden of Stanford University of your interest and the hearings. He is sending his material directly to you. His work is cited in the Department of Interior Environmental Impact Statement in the volume on "Alternatives to the Proposed Action", under "Alternative Transportation Systems", pages 123, 124.

Thank you for asking us to testify. When the needed study has been performed we would be happy to testify. It is to be hoped that the State will assist us in getting the study done and will not preclude the ALASKAN METHANOL APPROACH by precipitated action approving the sale of 1/8th of the gas to an as-yet-unbuilt gas pipeline.

Sincerely,


William H. Kumm
Principal
KM Associates

enclosures

WHK:agk

QUESTIONS FOR ROYALTY GASAPPLICANTS

January 1977

- 1) What is the expected cost of the entire gas transmission project in current dollars - including the North Slope gas processing plant, the pipeline, the liquification plant, the tankers, the lower 48 terminals and the re-gassification plant?

Allowing for interim capital charges, what is the ultimate "net base" investment expected?

- 3) What are the expected operating costs in current dollars?
- 4) What will be the planned offer price to the lower 48 distribution companies? That is, what "city gate" price will the distribution companies have to pay?
- 5) What is the projected price of non-Alaska gas in the projected sales period? Will North Slope gas be more or less costly?
- 6) If the applicants expect the North Slope supply to require a higher price than other lower 48 supplies of gas, how will the premium price gas fit into the regulated utility price structures?
- 7) What customer categories do the applicants expect to serve? Applicants need to identify year round base loads, in areas such as home heating, industrial process fuel, electric utilities, and petrochemical.
- 8) What is the applicants' estimate of the "netback" value of the North Slope gas? Will the use of the gas cap affect oil production? Will costs or charges be levied onto the gas cost structure if oil production is adversely affected by use of the gas cap?
- 9) If the FPC rules in favor of a non-trans-Alaska route, for the gas pipeline, what plans do the applicants have for disposal of their gas rights? Do the applicants propose to find an alternative to the gas pipeline? Would the applicants propose to retain their rights to the gas and ship it through the FPC certificated pipeline for separate lower 48 distribution?
- 10) Do the applicants plan to acquire other gas rights? What value do the applicants project for the non-Royalty gas?
- 11) What methods of finance do the applicants foresee for the trans-Alaska pipeline route? Can the applicants offer any guarantee that the trans-Alaska pipeline can be financed?

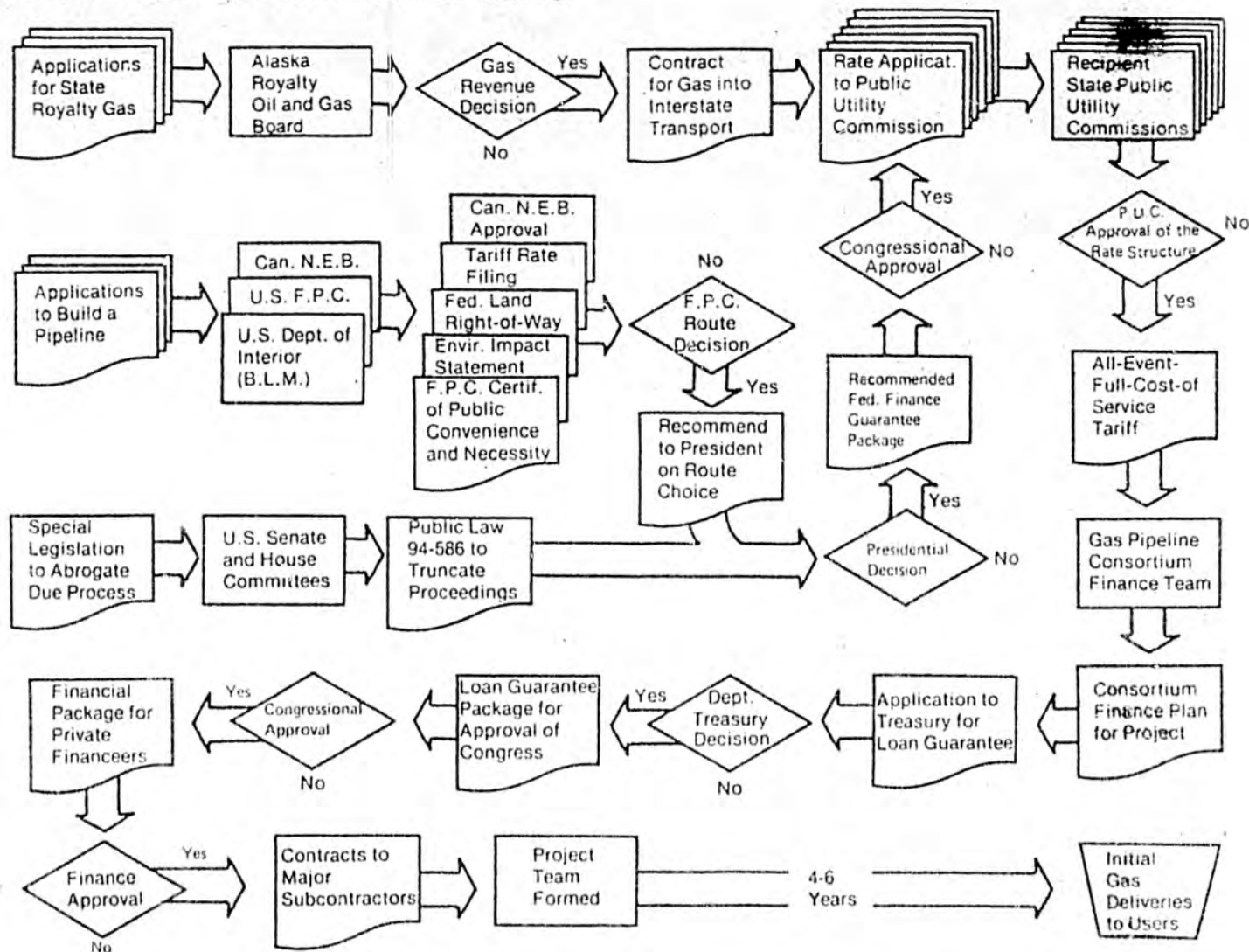
- 12) Do the applicants plan to request of the FPC an "all-events tariff"? That is, will payment floor guarantees be necessary or desirable?

THE ALASKAN
METHANOL
WAY

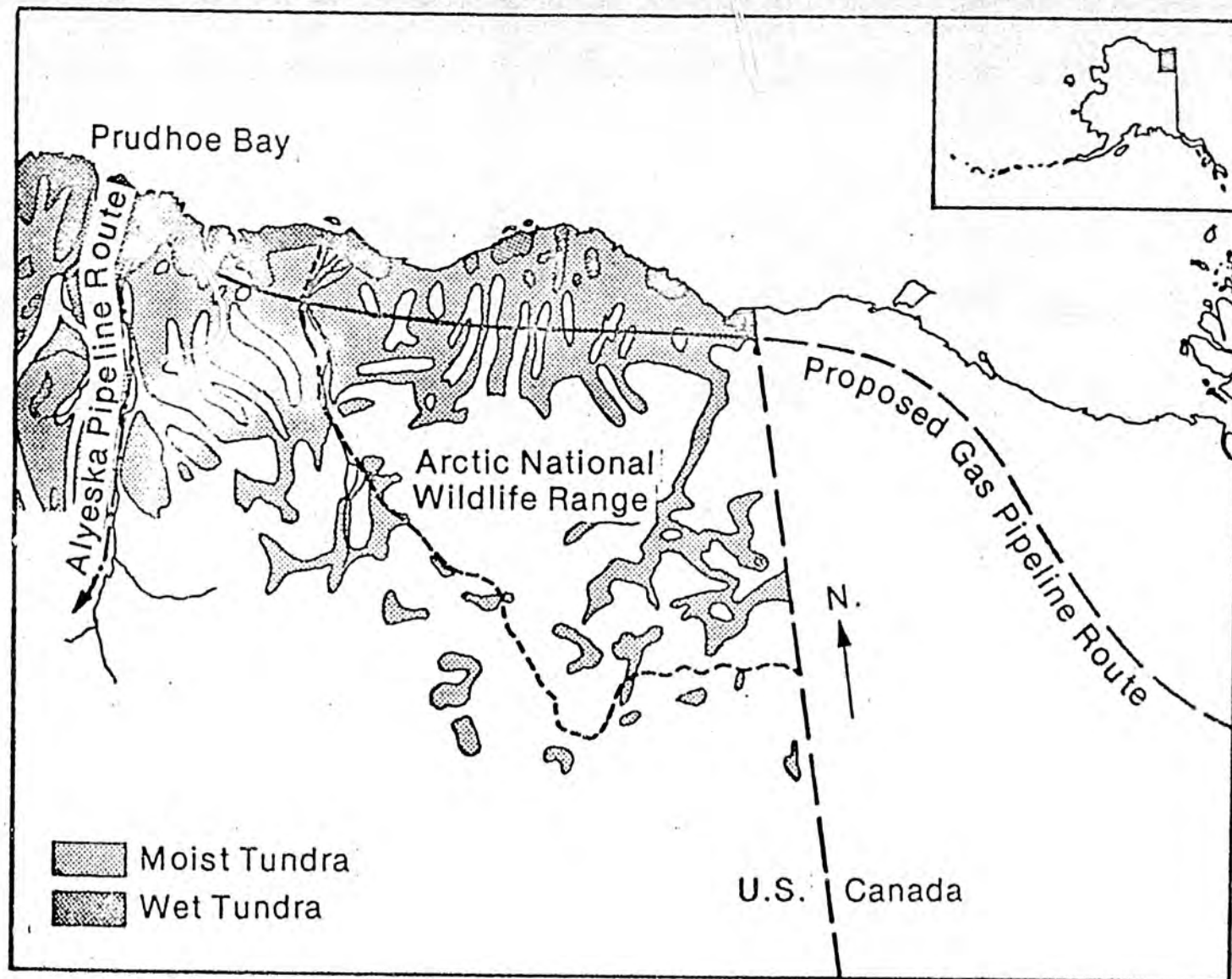
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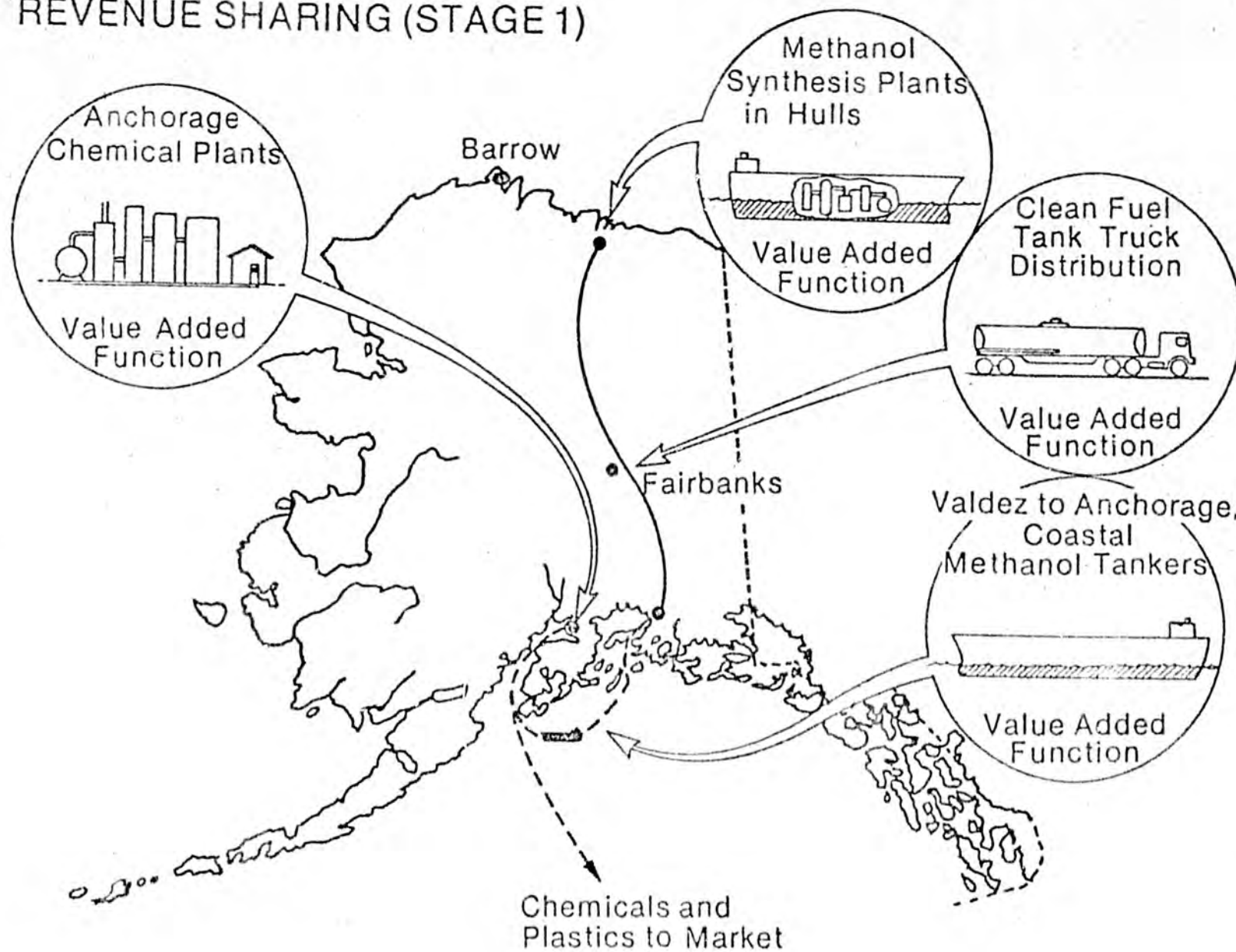
THROUGH THE MAZE WITH GAS



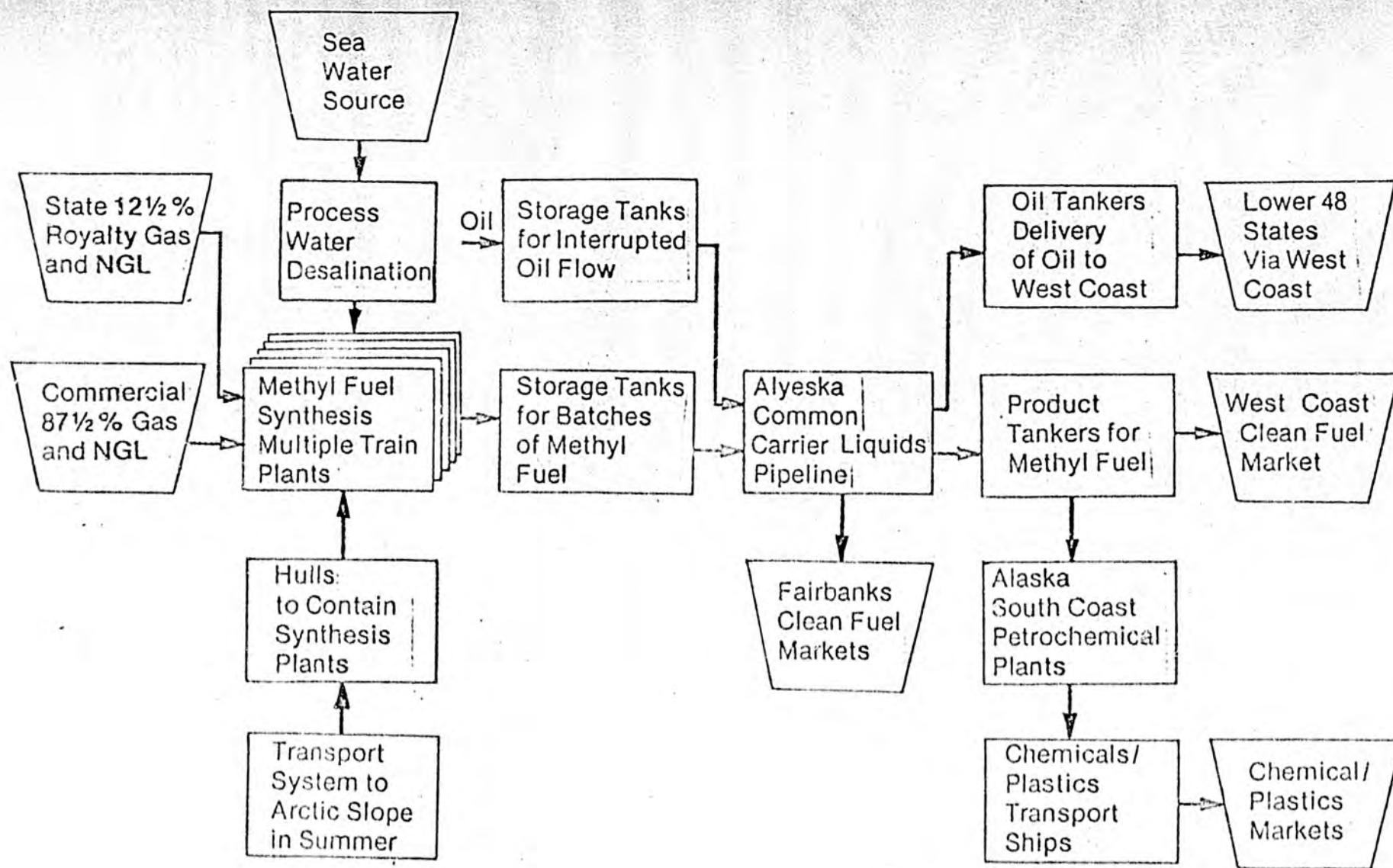
THE ENVIRONMENTALISTS LAST STAND



REVENUE SHARING (STAGE 1)



STAGE I SYSTEM ELEMENTS



THE IDEA

An Unmarketable Commodity |

- Solution Gas From Prudhoe Bay |

+ |

A People's Dilemma |

- Maximize Alaska's Royalty Oil and Gas Value |

+ |

Surplus Capacity |

- The Alyeska Liquids Pipeline |

+ |

Imagination |

= |

The Alaskan Methanol Way

TELEGRAM

RCA ALASKA COMMUNICATIONS, INC.
PHONE: 586-6440
JUNEAU, ALASKA 99801

EXHIBIT # 7

Alaska Farmland International
Energy Co.

1977 JAN 31 PM 9 37

#

02059 N. ANCHORAGE ALASKA 501 01-31 0540P AST

PMS SEN JOHN RADER .

POUCH V 1374

JUN

I WILL BE UNABLE TO ATTEND SENATE ROYALTY GAS
REVIEW HEARINGS TOMORROW. IT IS MY WISH HOWEVER,
TO CONVEY TO THE COMMITTEE SOME COMPANY AND
PERSONAL FEELINGS REGARDING THE THE CONDUCTANCE OF
NEGOTIATIONS IN OUR EFFORTS TO PURCHASE A PORTION
OF PRUDHOE BAY ROYALTY GAS. IT SHOULD BE MADE
CLEAR THAT FARMLAND INTERNATIONAL ENERGY CO.
OR THE PARENT COMPANY FARMLAND INDUSTRIES
INC. NO LONGER MAINTAIN AN INTEREST IN THE PURCHASE
OF THE ROYALTY GAS. REASONS FOR NO LONGER HOLDING
AN INTEREST SHOULD BE CLEAR IN DEPARTMENT OF NATURAL
RESOURCES CORRESPONDENCE ON THE MATTER. WHEREIN
WE EXPRESSED DISPLEASURE WITH THE MISLEADING
TACTICS ENCOUNTERED DURING THE COURSE OF OUR
ATTEMPT AT NEGOTIATIONS WITH HIGHLY PLACED OFFICIALS.
RESULTING IN THE PARENT COMPANIES DECISION NOT TO
PURSUE THE MATTER. AS FARMLANDS ALASKAN MANAGER
AND A CITIZEN OF ALASKA I HOLD PERSONAL FEELINGS

AGO 800558

ABOUT THE PROPOSED SALE OF ALL THE PRUDHOE BAY ROYALTY GAS TO 3 COMPANIES AS FOLLOWS; 1. I QUESTION UNDER WHAT AUTHORITY THE STATES NEGOTIATORS SELECTED THREE LARGE COMPANIES AND VIRTUALLY ELIMINATED EVERY OTHER PROPOSING COMPANY ON THE GROUNDS THAT THEY COULD NOT SHOW SUFFICIENT POLITICAL PROWESS TO QUALIFY OR THAT THEIR PROPOSALS WERE COMPLICATED THE ISSUE UNQUOTE. TO QUOTE COMMISSIONER MARTIN IN THAT THEY MIXED PROPOSALS TO DEVELOP INSTATE INDUSTRY AND PROVIDE GAS LINE SUPPORT WHEREAS, THE SELECTED THREE PROMISED SOLELY TO PROVIDE POLITICAL SUPPORT FOR A SYSTEM WHICH HAS NOT BEEN PROVEN TO BE IN THE BEST INTEREST OF ALASKA OR OF THE UNITED STATES OF AMERICA. 2. I QUESTION WHAT SUPPORTING MATERIAL WAS USED TO SEEK AN AMENDMENT TO THE ALASKA NATURAL GAS TRANSPORTATION ACT OF 1976 ALLOWING THE STATE TO RETAIN CONTROL OVER ITS ROYALTY GAS UNLIKE OTHER STATES. IT SEEMS UNLIKELY THAT A GAS SALE TO EXPORT 100 PER CENT OF THE GAS WOULD HAVE INFLUENCED THIS LEGISLATION, YET VERY LIKELY THAT PROPOSALS TO UTILIZE ROYALTY GAS OR A PORTION THEREOF WITHIN ALASKA WOULD HAVE BEEN EFFECTIVE AND MOST LIKELY WAS. 3. I QUESTION THAT POLITICAL CLOUT ALONE IS A SUFFICIENT REASON TO SELECT A BUYER COMPANY WHILE NUMEROUS INSTATE

USE PROPOSALS WERE THROWN OUT. VIRTUALLY ELIMINATION
THE POSSIBILITY OF ENTICING INDUSTRIAL DEVELOPMENT
THROUGH THE SALE OF ROYALTY GAS AND THAT FUTURE
ROYALTY GAS CAN BE COMMITTED TO A COMPANY BECAUSE
IT IS UNHAPPY WITH THE VOLUME INITIALLY COMMITTED
AND WITH THE STATES ABILITY TO RECALL THE GAS
FOR INSTATE USE. 4. I BELIEVE THAT DEPARTMENT OF
NATURAL RESOURCES DRAFT STIPULATIONS REGARDING
THE PRIVATE DEVELOPMENT OF INDUSTRY AS ADVANCED
TO ALASKA PETROLEUM COMPANY, AND TO FARMLAND FOR TWO,
ARE DESIGNED TO DISCOURAGE DEVELOPMENT IN ALASKA.
5. I BELIEVE THE SO CALLED QUOTE POLITICAL CLOUT
UNQUOTE WE ARE SUPPOSED TO RECEIVE IF THE GAS SALES
ARE APPROVED BY THE LEGISLATURE WILL SERVE MOSTLY
TO INSULT THE BASIC INTELLIGENCE OF OUR U S CONGRESS
AND WILL ALIENATE ALASKAS INTERESTS WITHIN THAT
BODY FOR MANY YEARS TO COME. 6. I BELIEVE HEARINGS
SHOULD BE CONDUCTED ON THIS MATTER IN BOTH FAIRBANKS
AND ANCHORAGE. RESPECTFULLY SUBMITTED.

CC LESLIE SWANSON

POUCH V

JUNEAU ALASKA

HALL GREEN

Tennessee Gas Transmission
A Tenneco Company

Tenneco Building
P.O. Box 2511
Houston, Texas 77001
(713) 229-2131



January 18, 1977

Exhibit # 8

Mr. Richard Maullin
Chairman
California Energy Resources Conservation
and Development Commission
1111 Howe Avenue
Sacramento, California 95825

Dear Mr. Chairman and Members of the Commission:

The purpose of this letter is to provide comments directed essentially toward Volume IV of your draft Biennial Report: "Alaskan Natural Gas: Criteria for Selection of a Transportation System."

Tennessee Gas Transmission and its sister company Tenneco Alaska, Inc. have not been an active participant in hearings leading to publication of your draft Biennial Report. We have, however, communicated with your staff concerning some issues discussed in the Report.

Recently Tenneco Alaska, Inc. signed an agreement with the State of Alaska to purchase a portion of the State's Prudhoe Bay royalty natural gas; a copy of that agreement is attached at Tab A. One term of that contract, which is presently being considered by the Alaska legislature, provides that we will support a transportation system for Prudhoe Bay gas involving a Trans-Alaska pipeline, a liquefaction facility in Southern Alaska, and trans-shipment to the lower 48 by LNG tanker. As provided in the agreement, we may lose the right to purchase Alaska's gas if that system is not selected.

Prior to signing that agreement, we were not committed to any of the three competing systems for transporting Alaskan natural gas to the lower 48 states. Before agreeing to support the Trans-Alaska transportation system our Company analyzed many of the same issues discussed in your draft Biennial Report for we risk the loss of our investment made in supporting the route if that route is not selected. We agreed to support that delivery system because we have concluded that it is more in the national interest of the United States than the two competing delivery systems and, for this reason, is more likely than either of them to be designated by the President pursuant to Section 7 of the Alaska Natural Gas Transportation Act of 1976.

In the following portions of this letter I will set forth, though necessarily in somewhat summary fashion, many of the considerations behind our conclusion that the Trans-Alaska delivery system has national interest advantages over the competing systems. I am hopeful these

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TENNESSEE GAS TRANSMISSION COMPANY

Mr. Richard Maullin

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January 18, 1977

comments will be useful to you not only in preparing your final Biennial Report but also in preparing comments to the President pursuant to Section 6 of the Alaska Natural Gas Transportation Act of 1976.

The criteria we applied in reaching our decision were essentially the same as those outlined on pages 9-10 of Part IV of your Biennial Report. Since we do not have customers in California, we were not directly concerned with your criteria 8 and 10; however, we recognize that these issues are appropriate for consideration by the State.

In addition to the criteria listed in your report, we also considered the following specific criteria:

- Future expansibility of the delivery system to accommodate new discoveries of Alaskan natural gas;
- Consistency of the delivery system with probable future U.S. energy policy.

To a degree we agree with the statement at page 9, Part IV, of the draft report that:

Given the difficulties in siting and regulating operations of liquefied natural gas (LNG) terminal facilities, El Paso's proposal to transport North Slope gas by pipeline to Southern Alaska and then to liquefy it and transport by ship in the form of LNG would place California in a position of unnecessarily high reliance on a form of gas delivery more appropriate for import projects for which there is no overland pipeline alternative.

The degree to which we agree is that if the proposed pipeline projects crossed only U.S. territory thereby eliminating the additional levels of governmental controls and regulations and if they did not give rise to serious native claims issues, we believe the pipeline delivery system proposed by Arctic Gas would be preferable to an LNG delivery system from a "national interest"--as opposed to a California or an Alaskan point of view, even though the Arctic Gas Route presents some very difficult environmental problems and some unique Arctic construction problems. For reasons discussed below, we do not have the same view of the Alcan route.

We believe, however, that it is not possible to ignore or minimize the significance of the fact that both of the competing pipeline proposals must transit a very significant portion of Canadian territory and that this fact gives rise to many serious questions concerning financability, timely completion, operating costs, and the expansibility of these projects. In fact, under the test quoted above, we seriously doubt that, as a practical matter, there is an available "over-land pipeline" alternative to the Trans-Alaska delivery system because legitimate and foreseeable Canadian interests

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will preclude approval and completion of a trans-Canada pipeline within the time frame within which Alaska gas must reach our lower 48 states if our national interests are to be served.

Our assessment of these issues has been made from the perspective of a company that is by no means anti-Canadian. We have substantial business interests in Canada, and we intend to maintain and, to the extent possible, further those interests. Moreover, we have the highest respect for the ability of Canadian leaders to reach and implement decisions that are in the interest of the Canadian people. It is precisely for these reasons, however, that we believe the Canadian government will not reach a decision within the near future (i.e., the next two years) to grant necessary permits for, and to allow the actual construction of either the proposed Arctic Gas pipeline (with or without a Western Leg) or the proposed Alcan pipeline.

The salient points of our analysis are as follows:

a. Neither of these projects is necessary to assure that projected Canadian demand for natural gas can be met by Canadian supply within the next five to seven years.

--- As recent testimony before the NEB reveals, there are substantial unconnected supplies of natural gas now available in Canada other than discoveries in the Mackenzie Delta. These supplies could be connected and delivered through existing delivery systems to markets in Canada.

--- Demand in Canada has not been increasing at previously projected rates. Prices have increased more in that country than in this country, which has had a dampening affect upon demand.

--- If interim supplemental supplies are necessary within approximately five to seven years, there are other alternatives available to Canadians. As an example, Tenneco LNG Inc. has contracted to land the equivalent of a billion cubic feet per day of Algerian LNG in New Brunswick of which up to 17% is available for Canadian consumption.

b. Available evidence indicates that reserves sufficient to sustain Canadian participation in a major pipeline project are likely to be proven in the Canadian Arctic Islands before they are proven in the Mackenzie Delta.

TENNESSEE GAS TRANSMISSION COMPANY

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January 18, 1977

- Current reserves discovered in the Arctic Islands total 15-16 Tcf. Threshold volumes sufficient to justify a pipeline market outlet range from 20 to 30 Tcf depending upon pipeline size and desired deliverability.
- Two new ventures have recently been consummated which will commit sufficient exploratory funds in the Arctic Islands to insure the discovery of threshold reserves. In the fall of 1976, Home Oil Company agreed to purchase \$30.5 million of Panarctic common stock with the funds to be allocated to exploration over a three-year period. The second venture involves a commitment by a consortium composed of Imperial, Gulf, Petro-Canada and Panarctic to spend \$80 million for Arctic Island exploration over the next five years. These new funds, combined with other monies destined for Arctic exploration, will support the activity level necessary to discover the reserves required to meet future Canadian demand plus the possibility of additional future exports to the U.S.

c. Approval and implementation of either the Arctic Gas or the Alcan project would have negative economic impacts in Canada which would not be off-set by economic advantages, at least in the absence of a strong Canadian demand for Mackenzie Delta gas. In any event there are insufficient proven reserves in the Mackenzie Delta to provide the daily deliverability required to justify the project.

- Canadian law and regulations require majority equity ownership of facilities located in Canada and that, to the extent possible, such facilities be built by Canadian materials and labor. Fulfillment of these requirements will preclude the implementation of any other substantial gas pipeline project in Canada for the next several years and could deny financing to other substantial public works, or energy-related projects in other parts of Canada during this same time period.
- Implementation of either of these projects will have an inflationary impact in Canada that will be nationwide.
- The primary benefits to be derived from these projects will be jobs and tax base in Western Canada, where unemployment is lower than in other parts of Canada and where per capita income is higher.
- The negative economic impacts of these projects will be felt primarily in Eastern Canada where there is higher unemployment, lower per capita income, a greater population,

TENNESSEE GAS TRANSMISSION COMPANY

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political division, and where a substantial portion of economic activity is devoted towards the manufacture of products for export, which activity is very directly and negatively impacted by inflation.

d. Legitimate native claims, socio-economic and environmental concerns expressed by many Canadian citizens will be voiced in the forthcoming Berger Commission report. The existence of this report, regardless of its conclusions, will make it difficult for the Canadian government to override these concerns and approve and allow the prompt implementation of either the Gas Arctic or Alcan projects without an extended period of debate.

--- All indications we see from Canadian news reports are to the effect that there is substantial opposition by the native peoples and by environmental and other groups in Canada to either the Arctic Gas or the Alcan projects.

--- While opposition to the Alcan project appears to be less than opposition to the Arctic Gas project, the benefits to Canada are much less from the Alcan project than from the Arctic Gas project because Alcan will supply no Canadian gas to Canadian markets.

e. The facts under paragraphs a through d provide the Canadian government an opportunity and sound reasons to delay at least two years the decision whether Mackenzie Delta gas or Canadian Arctic Island gas should be the next source of Canadian gas to bring to Canadian markets. Proposals that do not depend upon approval of the Arctic Gas or the Alcan project are on the drawing boards for both such projects--i.e., the Foothills project for Mackenzie Delta gas and the Polar Gas project for Canadian Arctic Island gas. Many complicated considerations will bear upon a Canadian decision as to which project should proceed first. It would not be in the Canadian government's interest to make a precipitous decision on that issue, which would be the case if they were to approve the Arctic Gas project or the Alcan project within the next year or two.

f. Other, more fruitful avenues of U.S.-Canadian cooperation are available than the Arctic Gas or Alcan projects.

--- Success in any jointly-approved and supported major energy project will be important to both the U.S. and the Canadian governments. For reasons discussed in this letter, both the Arctic Gas and the Alcan projects involve substantial risks of delay, financial difficulties, and of disputes over future expansibility and provincial taxes. Both the U.S. and Canadian federal governments will want to avoid disputes over these issues.

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- The most immediate prospect for successful cooperation is the Tenneco-Algerian LNG project which is the subject of filings before the NEB and FPC on December 20, 1976.
- The Polar Gas Project is also a possible avenue of successful U.S.-Canadian cooperation in the energy area. We expect that project to be the subject of a filing before the NEB in the last quarter of 1977.
- U.S.-Canadian cooperation may be required to implement a delivery system to take surplus West Coast oil to our Midwest.

A review of the submittals to the National Energy Board concerning the proposed Arctic pipelines reveals some divergence of opinion as to which route or if any proposed route is in the best interests of Canada. In the near future we will consider commissioning a study by a neutral, respected Canadian expert to assess the validity of the points made under paragraphs a through d above and to determine the probable net economic benefits to the Canadian economy and the various geographical areas of Canada of the various alternatives available to Canada. If such a study should reveal that it is not in the national interest of Canada to grant the necessary approvals and allow implementation to begin for either the Arctic Gas or the Alcan projects within the next two years, we believe that these projects should not be considered by U.S. authorities as practical alternatives to a Trans-Alaska LNG system for delivering Prudhoe Bay gas to the lower 48 consistent with United States' national interest. The supply/demand picture in the lower 48 states requires the promptest practical delivery of Prudhoe Bay gas to our markets. The critical shortage of domestic natural gas supply existing today due to the extremely cold and prolonged weather east of the Rockies has highlighted these requirements.

We believe the following considerations also support the conclusion that the Trans-Alaska delivery system is in the national interest and will be approved by the President.

i. Once construction starts, timely completion of the Trans-Alaska system is more reliable than timely completion of either of the other projects. Risks of construction delays for the Arctic Gas project are substantially greater than they are for the Trans-Alaska project, as revealed by Department of Interior reports. Both Arctic Gas and Alcan face purely internal Canadian issues, such as native claims. As your report so appropriately points out beginning at page 11 of Part IV, decision makers must consider the probable completion date, rather than the date when permits are granted, in determining what project is in the national interest.

TENNESSEE GAS TRANSMISSION COMPANY

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ii. The Trans-Alaska project will create more U.S. jobs and generate more U.S. taxes than either of the competing systems.

iii. The Trans-Alaska system can much more readily be financed for the reasons cogently set forth in the December 16, 1976, summary brief of El Paso filed in the FPC proceedings (CP76-96, et al) at pages 13 to 16. This is a matter of extremely great practical and political significance as reflected by Section 7 of the Alaska Natural Gas Transportation Act. It would be a serious mistake to believe that these financing problems will not materially delay both the Alcan and Arctic Gas pipeline routes after necessary governmental approvals for the project have been obtained.

iv. Present information indicates to us that the Canadian government may not reach a decision on this issue prior to the end of 1978, while the Alaska Natural Gas Transportation Act requires a decision from the President no later than the end of 1977. Arctic Gas Pipeline indicated in mid-December, 1976, that final government approval of the project could not be expected before April 15, 1978.

v. If the U.S. government takes action to reject as a practical matter the Trans-Alaska delivery system before the government of Canada has taken all necessary steps to assure that it will grant permits for and allow the promptest practicable completion of one of the competing pipeline alternatives, the United States will be subject to a serious bargaining disadvantage vis-a-vis the Canadian government. The Canadian government's responsibility is to its citizens, and this responsibility will require it to take advantage of its bargaining position.

vi. Because onshore and offshore Alaska will be the most prolific area of exploration for energy in the lower 48 states during the next 20 to 30 years, national policy should favor the development of delivery systems to take that energy (oil and gas) from the West Coast to other parts of the United States. (Existing delivery systems from the Gulf Coast to the West, East and Midwest reflect the fact that the Gulf Coast has been our major source of energy supply.) Natural gas will probably be found in substantial quantities in various parts of Alaska, onshore and offshore. West Coast LNG facilities will facilitate delivery of this gas to the Eastern part of our nation. They will also facilitate the importation of LNG from Indonesia and Latin America as natural gas in those areas becomes available for our markets.

TENNESSEE GAS TRANSMISSION COMPANY

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Mr. Richard Maullin

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vii. There will be substantial U.S. opposition to the Arctic Gas proposal because of its impact upon the Arctic Natural Wildlife Range. This opposition can take many forms and can delay timely completion of that project, even if it is approved. The prospect of such delay will be a major factor in any decision looking toward the promptest practicable implementation of a delivery system from Prudhoe Bay gas.

viii. Close scrutiny reveals, as reflected in the Staff report of the FPC, that the Alcan project offers no substantial economic or environmental benefits to the U.S. compared to the Trans-Alaska project. In fact, it is economically inferior to the Trans-Alaskan route and involves serious environmental and conservation problems that are avoided by that route. It requires many more miles of pipeline and, therefore, many more real, non-renewable resources than either of the other projects. It also involves substantial risks that the project will not be able to be expanded to accommodate future discoveries of Alaskan gas. Moreover, as mentioned, since the project offers very few benefits to the Canadian nation and several detriments, its approval and implementation is highly improbable. Its apparent attractiveness is that it is a "compromise" between two vigorously competing projects. But the real interests involved in the selection of a delivery system for Alaska gas are so important that it is unlikely that this quality alone will justify approval of the Alcan route.

We hope these comments are useful to you. We would be happy to meet with you or your staff to discuss them in more detail.

Very truly yours,

TENNESSEE GAS TRANSMISSION COMPANY

Robert C. Thomas
Senior Vice President

RCT:kl

Attachment

Exhibit 9

SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

Form 8

AMENDMENT TO APPLICATION OR REPORT

Filed pursuant to Section 12, 13 or 15(d) of the
Securities Exchange Act of 1934

For the Month of January 1976

Tenneco Inc.
P. O. Box 2511
Houston, Texas 77001

AGD 800569

9.1

SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

FORM 8

AMENDMENT TO APPLICATION OR REPORT
Filed pursuant to Section 12, 13 or 15(d)

of

THE SECURITIES EXCHANGE ACT OF 1934

TENNECO INC.

(Exact name of registrant as specified in charter)

AMENDMENT NO. 1

The undersigned registrant hereby amends its Current Report on Form 8-K for the month of January 1976 by providing information for the following item as set forth in the pages attached hereto:

ITEM 13

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this amendment to be signed on its behalf by the undersigned, thereunto duly authorized.

TENNECO INC.

By EDWARD J. HARRISON
Edward J. Harrison
Senior Vice President and
General Counsel

Date: February 13, 1976

Item 13. Other Materially Important Events

9.2

In March 1975 the management and the Audit Committee (composed of four outside directors) of Tenneco Inc. reviewed certain payments to foreign business consultants during 1974 in connection with the acquisition or proposed acquisition of properties or materials from foreign governments or agencies thereof. It was concluded at such time that the payments were for valid business purposes and that there was no indication the payments were illegal or improper. Accordingly, no action was taken. Later in 1975, however, the matter was reconsidered by management because of the publicity concerning the new and emerging concept of "sensitive payments" and the concern expressed by various Securities and Exchange Commission (the "Commission") representatives with respect thereto. At a meeting in October 1975 the Audit Committee, with the concurrence of the full Board of Directors, determined that in light of the information presented at the meeting concerning such 1974 payments and the recent publicity concerning foreign and domestic bribes and political activities of an illegal or questionable nature by other corporations, management should undertake at once a full and complete review of the Company's foreign and domestic operations. Tenneco Inc. and its subsidiaries are hereinafter referred to as the "Company" unless otherwise indicated. The Audit Committee authorized Arthur Andersen & Co., the Company's independent public accountants, and Baker & Botts, the Company's outside legal counsel, to assist in such review. The Commission was promptly advised that, in compliance with the Commission's publicly enunciated and recommended voluntary disclosure program, the review was being made for the period beginning January 1, 1970 and that a report to the Audit Committee and to the Commission would be made as promptly as practicable.

The review has been conducted by representatives of Arthur Andersen & Co. and Baker & Botts, with the active assistance and cooperation of the Company's management. Interim reports by such representatives to the staff of the Commission were made on October 30, and December 18, 1975 and January 20, 1976. Reports to the Audit Committee, and to the full Board of Directors, were made on December 10, 1975 and January 7, 1976.

Information was obtained through written inquiries and personal interviews of executive personnel and other employees of the Company and of certain foreign consultants. Approximately seventy-five such persons have been contracted in one manner or the other, or both. Although no pattern of improper or questionable conduct was revealed either in foreign or domestic operations reviewed at the direction of the Audit Committee, there have been reports of apparently improper or questionable practices in certain instances.

The Company uses numerous local attorneys, advisers, consultants and agents in connection with certain of its foreign operations in approximately 24 countries. These individuals are independent businessmen, many of whom have written contracts with the Company relating to specific countries or areas or to specific projects. During the period January 1, 1970 through September 30, 1975, the Company made or accrued payments aggregating approximately \$12 million to such persons (or entities designated by them). Although it is not feasible to state with substantial certainty that none of the payments during such period, other than those described in the following paragraph, were indirectly for the

use or benefit of employees of foreign governments or agencies thereof, the investigation did not reveal the existence of any other payments to foreign government employees or military personnel or that any such payments were being "kicked back" to the Company or its employees or used to create a "slush fund" of any kind. However, in some cases the payments are made to the consultant or his nominee outside the country of his residence and verification of the end use of the payments is not feasible. The question of whether local laws of the countries involved are being violated by making such payments to the consultant or his nominee outside the country of his residence is being reviewed and will be reported to the Audit Committee.

Of the payments reviewed for such period, (i) \$10,000 is known to have been paid to a foreign government employee, (ii) \$25,000 is known to have been invested in a U.S. concern in which one or more foreign government employees probably have a beneficial interest, (iii) approximately \$500,000 was paid to the military and to certain military personnel in a foreign country for protection of a subsidiary's employees working in remote, dangerous locations and for rental of military aircraft and related equipment and (iv) a local sales manager of a subsidiary purchased in 1975 out of the subsidiary's petty cash fund merchandise valued at approximately \$480 and gave same to three employees or officials of a foreign government purchasing office or agency to which the subsidiary was selling equipment. The two payments totaling \$10,000 were improperly described on the books of the Company and may have been improperly deducted for U.S. income tax purposes. The \$25,000 investment is properly described on the books of the Company. The payments totaling \$500,000 for military protection and equipment were properly described on the Company's books and are considered properly deductible for U.S. income tax purposes because of the absolute necessity of military protection in that particular country. The \$480 payment was not correctly described on the Company's books.

In connection with negotiations involving proposed long-term, multi-billion dollar purchases of raw materials from certain countries, consultants have contractual commitments to receive from the Company additional sums aggregating up to approximately \$12.0 million (subject to adjustments, not presently subject to determination, under certain circumstances because of fluctuating currency exchange rates) plus out-of-pocket expenses upon successful conclusion of all phases of such arrangements.

Under contractual arrangements in four countries, the Company has made scholarship payments from time to time aggregating \$330,000 for the five years and nine months ended September 30, 1975.

In connection with certain sales of products through independent dealers in foreign countries, the Company follows the practice, where requested by such dealers, of withholding all or a portion of the dealer's commission as an account payable to the dealer or of paying all or a portion of the dealer's commission to a bank account outside the country in which the dealer resides. Such deposits are made by check directly to the dealer's designated bank account. Commissions not paid by check are either disbursed in cash or by credit

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against amounts due the Company. The payments are properly described on the Company's books and the Company's tax returns. The question of whether local laws of the countries involved are being violated is being reviewed and will be reported to the Audit Committee.

The Audit Committee of the Board of Directors has directed management of the Company to formulate procedures and policies to eliminate possible irregularities in connection with foreign operations and to present such procedures and policies to the Audit Committee and the Board of Directors for review, comment and approval. Thereafter, management will be charged with the responsibility, through internal audit procedures and such other techniques as may be deemed reasonably necessary (including disciplinary action, and, where appropriate, dismissal for violations), of insuring compliance with such procedures and policies on a company-wide basis. In this connection, and in addition to broader policy statements to be enunciated with respect to U.S. and foreign business operations in general, management intends to recommend the affirmation of substantially the following policy regarding payments which may be made in any country in connection with the purchases of products or raw materials or the sale of products or services:

"The Board of Directors and management of Tenneco Inc., having due regard for and recognition of the responsibilities arising from and attendant to international operations, hereby affirm the corporate policy of Tenneco Inc., its subsidiaries and divisions to the effect that all employees and agents are to comply with the ethical standards and legal requirements of each foreign country in which business is conducted."

Commencing in 1966 or 1967 many high-level executives of the Company made annual cash contributions of \$2,000 each to a fund to be used for political contributions. It is reported that approximately twenty executives made contributions each year and that the fund did not exceed \$40,000 in any one year. It is reported that this fund was discontinued after 1973. Under applicable Federal law, the legality of the fund turns primarily on "voluntariness". If there was direct or indirect coercion or inducement, whether in terms of advancement or company cars or other job perquisites, the fund would probably be deemed illegal. "Voluntariness" is a subjective determination by each individual participant, and most participants would probably state that their contributions were made voluntarily. For this reason, it is believed that the establishment of the fund did not violate Federal law.

Another employee fund was established at the Newport News Shipbuilding subsidiary before it was acquired by the Company in 1968. Cash contributions were made to the fund by high-level executives of the subsidiary. It is believed that contributions were made only once in the aggregate amount of approximately \$10,000. The fund presently has a balance of \$2,370 and is in the custody of the subsidiary's general counsel. Disbursements from the fund were made at the direction of the President of the subsidiary. The establishment of the fund is considered to comply with applicable Federal law on the basis that contributions were made voluntarily.

Recipients of campaign contributions from the Company's executive fund are believed to have been generally

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determined by the chief executive officer of the Company. During the fund's existence from 1966 or 1967 until 1973, campaign contributions were made in Federal elections and in state and local elections. It is believed that contributions in state and local elections were made primarily in Texas and Louisiana. Contributions from a voluntary employee fund are specifically permitted by Federal election law and the Supreme Court has held that such voluntary employee funds were permissible prior to enactment of such election law. It is believed that such contributions are also permissible under Texas and Louisiana law, although no specific statutory authority exists, because of analogous Federal judicial precedent exempting voluntary employee funds and the intent of the law to prohibit only contributions of corporate money.

Contributions were made from the Newport News Shipbuilding employee fund in one Federal election and various state and local elections in Virginia. The contribution to the Federal election is believed to comply with Federal election law on the basis that the contribution was made from a voluntary employee fund. The state and local contributions are likewise believed to be permissible. In any event, state and local corporate contributions are permitted by Virginia law.

During the period from January 1, 1970 through December 1, 1975, three subsidiaries, Tenneco West, Inc., Heggblade-Marguleas-Tenneco Inc. and Stockdale Development Corporation, made campaign contributions in California elections aggregating approximately \$180,000. State and local corporate campaign contributions are permissible under California law.

It has been reported that since 1970 two corporate campaign contributions of \$100 each were made by local sales managers of a subsidiary, J. I. Case, in connection with state or local elections in Rhode Island and Florida, in both of which states corporate campaign contributions in state and local elections are believed to be permissible. In one or, perhaps, both of such cases, the contribution was not correctly described on the subsidiary's books and/or was improperly deducted for tax purposes.

Beginning prior to 1970 and continuing until August 1972, it is reported that cash amounts ranging from \$200 to \$2,000 were given on several occasions by the President of a subsidiary, Midwestern Gas Transmission Company, to state public utility commission chairmen in Indiana, Illinois, Kentucky and Wisconsin. The subsidiary officer states that the money was understood to be given in turn by the recipients to various charitable projects of their choice. In 1972 the same subsidiary officer gave \$2,000 in cash to the chairman of the Pennsylvania Public Utility Commission. The officer states that the Pennsylvania chairman requested the money for use as a contribution to a charitable dinner in Washington, D.C., honoring a U.S. Senator from Pennsylvania. The money was given to the Pennsylvania chairman several months after the dinner, and the Pennsylvania chairman states that the money was applied as a reimbursement of his contribution to the dinner. Two other employees of the Company state that they believe or had heard that the money was given to the Pennsylvania chairman to obtain his influence with the head of the General Services Administration, which was participating as an

9.6

intervenor in a Federal Power Commission regulatory proceeding, Rate Proceeding 71-6, to which a Company division, Tennessee Gas Pipeline, was a party. The subsidiary officer who delivered the payment and the Pennsylvania chairman deny that this payment had any connection with such proceeding. The money was given to the Pennsylvania chairman several months after the regulatory proceeding had been ultimately resolved in a manner favorable to the division. The Company's executive fund may have been the source of these payments, although this has not been clearly determined since there are no records of disbursements from the fund and the recollections of the subsidiary President and the administrator of the fund differ.

Beginning on October 27, 1970, and continuing until September 1975, a subsidiary, Tenneco Oil Company, made payments of \$2,000 per month to the sheriff of a Louisiana parish who is also an attorney. There are conflicting statements regarding the reason or reasons for the payments. The payments were approved by senior management of the subsidiary, but there is no evidence that the Board of Directors or high-level management of Tenneco Inc. were aware of the arrangement. The sheriff is presently under investigation by officials of the U.S. Department of Justice, and the Company does not believe that it would be appropriate to comment further about the matter pending resolution of such Federal investigation.

In June 1970, a \$2,000 cash campaign contribution was made to a State District Judge in Louisiana for use in his race for a Louisiana appellate court seat. Approximately eighteen months prior to the contribution, the Judge had granted an injunction against violence on the picket line in connection with a union strike at the plant of a Company subsidiary, Tenneco Oil Company. Approximately two months after the contribution was made, the union filed a motion to dissolve the injunction, which was denied by the Judge in late 1970. The \$2,000 was given to the Judge by a local employee of the subsidiary. The payment was approved by senior management of the subsidiary, but there is no evidence that the Board of Directors or high-level management of Tenneco Inc. were aware of this payment. The money probably came from either the personal funds of an officer of the subsidiary or the Company's executive fund, and not from corporate funds. It is believed that the campaign contribution did not violate the Louisiana prohibition against corporate contributions which was then in effect because the money probably did not come from corporate funds.

In 1972 contributions of \$1,000 each were made by a subsidiary, Tenneco Oil Company, to two Louisiana District Judges and a Louisiana District Attorney who were running for re-election, all in the same parish. The contributions were made in cash by an employee from the subsidiary's working fund account. The payments were incorrectly described on the subsidiary's books and improperly deducted for tax purposes. The contributions were approved by senior management of the subsidiary, but there is no evidence that the Board of Directors or high-level management of Tenneco Inc. were aware of the payments. The contributions violated the then existing Louisiana prohibition against corporate campaign contributions.

9.7

Tenneco proposes to turn over to the Internal Revenue Service the relevant information relating to the foregoing matters and to amend tax returns and make additional payments where appropriate. It is not considered at this time that material income tax deficiencies will result.

At its meeting in October 1975 the Audit Committee of the Board of Directors approved and adopted the following policy statements:

1. The use of assets of the Company or any subsidiary for any unlawful or improper purpose is strictly prohibited;
2. No undisclosed or unrecorded fund or asset of the Company or any subsidiary shall be established for any purpose;
3. No false or artificial entries shall be made in the books and records of the Company or its subsidiaries for any reason, and no employee shall engage in any arrangement that results in such prohibited act;
4. No payment on behalf of the Company or any of its subsidiaries shall be approved or made with the intention or understanding that any part of such payment is to be used for any purpose other than that described by the documents supporting the payment;
5. Any employee having information or knowledge of any unrecorded fund or asset or any prohibited act shall promptly report such matter to the chief executive officer or general counsel of Tenneco Inc.;
6. All executive officers of the Company shall be responsible for the enforcement of and compliance with this policy including necessary distribution to ensure employee knowledge and compliance;
7. Appropriate officers and employees will periodically be required to certify compliance with this policy; and
8. This policy is applicable to Tenneco Inc. and all its domestic and foreign subsidiaries.

The Audit Committee has also directed management to implement procedures for insuring compliance with such policies and to report to the Audit Committee and to the Board of Directors with respect thereto. Following such report and review thereof by the Board of Directors of the Company, a definitive statement of such policies and procedures will be distributed on a company-wide basis.

The matters described herein have been voluntarily disclosed by the Company, and the Company has advised the staff of the Commission that its documents, books and records relating to the investigation ordered by the Audit Committee will be made available at the Company's offices for examination by the staff of the Commission upon request.

In keeping with the practice of other companies reporting matters of the type described herein, the Company

9.8

SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

Form 8

AMENDMENT TO APPLICATION OR REPORT

Filed pursuant to Section 12, 13 or 15(d) of the
Securities Exchange Act of 1934

For the Month of January 1976

Tenneco Inc.
P. O. Box 2511
Houston, Texas 77001

AGO 800577

9.9

SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

FORM 8

AMENDMENT TO APPLICATION OR REPORT

Filed pursuant to Section 12, 13 or 15(d)

of

THE SECURITIES EXCHANGE ACT OF 1934

TENNECO INC.

(Exact name of registrant as specified in charter)

AMENDMENT NO. 2

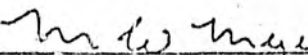
The undersigned registrant hereby amends its Current Report on Form 8-K for the month of January 1976 by providing information for the following item as set forth in the pages attached hereto:

ITEM 13

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this amendment to be signed on its behalf by the undersigned, thereunto duly authorized.

TENNECO INC.

By


M. W. Meyer
Assistant Secretary

Date: February 23, 1976

Item 13. Other Materially Important Events.

9.10

On February 13, 1976 Tenneco Inc. filed Amendment No. 1 to its Form 8-K Current Report for the month of January 1976, containing in part the following statements:

"Beginning prior to 1970 and continuing until August 1972, it is reported that cash amounts ranging from \$200 to \$2,000 were given on several occasions by the President of a subsidiary, Midwestern Gas Transmission Company, to state public utility commission chairmen in Indiana, Illinois, Kentucky and Wisconsin. The subsidiary officer states that the money was understood to be given in turn by the recipients to various charitable projects of their choice."

By affidavit dated February 23, 1976 George Perrine made the following statements:

"I was President of Midwestern Gas Transmission Company from 1961 until August 1972. I am presently a consultant to Tenneco Inc. Although I gave the information quoted above in substantially the language therein to Tenneco Inc. representatives, upon further reflection I am unable to recall any names, dates or amounts or whether any sums were actually delivered to public utility commission chairmen, members or employees in any of the states of Indiana, Illinois, Kentucky or Wisconsin or elsewhere. Because of such inability to recall specific information, I have concluded that my original statement was in error."

Item 14. Financial Statements and Exhibits.

(b) Exhibits

1. Affidavit of George Perrine dated February 23, 1976.

THE STATE OF TEXAS §
COUNTY OF HARRIS §

9.11

AFFIDAVIT OF GEORGE PERRINE

BEFORE ME, this day personally appeared George Perrine, who, after being duly sworn, deposed and said:

I.

My name is George Perrine. I have personal knowledge of every statement made in this Affidavit and am fully competent to testify about the matters stated herein.

II.

I understand that Tenneco Inc. has filed Amendment No. 1 on Form 8 amending its Current Report on Form 8-K for the month of January 1976, and that the following appears as part of said Amendment:

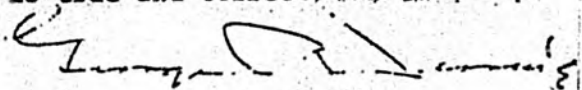
"Beginning prior to 1970 and continuing until August 1972, it is reported that cash amounts ranging from \$200 to \$2,000 were given on several occasions by the President of a subsidiary, Midwestern Gas Transmission Company, to state public utility commission chairmen in Indiana, Illinois, Kentucky and Wisconsin. The subsidiary officer states that the money was understood to be given in turn by the recipients to various charitable projects of their choice."

III.

I was President of Midwestern Gas Transmission Company from 1961 until August 1972. I am presently a consultant to Tenneco Inc. Although I gave the information quoted above in substantially the language therein to Tenneco Inc. representatives, upon further reflection I am unable to recall any names, dates or amounts or whether any sums were actually delivered to public utility commission chairmen, members or employees in any of the states of Indiana, Illinois, Kentucky or Wisconsin or elsewhere. Because of such inability to recall specific information, I have concluded that my original statement was in error.

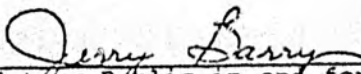
Further, the affiant sayeth not and I have read
the foregoing Affidavit and it is true and correct.

9.12



George Perrine

SUBSCRIBED AND SWORN TO before me by George Perrine
on this 23rd day of February, 1976.



Notary Public in and for
Harris County, Texas

My Comm. Expires

February 2, 1977

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WRITTEN STATEMENT BEFORE
SPECIAL COMMITTEE OF ALASKA LEGISLATURE
HEARINGS HELD ON JANUARY 31 — FEBRUARY 2, 1977

Southern Natural Gas Company (Southern) is the major supplier of natural gas in the southeastern United States. The Company provides service to numerous markets in Louisiana, Alabama, Georgia, South Carolina and Mississippi and portions of Tennessee. Southern also supplies gas to a portion of northern Florida through its wholly-owned subsidiary, South Georgia Natural Gas Company.

CORPORATE STRUCTURE AND
FINANCIAL ASPECTS OF SOUTHERN

Southern is a wholly-owned subsidiary of Southern Natural Resources, Inc. (SNR), which is a diversified billion dollar company. Attached is an organizational chart of SNR (Attachment No. 1). SNR is the parent company for seven energy-related and natural gas pipeline companies. In addition to Southern and South Georgia Natural Gas Company, which are natural gas pipeline companies, Southern Energy Company will own and operate a liquefied natural gas (LNG) receiving terminal near Savannah, Georgia. Southern Deepwater Pipeline Company is a 50% participant in Sea Robin Pipeline Company, which operates a large offshore gas supply system in the Gulf of Mexico. The Offshore Company is one of the world's largest contract drilling firms and is principally engaged in drilling for oil and gas in offshore and onshore areas around the world. SONAT Exploration Company is engaged in oil and gas exploration and production activities. Southern Forest Products, Inc. holds a 50% interest in Boise Southern Company, a forest products joint venture.

The common stock of SNR is listed and traded on the New York Stock Exchange and the Pacific Stock Exchange. SNR has approximately 10,000,000 outstanding common shares and 22,000 shareholders located in every state of the union and in many foreign countries.

SNR and its system of companies enjoy a very sound financial reputation. Indicative of SNR's sound financial condition is its rating included in Forbes, January 1, 1977 rating of utilities. In this connection, SNR's 5-year rank is No. 1 among other natural gas utilities in return on equity, return on total capital and growth in earnings/share (Attachment No. 2).

Southern also has outstanding debt securities, some of which are listed on the New York Stock Exchange. The Moody's ratings of Southern's debt securities are equal or superior to the ratings of debt securities of other pipeline companies participating in the Alcan Gas pipeline project and the Arctic Gas pipeline project (Attachment No. 3).

PIPELINE SYSTEM AND
OPERATIONS OF SOUTHERN

In 1930, when it began operations, Southern operated a 1,250 mile pipeline with 15,000 total installed compressor horsepower. Today, the Company operates a 7,700-mile pipeline system with 399,364 compressor horsepower, which traverses the southeastern portion of the United States. Attached is a map depicting its pipeline system (Attachment No. 4).

Southern sells gas for resale to 9 distributing companies, to 102 municipalities and gas districts and to 3 connecting interstate pipeline companies. It also makes direct sales of gas to 67 industrial customers located throughout the southeast. These industrial customers are very important to the economy of the southeast, and some are major U. S. companies. Attached is a list of the major resale customers and its direct industrial customers (Attachment No. 5). The population of its market area is about 7,000,000.

Through a subsidiary, Southern owns 50% of a major gas supply system, known as Sea Robin Pipeline Company, which consists of 335 miles of pipeline extending into the Gulf of Mexico from Louisiana. At the time this gas supply system was built, it was one of the largest offshore pipeline projects in history -- it was the first offshore project to use 36-inch diameter pipe in the Gulf of Mexico and the pipeline system reached further into the Gulf than any previous pipeline project. Sea Robin commenced operations in 1970 and today represents a gross investment of approximately \$175,500,000, of which Southern is a 50% participant. Attached is a picture of a typical drilling platform located offshore, Louisiana; after drilling is completed, production facilities will be installed as the platform and the facilities will be tied in to Sea Robin's system (Attachment No. 6).

The Company is a participant in a unique project to import liquefied natural gas (LNG) into the United States from Algeria. This is the first (and only) major base load LNG project which has received all necessary government approvals. Through a subsidiary, Southern is constructing and will operate an LNG terminal on an island near Savannah, Georgia (see page 3, infra) for further details regarding this project.

In 1977, the Company will sell about 555 billion cubic feet of gas from its pipeline system. The rated delivery capacity of the pipeline system is 2.230 billion cubic feet per day.

SOUTHERN'S GAS SUPPLIES

The Company presently obtains its gas supplies from 153 oil and gas fields in south Louisiana, the Gulf of Mexico offshore Louisiana, north Louisiana, east Texas, Mississippi and from one source in Alabama. It presently purchases over 50% of its gas supplies in the Gulf of Mexico. While this percentage is increasing each year, a substantial portion of the oil and gas provinces offshore in the Gulf have been leased (Attachment No. 7), which means that Southern will have to broaden its search to meet the gas requirements of the southeastern United States.

Since the late 1960's, the Company has been unable to acquire enough gas to replace that used on its system each year. Because of this, Southern notified all of its customers in 1970 that it could not accept any new customers or increase the contractual volumes it was obligated to deliver to existing customers until the gas supply situation improved. Unfortunately, this situation has not improved, either on Southern's system or nationwide. Indeed, the severe winter now being experienced in the southeast and other parts of the nation has seriously aggravated the nationwide critical gas shortage.

Recognizing that the natural gas shortage was developing, Southern in the late 1960's intensified its efforts to obtain new gas supplies and undertook unique and innovative gas supply programs. These efforts include:

- In recent years, major investments by Southern, at a cost of about \$243 million, in offshore natural gas pipeline systems in the Gulf of Mexico (the area which the Company has relied on for virtually all of its new gas reserve additions).

- Prior to 1970, the Company and its affiliates owned interests in 13 offshore Gulf of Mexico blocks — since 1970, Southern and its affiliates have made successful bids, totaling approximately \$69,000,000 for interests in 33 additional offshore federal blocks. Also, Southern and its affiliates have substantially expanded their own exploration programs — they now own interests in 39 oil and gas fields. Attached is an artist's rendition of a gigantic production platform now being constructed for one of these fields located in the Gulf (Attachment No. 8).
- Southern aggressively pursued the FPC's advance payment program as a means of obtaining new domestic gas supplies — during that program's existence, it made a cumulative total of \$151,000,000 in advance payments.
- Another major and significant step was Southern's development of the Muldon Gas Storage Field in northeastern Mississippi several years ago. This field, representing an investment of over \$63,000,000, is one of the largest underground gas storage fields in the U. S. which is owned by a single company. It has become a major factor in helping the Company meet its winter peak delivery obligations. This storage field, under normal conditions, can provide Southern with 34% of its winter peak-day requirements. It can be of great utility in accomplishing the distribution by substitution and exchange of the Prudhoe Bay gas into Southern's service area. Attached is a picture of the Muldon Gas Storage Field facilities (Attachment No. 9).

Also, as the Company saw the gas supply shortage beginning to threaten in the 1960's, it initiated studies, internally and through outside consultants, to determine the most appropriate means of supplementing the depleting domestic gas supplies. The studies concluded that over and above the major initiatives described above, Southern must undertake non-conventional, non-traditional gas supply efforts if it hoped to supply the existing requirements of its customers in future years. The studies also concluded that, at that time, the first, most immediate, viable non-traditional supplementary supply available to Southern was the importation of liquefied natural gas (LNG) from overseas.

LNG PROJECT

Southern's LNG project was mentioned earlier (p 2, supra). Since the Trans-Alaska pipeline project involves LNG facilities of a similar nature, it is appropriate to discuss in some detail how the Company handled the various aspects of its LNG project. In particular, the discussion will focus on the technical and environmental features of the LNG project. Southern's expertise in all phases of LNG projects, described below, comprises the type of expertise that Southern will bring to the Trans-Alaska pipeline project.

In 1970, Southern contracted to purchase LNG to be imported from Algeria. A prime mover in this project is a subsidiary of El Paso Natural Gas Company, which had agreed to purchase the LNG from Sonatrach, the Algerian national oil company, and to transport it to the USA. Southern became one of three east coast USA purchasers to contract, in turn, for the purchase of the LNG from El Paso.

This was the first base load LNG project ever proposed for the USA — and, although others have since been proposed, it is the only one which has received all of the necessary governmental approvals. However, the LNG to be supplied through this project represents a supplementary gas supply source and does not answer the nation's and the southeast's desperate need for significant new domestic gas supplies.

At the time of the project's inception, the Company realized that the project could only succeed through a concerted effort between it and many other people, and groups, including state and federal governmental officials, federal and state legislators, Southern's customers, environmental groups and state Public Service Commission officials. The project required the support and approval of all of these groups -- which was achieved as a result of concerted efforts spanning a period of several years.

With the support and approval of all these groups, there were two principal objectives: (1) to construct and operate energy transmission systems to get the energy from the source to the market, and (2) the need and concern to have these facilities constructed and operated in a manner that would be compatible with the local environment. The input of all groups was necessary to accomplish the objectives. As aforesaid, these efforts spanned a period of several years.

From day one, Southern concluded it should locate, design, construct and operate its LNG terminal and connecting pipeline facilities in a manner that would cause minimum degradation to the environment. With this mandate, the Company sought the advice of leading authorities in the environmental community, local environmental groups, concerned citizens and political forces in the area. All of these groups concluded that Southern had approached the problem in an intelligent fashion and gave their support to the project - with the result that there have been no environmental roadblocks with the Company's Savannah terminal facilities. As a result of the support of these groups and their team efforts with Southern, this LNG importation project has received all required local, state and federal governmental approvals (which included about 90 permits and authorizations).

In order to select an environmentally preferred site for the LNG terminal, Southern conducted an exhaustive study of every port on the lower Atlantic Seaboard from Jacksonville, Florida, to Charleston, South Carolina. Many of the ports investigated were rejected because of physical or environmental reasons. The ultimate selection of the Elba Island location, approximately five miles downstream from Savannah, Georgia, was a sound choice. This island is in a very remote area although it is in the general vicinity of a highly industrialized city, Savannah, Georgia. The island is completely surrounded by water and consists of approximately 850 acres which had been created from many years of maintenance dredging of the channel in the Savannah River. It is located approximately eight miles upstream from the mouth of the Savannah River with an unobstructed, reasonably straight channel to the open sea. It was necessary to build a 2.6 mile road and 1,780 foot high-rise bridge over an alternate channel of the intercoastal waterway to Elba Island. However, for the most part, this road was constructed on an old abandoned tramway in order to preserve and cause a minimum amount of damage to the marsh areas in the vicinity. The road and bridge were constructed in record time of only six months. During the design and construction phase of the terminal facility the environment and safety issues were of foremost importance. As an example, only approximately 120 acres of land were cleared of the total 850 acres on the island for the plant site. A greenbelt of trees between the plant site and the Savannah River was left for aesthetic considerations. Southern has considered and designed into the facility the ultimate in safety facilities. The latest in monitoring and fire protection equipment has been installed in order to provide the greatest possible degree of safety.

Initial plans called for the use of river water circulated through open rack vaporizers to heat the LNG and convert it back into a gas. The Company engaged Skidaway Institute of Oceanography, a unit of the University System of Georgia, to make a one-year study of the water quality and marine biology in the waters surrounding Elba Island and what effect the use of river water to convert the LNG back into a gas might have on the water quality and marine biology. This study concluded that the effect would be a reverse pollution and a benefit to the Savannah River. The discharge water from the plant would be five degrees cooler than the intake water in addition to having the oxygen content of the water increased by virtue of going over open rack vaporizers. Both of these effects would have a beneficial effect on the quality of the water and the marine biology.

At the recommendation of environmental consultants all facilities were constructed and painted in a manner to blend in with the environment. As an example, the three 400,000-barrel LNG storage tanks were painted a pastel blue to blend in with the skyline. Throughout the construction of the Savannah Terminal facilities an environmental consultant from the Institute of Ecology of the University of Georgia was employed to monitor all construction activities to insure that these activities would be compatible with the environment and that they would not result in any adverse pollution of the waters surrounding Elba Island or the general vicinity.

In order to transport the revaporized LNG into Southern's existing facilities near Savannah, Georgia, it was necessary to construct a pipeline from Elba Island to these facilities for a distance of approximately 13½ miles. Approximately 80 percent of the route is through marsh areas subject to 7½ foot tides twice each day. In addition, it was necessary to cross several miles of the Savannah National Wildlife Refuge which is principally a wildfowl feeding ground. In order to assure an absolute minimum chance of ever having to go back in this area during the life of the facility, the Company constructed two parallel 30-inch pipelines and installed pipe with a wall thickness equivalent to that installed in congested areas - the idea being that once the pipelines are laid, it is anticipated that they will not have to be disturbed in the future. Southern's careful planning in this matter will also permit the expansion of its regasification facilities without another intrusion into this environmentally sensitive area.

Prior to the announcement of the LNG project, Southern held many meetings with the Fish and Wildlife Service, which has jurisdiction over the Savannah National Wildlife Refuge, to seek their assistance in planning the location of the pipelines and a method of construction which would minimize any possible environmental damage to the Refuge. Through the joint effort of the Fish and Wildlife Service and Southern, an acceptable route was determined. The Company developed construction techniques which would further minimize any damage to these environmentally sensitive areas. In developing these construction techniques, Southern relied upon its almost 25 years of experience in constructing pipelines and facilities in the marshlands and offshore areas of South Louisiana. Southern was one of the first companies to extend its pipeline system through the environmentally sensitive areas of South Louisiana and into the deep waters of the Gulf of Mexico. At the time of constructing its West Delta and Main Pass Pipeline Systems in the Gulf of Mexico, these systems incorporated the largest diameter pipe laid to date in these depths of water. A few years later the Company constructed the Sea Robin Pipeline System which, as mentioned earlier (page 2, supra), at the time of construction was the largest offshore system in existence and it extended further from shore than any previous pipeline. The technical expertise and knowledge gained by the Company from these operations, along with its knowledge and experience in construction of pipeline facilities since 1929, have been very

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beneficial in designing and constructing pipelines in environmentally sensitive areas. Although Southern has not constructed pipelines in arctic areas, the experience gained in the lower 48 states and the Gulf of Mexico will most certainly be beneficial and add to the expertise of others in developing techniques to minimize any degradation of the environmentally sensitive Alaskan area.

The construction techniques developed for the twin 30-inch pipelines crossing the Savannah National Wildlife Refuge consisted of four push sites at accessible areas where the pipe could be fabricated from ramps and pushed into place by means of flotation attached to the pipeline until it reached its final location in a narrow backhoe ditch. At this point, the flotation was removed from the pipeline allowing it to sink to the bottom of the ditch and the pipelines were backfilled to their normal condition. In order to minimize the loss of spoil in the backfilling operation it was decided to dig the first ditch for the first pipeline and after installing that line while digging the ditch for the second pipeline to place the spoil from the second pipeline into the ditch for the first pipeline. This resulted in a minimum handling of the spoil and, consequently, a minimum reduction in the spoil available for backfilling operations. All of this effort resulted in considerable additional construction expense; however, it provided a minimum of disturbance and maximum recovery to the area as is indicated by the attached photograph. Attachment No. 10 shows the after construction, restoration and natural growth after one growing season in the Savannah Wildlife Refuge. The black dots on either side of the photograph represent the center line of the pipeline right-of-way. As shown by this photograph, the regrowth after construction of the pipeline indicates a remarkable recovery and from an eye level standpoint it is difficult, if not impossible, to determine the actual location of the pipeline route.

In addition to all of these efforts, Southern contracted with the Institute of Ecology of the University of Georgia to provide an environmental consultant to monitor the entire pipeline construction. Southern also funded a regrowth study which has been underway for approximately a year and a half to study the regrowth conditions in the marsh areas. (This is one of the first regrowth studies actually conducted after installation of pipelines through marsh areas and has been most beneficial to the environmental community and to Southern.)

The natural gas to be liquefied and sold to El Paso Algeria for the El Paso Algeria LNG Project originates in the Sahara Desert in Algeria. Natural gas from this field is gathered and routed to a liquefaction plant at Arzew, Algeria on the Mediterranean Coast. The gas is then liquefied by the use of a refrigerant system. The LNG is then stored in tanks at Arzew to await shipment. El Paso Algeria is constructing a fleet of nine (9) tankers specially designed with insulated cryogenic cargo containment systems to transport the supercold LNG from Arzew across the Atlantic for about 3,995 nautical miles to Savannah, Georgia and Cove Point, Maryland on a combined fleet basis. Attached is an artist's rendition showing the LNG tanker route from Arzew to Savannah (Attachment No. 11). Each ship will have a nominal cargo capacity of 125,000 cubic meters (approximately 2,700,000 Mcf). Typically, the overall length is 935 feet and the width is 140 feet, but dimensions of the vessels will vary depending upon the type of cryogenic containment system employed. Attachment No. 12 is a picture of one of the LNG tankers. It will take approximately 21 days to make the round trip between Arzew and Savannah. During the course of a year, fifty (50) shiploads of LNG, or approximately one shipload every seven days, will be delivered to the Savannah terminal. This amounts to approximately three million short tons of cargo that will be unloaded annually at the Savannah terminal. The cargo onboard the ship when it arrives will be at atmospheric pressure and a temperature of approximately -260°F. After re-gasification through the Savannah terminal, the gas will be transported by pipeline through the Company's eastern

market area. (As mentioned earlier, two 30-inch pipelines had to be installed to hook up the Savannah terminal to the Company's existing pipeline system.)

In order to receive, store and regasify the LNG, Southern's LNG team became intimately involved in the design and construction activities of its consultants and contractors. The major consultants and contractors employed were Bechtel, Incorporated for the process and civil design and construction; Raymond Technical Facilities for the design of the South Channel bridge and unloading dock; Raymond International for construction of the South Channel bridge; Gulf Foundations for the construction of the unloading dock; Chicago Bridge and Iron Company for the design and construction of the LNG storage tanks; University Engineers for the design of a fire prevention and control system; and Walter Kidde Company for the installation of the fire prevention and control system. Personnel of the Company have been involved in all decisions and most daily problems encountered by the contractors listed.

To construct the dock at the Savannah terminal to unload the LNG from the tankers, and to allow the tankers to be turned around, involves considerable dredging. Dredging for dock construction has been accomplished and this involved the removal of about 500,000 cubic yards of material. Maintenance dredging in the dock area and initial dredging of the turning basin involves the removal of approximately four million more cubic yards of material. Numerous discussions were conducted with Federal, State, and local groups to gain authorization to dredge, and once dredging activities started close coordination had to be maintained with certain of the approving agencies.

Design and construction of the LNG process facilities, as well as others, necessitated that consideration be given to earthquake criteria, that an extremely effective quality assurance program be designed, implemented and followed, and that effects of cryogenic temperatures be evaluated in all calculations. The Elba Island facility design was subjected to a cryogenic safety review by consultants from the National Bureau of Standards working for the FPC which concluded after considerable study that the LNG terminal can be expected to operate safely.

LNG delivered by the tankers at the Savannah terminal will be stored in the three 400,000 bbl. insulated tanks. These tanks are of identical capacity and structural design. These tanks are erected on a reinforced concrete and pile foundation with air space between the concrete pile cap and ground to prevent soil freezing and heaving. These tanks will normally store the LNG at about -260 F and can operate up to pressures of 2.0 psig before venting. The maximum daily boil-off rate will be less than 0.06% of full liquid volume. Construction is of the double wall type, with an inner aluminum tank and an outer carbon steel tank. Each tank holds approximately the equivalent of 1,380,000 Mcf of gas and is supported by more than 600 pilings. These tanks are designed to withstand a Zone 3 earthquake. Tank design and construction are essentially complete.

The Elba Island facility has a very sophisticated fire prevention and control system. All major process equipment on the plant site is protected from fire by a combination of dry chemical and foam systems. The fixed dry chemical system is used to extinguish any LNG fires which might occur and is automatically activated when flames are sensed, or the system may be manually actuated from the control room. The fixed foam system is primarily used for controlling boil-off vapors should LNG accidentally be spilled. This system is actuated automatically by means of cold sensors, or it may be actuated manually from the control room. The plant also has an underground fire water loop with hydrants and nozzles located

throughout the facility for extinguishment of non-LNG fires. Water from the system will also be used as a heat shield to protect structures or equipment from any fires that might occur elsewhere in the plant. Two fire trucks have been purchased. One is strictly a firewater truck and will be used to combat grass fires that might occur. The second truck contains a dry chemical unit and also has a foam generator. This vehicle will be used to supplement the fixed foam and dry chemical systems and is needed to serve areas not covered by the fixed systems.

The Company is very familiar with all facets of shipment of LNG by cryogenic tankers. At one point in time on the Algerian LNG-I project, Southern had the option to own one of the tankers and, as a result, made extensive studies into the construction and operation of LNG tankers. Also, through an affiliate company, The Offshore Company, which is one of the largest offshore drilling firms in the world, Southern is thoroughly familiar with the planning, design, construction and operation of mammoth offshore drilling rigs and the transportation of these rigs and other ocean transportation on the high seas. The Offshore Company has developed sophisticated patented systems for offshore drilling rigs and is thoroughly familiar with the shipyard construction of these rigs and other large ocean-going vessels. Attached is a photograph of one of The Offshore Company's Discoverer-Class drillships. Offshore's Discoverer Seven Seas is a very large self-propelled drillship capable of drilling in water depths of 6,000' (Attachment No. 13). The technical expertise of The Offshore Company will add much to the LNG shipping aspects of the project.^{1/}

The necessary facilities in Algeria, the required LNG tankers and Southern's receiving terminal at Savannah are now in advanced stages of construction.

In summary, through advanced planning and cooperative efforts of all concerned, Southern overcame possible environmental and other problems related to this project. This result was quite unique, considering the problems which others have faced. The Company expects to receive the first shiploads of LNG in early 1978. The total investment of Southern in the LNG terminal and related pipeline facilities is in the order of \$170,000,000.

Attached is an artist's rendition of how the LNG terminal will look when it is completed, and two recent aerial photographs showing the state of completion of these facilities (Attachments Nos. 14, 15 and 16).

Although this LNG project is essential to the southeast, it by no means diminishes the need of the nation and the southeast for new domestic gas supplies. In fact, the Southern-Algeria LNG project is expected to only supply 15% of the requirements of Southern's customers.

^{1/} Offshore operates one of the largest fleets of offshore mobile drilling units in the world. Its fleet includes self-elevating mobile platforms, drilling tenders, drilling rigs for self-contained platforms, an inland drilling barge, self-propelled drillships, a self-propelled, self-elevating drillship, and a self-propelled, semi-submersible drilling vessel. Offshore also owns and operates workboats, land drilling units and various transportation equipment. In addition to providing contract drilling services, Offshore also provides services for others in engineering, design and construction of offshore drilling equipment. In this area, Offshore and its subsidiaries own or are licensed to use over 70 United States patents relating to equipment used in the drilling industry. These patents expire at various dates from the present until late 1992.

OTHER ACTIVITIES OF SOUTHERN

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The Company is studying the feasibility of purchasing additional LNG. For example, Southern is in close touch with every major potential source of new LNG that logically could come into the east coast -- such as Algeria, Venezuela, Nigeria, Iran, the Arabian Gulf, etc. The LNG terminal at Savannah, one of the only two base load LNG facilities approved by the FPC, puts Southern in an advantageous position to purchase LNG from these sources. Also, the Company is studying the feasibility of other synthetic fuels, such as coal gasification.

But, while LNG and other synthetic forms of energy are needed to supplement dwindling gas supplies, they do not take the place of new domestic gas supplies. There can be no question that the southeastern United States is in dire need of new domestic gas supplies -- such as Alaska royalty gas.

SOUTHERN SUPPORTS AN ALL-AMERICAN ROUTE

The Company believes that an Alaska natural gas transportation project which follows an all-American route has several significant advantages over projects which cross Canada (see Attachment No. 17). Primary among the advantages of an all-American route are the time required to bring Alaskan gas to the lower 48 markets and the greater positive impact on the United States economy. Environmental considerations and the ultimate widespread geographic distribution of Alaskan gas (which will be distributed to 43 states) are also important factors in favor of a Trans-Alaska natural gas transportation system.

Considering the severe winter which a major portion of the United States has experienced this year (Southern's market area in the southeast is experiencing its coldest winter ever recorded), the Company believes a critical factor in the selection of an Alaska natural gas transportation system is how quickly Alaskan gas can reach the lower 48 markets. El Paso Alaska estimates that its project can commence deliveries of Alaskan gas to the lower 48 markets approximately 5 years after the construction commences with deliveries of full volumes 10 to 12 months thereafter. The sponsors of the Arctic Gas project estimate that their project can commence deliveries to United States markets after 5½ years of construction. But this estimate is subject to challenge. The Department of the Interior made a study which concluded that the risk of delay in an Alaska-LNG project would be about half of that for an Arctic Gas project. Also, El Paso Alaska commissioned the Green Construction Company, one of the Alyeska pipeline contractors, for an independent study of the proposed Arctic Gas construction schedule. This study concluded that the Arctic Gas project had nearly a 100% probability of experiencing 1.5 to 2 years' delay, which would result in a cost overrun of approximately \$2.7 billion.

Southern believes the earlier delivery of additional gas supplies to the lower 48 markets by the Trans-Alaska pipeline will have a significant positive impact on the national economy. In addition, this project offers several other positive impacts on the economy. It has been estimated that the Trans-Alaska pipeline project would result in 749,000 man years of direct and induced employment in the United States as compared to 245,000 man years of direct and induced American employment resulting from the Arctic Gas project. This additional employment will improve the likelihood of achieving the national goal of reducing unemployment. Further reductions in unemployment are likely to result from the fact that the Trans-Alaska pipeline project is projected to have a net economic benefit of from \$0.9 to \$1.9 billion larger than that of the Arctic Gas project. A third economic benefit of a Trans-Alaska project is the amount of revenues it will provide to all levels of government. It is estimated that this project will generate \$19.2 billion in United States income taxes, Alaska ad valorem taxes, and miscellaneous taxes. In

addition to the direct benefit the State of Alaska will receive from its share of these tax revenues, it is estimated that the State's economy will greatly benefit from an estimated \$5.44 billion in direct expenditures made in Alaska on construction payrolls, goods, services and pipeline facilities.

Southern is convinced that a major advantage of the Trans-Alaska pipeline project is the limited environmental impact it will have. This project avoids the unique Arctic National Wildlife Range. In the Company's opinion, this factor alone gives it an overwhelming advantage in this area. The Trans-Alaska pipeline project, however, has another significant environmental advantage: the proposed realigned route will utilize the Alyeska oil pipeline workpad for nearly its entire length of the State. In this manner, a separate cut across the State's wilderness will be avoided. Only where the gas pipeline diverges from the Alyeska pipeline, its last 42 miles, will the project invade a part of the State's pristine environment. Southern believes the small incremental impact of the natural gas pipeline on the State of Alaska's environment and the preservation of the Arctic National Wildlife Range make the Trans-Alaska pipeline project environmentally preferable to the competing projects.

Finally, the Company anticipates that the Trans-Alaska pipeline project will bring Alaska natural gas to 43 of the lower 48 states. This represents a very broad geographic distribution of Alaska's royalty gas in the lower 48 states.

THE ROYALTY GAS PURCHASE CONTRACT IS BENEFICIAL TO ALASKA

Southern believes that the royalty gas purchase contract between it and the State of Alaska is a mutually beneficial arrangement. While the Company will receive much needed gas supplies, this contract contains many favorable aspects for the State of Alaska. In addition to the favorable terms contained in the contract itself, by entering into this arrangement Alaska received the benefit of gaining an enthusiastic participant in support of the Trans-Alaska pipeline project. From the time the royalty gas agreement was concluded, the Company has repeatedly gone on the public record in support of the project. Southern has stressed the reasons listed in the above section in endeavoring to build public support for an all-American gas transportation system.

Concerning the contract itself, the State has the benefit of two unique contractual provisions. First, the contract provides that Southern will reimburse the State for Southern's pro rata share of any costs attributable to the preparation and transportation of the State's royalty gas incurred by the State as a result of its decision to take its royalty gas in kind. Second, and probably the most advantageous provision in the contract to the State, the State has the right to reclaim its royalty gas when it has a need to use this gas within the State. If the State exercises this right, the contract gives Southern the right to purchase surplus royalty gas from the State to replace any gas which it so reclaims. However, the gas used in repayment will be surplus gas, i.e., gas which would be exported from Alaska anyway. In addition, the only gas eligible to be used as replacement gas is that gas moving through the Prudhoe Bay pipeline.

The contract provides for a mutually beneficial price for the gas. The State of Alaska will receive the best price paid for gas from the Prudhoe Bay Field, but Southern is not required to pay any premiums or extra charges.

Finally, Southern believes it is to the State's advantage that the sales contract is for a stated amount of gas. This enables the State to know the precise maximum amount of gas it has committed from the Prudhoe Bay Field. Also, the contract is for a stated term, 20 years, but is considered completed if the maximum volume designated in the contract is delivered at an earlier date.

SOUTHERN'S NEED FOR ALASKA'S ROYALTY GAS

In spite of its intensified efforts, Southern's domestic gas supply additions have diminished drastically in recent years. During the five-year period 1971-75, the Company was successful in adding under new contracts reserves amounting to only 40% of the total gas consumed during that period. Thus, Southern considers the Alaska royalty gas from the Prudhoe Bay Field to be a very significant and important source of new domestic gas supplies for its customers in the southeastern United States. No other Prudhoe Bay gas has been contracted for markets in the southeastern United States.

Southern's farsighted gas supply efforts have enabled it to maintain service to its customers without curtailment of high priority users until this severe winter season. The present gas shortage situation resulting from this abnormal winter underscores Southern's need to add significant new gas reserves to its system. At the time of commencement of deliveries of the Prudhoe Bay gas, the Company will be serving only users of the very highest priorities. The addition of a portion of Alaska's royalty gas to Southern's supplies will, therefore, be vital to Southern's ability to serve high priority gas users. This fact is completely demonstrable and clearly substantiates Southern's vital need for this gas.

The gas supply situation in the southeastern United States is critical. Southern went into this winter with enough gas from its conventional sources, a full storage field and every expectation of being able to serve the essential requirements of all the residences, small businesses, and industries in the southeastern states that its customers serve. However, the southeast has experienced unprecedented cold weather for almost the entire period since October 1. This has been the coldest winter since before the turn of the century in Southern's service area. Temperatures during the last quarter of 1976 averaged approximately 45% lower than in any previous winter. January has been even colder. The much colder weather means that gas which Southern was able to sell last winter to industries must now be dedicated primarily to heat homes and hospitals. Also, as a consequence of the severe cold, Southern has had to withdraw from its storage facilities at a much faster rate than anticipated.

The southeastern United States must receive gas from new supply sources, such as the Alaska reserves. As vividly illustrated by Attachment 18, the southeastern United States is experiencing substantial economic growth and must be assured of adequate gas supplies.

SUMMARY

A brief review of the highlights of this statement accents the mutual benefits which Southern and the State of Alaska will derive from the approval of the royalty gas sales contract.

First and foremost, for Southern the approval will commit an extremely important gas supply to its customers, and for the State it will begin the foundation of a strong revenue base to be derived from the sale of this gas. There is no question that new gas supplies are desperately needed in the southeastern United States.

Second, Southern brings a vast amount of experience in the construction and operation of all types of pipelines. This technical experience encompasses not only pipeline construction in environmentally sensitive areas such as the Savannah Wildlife Refuge, but also the planning and construction of an LNG terminal and related facilities.

Finally, Southern and the State of Alaska have been enthusiastic supporters of a trans-Alaska pipeline project since this agreement was concluded. The national and local economic benefits of such a project are well-known. The approval of the royalty gas contract will be an additional factor both parties can present to the public in their efforts to build support for a trans-Alaska pipeline project and thereby increase the probability that these economic benefits will be realized.

Peter G. Smith, President
Southern Natural Gas Company

For further information, attached is a copy of Southern Natural Resources, Inc.'s 1975 Annual Report to Stockholders (Attachment No. 19).



Northern Perspectives

Exhibit 11

Volume four, number four, 1976

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AN INKBLING OF THE LONG JOURNEY

Arlon R. Tussing

There are, I believe, serious questions about the viability of the transportation systems proposed by both the Arctic Gas consortium and the El Paso Company for taking Alaska natural gas to U.S. markets. An investigation I conducted in 1975 on the economics of the two proposals for the State of Alaska raised the possibility that the cost of delivering the gas might actually exceed its value to consumers. At best, it appears that both projects, as proposed by their sponsors, are so risky that it may not be possible to finance them privately, even if their political and regulatory problems can be overcome — itself a questionable issue.

Both U.S. projects face the following risks:

Gas supplies: Production from the Alaska North Slope, and in the case of the Arctic Gas proposal, from the Mackenzie Delta, may be substantially less than the design capacity of either transportation system, meaning that each unit actually carried would have to bear a larger portion of the system's fixed costs than projected by its sponsors.

Delays and capital cost overruns: Actual construction costs may exceed estimated costs by substantially more than the effect of general inflation. The Arctic Gas project involves construction and operating technology untested in North America, while its route traverses hundreds of miles of difficult Arctic terrain where there has been no previous construction of either pipelines or roads. El Paso proposes a system of unprecedented pipeline pressures and a huge scale-up of existing liquefied natural gas (LNG) technology. New technology, unfamiliar environments, and a large scale — relative to previous projects, are exactly the ingredients of the most spectacular cost overruns. Arctic Gas, for example, envisions a system from Alaska across Canada, and into the Lower

48 States with an estimated cost in 1975 dollars of about 8½ billion. I would not be surprised to see the total cost of either project exceed \$20 billion, including interest on funds used during construction.

Experience in North America with big, custom-engineered construction projects has been that they normally cost two or three times their original projections, even including an allowance for inflation. Cost estimators are like accountants in that they prefer a solid,

empirically based figure to a realistic figure. They do attempt to project the increase in anticipated labour rates and in the prices of specific materials but they don't take into account the fact that huge projects, particularly if they involve new technology or a remote construction site, usually don't work the first time around, nor that both the purchaser and the licensing authorities change their minds several times in the course of planning and construction. The cost engineers don't appreciate that



"It's new, man—it's bound to have a few little bugs."

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such projects are usually clumsily managed and subject to a number of re-organizations during their design and construction. They don't allow for the fact that materials and equipment are always late and often mis-specified or defective, or that enterprises of this sort suffer not normal, but abnormal labour cost increases. Because of their size and urgency, they are especially vulnerable to wage pressure, even more so to featherbedding, and often to racketeering.

The Alaska oil pipeline was initially estimated at something less than one billion dollars in 1969. It will finally come in at a cost between eight and ten billion. This particular project is an especially horrible example because it has suffered from each of the diseases I mentioned. But it isn't unique. Nuclear generating plants in the United States have been coming in at four to five times their projected cost per on-line kilowatt.

On this basis the cost of the Arctic Gas project could easily become twenty billion dollars. Let's assume it will cost twenty billion and also that the project is to be paid for in 20 years, that is, a five percent amortization. Let's also assume that the investors should receive a 15 percent pre-tax rate of return on total assets.* Under a conventional utility accounting scheme, the project would need a first year cash flow of four billion dollars just to cover its fixed costs. On a discounted cash flow basis the annual fixed charge would be about \$3.2 billion.

With a throughput of something like a trillion cubic feet per year, we are talking of \$3.20 to \$4.00 per thousand cubic feet (mcf) for the capital plant just to get the gas into the existing distribution systems in the Lower 48 states and eastern Canada. If less gas can be delivered, as is likely, the cost would be even higher. This charge doesn't include the cost of developing the gas fields, any return to the producers, royalties, operating costs or costs of distribution.

Market: Both El Paso and Arctic Gas insist that the natural gas shortage in the United States is an absolute one, and that Lower 48 markets will accept North Slope natural gas at any price. Not everyone agrees; the Federal Energy Administration, for example, estimates that no market for Prudhoe Bay gas would exist in 1985 at a "city gate" price exceeding \$2.40 per million BTU (in 1975 dollars). The Interior Department's study reaches a similar conclusion. This price could easily be exceeded even without implausibly large

Experience in North America with big, custom-engineered construction projects has been that they normally cost two or three times their original projections, even including an allowance for inflation. New technology, unfamiliar environments, and a large scale — relative to previous projects, are the ingredients of the most spectacular cost overruns.

cost overruns or shortfalls in gas supplies to the system.

One assumption of the studies mentioned here is that natural gas field prices are free of Federal Power Commission (FPC) controls, and that the Alaskan gas is priced incrementally. Even relaxing these assumptions, however, it is not at all clear how much customers would be willing to pay on a year-round basis for the quantity of gas that would be carried by this system. The gas delivered through such a pipeline would be a base load supply delivered into southern distribution systems which have typical load factors in their premium markets of less than 40 percent. The seasonal swing in residential and commercial demand is one reason why about half the natural gas produced in the United States is now being burned as a boiler fuel. Some of the gas from the Arctic would have to be "dumped" in the boiler fuel market in competition with heavy fuel oil at an equivalent of about \$2.00 or coal at about \$1.00. The cost of Arctic gas delivered into the distribution system for premium customers could therefore reach \$5.00, \$6.00 or even more, per million BTU. Six dollar gas is about equivalent to oil at \$30.00 per barrel. It would seem on its surface that there ought to be some question about the economic wisdom of such a project.

Political, regulatory and other institutional issues: Each project would face serious political and legal obstacles, even after it received a certificate from the Federal Power Commission. Lack of co-ordination in U.S. and Canadian approvals, for example, could block or delay construction of the Arctic Gas system, while there is some chance that resistance in California to port and terminal facilities would jeopardize completion of the El Paso system. The Arctic Gas system is, significantly, opposed by the governments and the preponderance of public opinion in both Alaska and Alberta, and the El Paso system is widely opposed within the state

of California, where the liquified natural gas would be landed. The major environmental organizations are hostile to both projects. Neither they nor various local interest groups are likely to abandon every attempt to obstruct or delay construction simply because the system has been sanctioned by the Federal Power Commission.

Financing problems: The financial consequences of the risks I have listed are magnified by the fact that neither project can be built in smaller self-sustaining stages. Either would be a large integrated system which could not carry any gas or produce any cash flow until it was completed. Most of the capital invested (\$10 to \$20 billion or more) would therefore be exposed to these risk factors for at least the entire planning and construction period.

Private leaders simply will not accept risks of this sort, and neither project's sponsors are financially large enough to carry them, even if they were willing to do so. They do not in fact seem to be willing, as they both propose tariff conditions which would protect their own profits as well as their debt service obligations against "all events". Only the federal governments and/or, perhaps, potential gas consumers are in a position to carry financial risks of the size associated with either of the systems.

Accordingly, El Paso proposes to use federal loan guarantees (under an existing programme) for its LNG tankers and spokesmen for Arctic Gas have suggested that governments indemnify the sponsors against cost overruns exceeding 40 percent (nearly certain, in my judgement). But, more importantly each applicant proposes to rely on "full cost of service all-events tariffs" to cover their debt service obligations and to ensure a return on their equity. These tariffs provide, in brief, that consumers are required to pay the debt service and operating costs of the transportation system (plus a profit to the owners) no matter how great these costs are and whether or not the customers receive any gas. Arctic Gas's tariff would begin to run as soon as gas was first delivered; El Paso's would begin 60 months after approval of its project, even if it were never completed.

The proposition that consumer should bear or share in the risks associated with a project which benefits them is not in itself unreasonable, provided that the economic expectations of the project are clearly favourable and the risks are of a reasonable magnitude. But with these projects there are good reasons for doubt on both scores. Moreover, even if the Federal Power Commission were to approve "all-events tariffs, local gas distributors would not

*Based on a multiple of 15 percent debt at an average interest rate of 10 percent, a 15 percent after tax return on equity, and a 50 percent average tax rate on profits.

sign contracts containing such tariffs unless they were assured in advance by their state regulatory commissions (as well as by their own market analyses) that they would be able to pass these charges through to their own customers. Responses by the state commissions to Federal Power Commission enquiries suggest that there is almost no chance that they would give such advance approval.

These considerations lead inexorably to the conclusion that neither system can be built in the form proposed by their sponsors without either substantial federal financial backing, Federal Power Commission authority to preempt the jurisdiction of state utility commissions over the tariffs of local distributors, or both. No plausible proposals of either sort have yet been made, either by the applicants or by any of the responsible federal agencies.

Perhaps the most chilling prospect is that the Federal Power Commission (and the National Energy Board, in the case of the Arctic Gas project) would license one of the projects on the basis of conventionally estimated costs. The Commission would permit the transmission companies to begin collecting interest on construction debt before the project goes on line, and on that assurance the capital market would provide the sponsors with three or four billion dollars for engineering studies, site preparation and materials acquisition.

At the completion of this first phase, the sponsors will try to borrow the money for actual construction. At this time the cost estimators will have brought the figure up to \$13 or \$14 billion or more. After some point even all-events tariffs would not assure debt repayment, so that the money just won't be there to finish the system.

But a commitment would have been made. The transmission companies and their customers will come to Congress (and the Canadian government) with figures that show the present benefits will still exceed the present costs, because sunk costs don't matter (except to the investors). They'll talk about the pressing need of consumers who don't have any alternative in sight (because they have been counting on Arctic gas), they'll talk about energy self-sufficiency, and they'll talk employment and the balance of payments. If Congress and the Canadian Parliament have any inkling now about the long journey on which they are about to embark, they may hesitate.

In summary, there seem to be two problems that work together to make questionable the completion of either project as proposed: each of them requires too large an initial capital, and

that capital would be exposed to too many large risks. Once these are recognized as the critical problems to be overcome, it is obviously worthwhile to investigate whether there might not be some alternative system (or modification of one of the applicant's systems) which could begin with a smaller investment and perhaps be expanded in stages after gas and income begin to flow, a system with a smaller potential for cost overruns, and one which would raise less opposition on environmental, development or economic nationalist grounds.

The proposition that consumers should bear or share in the risks associated with a project which benefits them is not in itself unreasonable, provided that the economic expectations of the project are clearly favourable and the risks are of a reasonable magnitude. But with these projects there are good reasons for doubt on both scores.

The Fairbanks-Alcan route: One system which seems to have the possibility of meeting some of the criteria mentioned here would be an overland natural gas pipeline along the general route of the Trans-Alaska oil pipeline to a point about 100 miles south of Fairbanks, and along the general route of the Alaska Highway into northern British Columbia or Alberta. Such a route has been suggested as an alternative for the Arctic Gas system by various parties, including the FPC environmental staff.* Simply as an optional way of completing the Arctic Gas proposal, however, the Alaska Highway route would result in higher costs, because an additional separate pipeline leg would be required to bring the Mackenzie Delta gas reserves to market.

Use of the Alaska Highway routing would at first seem to have only two advantages over the system proposed by Arctic Gas: a reduction of the likelihood of major cost overruns because the new system would follow existing transportation corridors, where construction conditions are less extreme and better

known, and less intense environmental opposition because this route has far fewer river crossings, would not invade the Arctic Wildlife Range, and follows a corridor already affected by development.

Coupled with two other changes relative to the Arctic Gas proposal, however, an Alaska Highway system would appear to be considerably cheaper. In initial capital outlay, and still competitive or even superior in terms of expected transportation tariffs for Prudhoe Bay gas. The first of these two variations is to use, as much as is practical, conventional technology and existing transportation facilities in the United States and Canada. The second is to postpone construction of a transportation system to serve the Mackenzie reserves.

Northwest Pipeline Company, a U.S. company, together with three Canadian companies, Westcoast Transmission, Alberta Gas Trunk (AGTL), and Foothills Pipeline Co. (a joint venture of the other two) has formally proposed to build a system from Prudhoe Bay along the oil pipeline route to Fairbanks, then following the Alaska Highway to Fort Nelson, British Columbia and Zama Lake, Alberta, where the gas would enter existing Canadian transmission facilities. These facilities would be expanded where necessary to accommodate the increased volumes.

The pipeline concept proposed by Northwest and its Canadian partners would have several technical and financial advantages over the other two systems. It uses a 42-inch pipe, conventional technology, a corridor where there has already been highway and/or pipeline construction, and maximum employment of existing facilities. By virtue of these changes, the initial capital cost outlay before any gas or cash could begin to flow might be held considerably lower than the cost officially anticipated for the Arctic Gas system. The likelihood of large cost overruns, as well, would be much reduced by these features. Whereas ultimately, higher volumes would be required to cover the investment, the system could begin to operate with a flow of as little as a billion cubic feet per day. And, in my judgement, the political and regulatory barriers to an Alaska Highway system would be far less formidable than for either of the other two systems.

The system proposed by Northwest, Foothills, et al, may not yet be the cheapest way of moving Alaska gas to the United States Midwest and East. The Alcan proposal presented to the FPC and NEB still includes the 1117 mile Northern Border pipeline which is part of the Arctic Gas system. The sys-

*In September 1976 the FPC staff issued an Alcan system supplement to the Final Environmental Impact Statement on Alaska natural gas transportation systems. The supplement urges "that none of the proposals be approved as proposed. It concludes that the Arctic gas proposal would be environmentally superior to other alternatives if the leg to the Western United States were dropped (and that area were served with Alaska gas by displacement) and the Fairbanks Corridor (Alcan Highway) route were adopted. The FPC staff did not endorse the Alcan proposal of Northwest and Foothills "because it lacks the necessary expansion flexibility."

tem with the lowest initial capital cost, however, seems to be one which would expand the Trans-Canada pipeline and the Great Lakes pipeline, instead of building an entirely new line across the Prairies. Both the U.S. and Canadian partners in the Alcan project understand the advantages of maximizing the use of existing facilities, and I can only speculate on the reason for retaining Northern Border. The Trans-Canada Pipeline Company, which is part of the Canadian Arctic Gas group, may be unwilling to co-operate with a rival proposal at this time, although there is no reason to suppose that Trans-Canada's facilities would not be available to move Alaska gas if the Arctic Gas proposal were to be rejected by the National Energy Board.

There is good reason to believe that the announcement by Northwest makes the State of Alaska's commitment to support El Paso obsolete, and that this support may deteriorate rapidly. The Northwest project would avoid most of the state's environmental objections to the Arctic Gas system; it also makes gas available in the Fairbanks area and involves almost as much pipeline construction within the state as would the El Paso system. Because it does not involve an LNG terminal, however, the boom resulting from building a pipeline along the Alaska Highway would be substantially smaller than the boom that would be generated by the El Paso project.

Alaska and the Alcan proposal: According to preliminary estimates from the University of Alaska's Man in the Arctic Program, construction of the Arctic Gas system would add \$19 million to the state's gross product and three thousand persons to the state's population in the peak year of construction. The El Paso system would increase gross product by \$235 million and population by 24 thousand, while the Alaska Highway pipeline routing would increase Alaska's gross product by \$111 million and population by 15 thousand. These calculations do not take account of the fact that Haines and Skagway would undoubtedly be major ports of entry for materials and equipment destined for construction activities in Yukon Territory.

For these reasons, the Northwest proposal seems at the very worst to be a workable compromise that would be acceptable to almost every important Alaskan interest group. The newly proposed system may, however, be more attractive to Alaskans than as just a fallback position or a workable compromise. Northwest Pipeline's approach to the state contrasts sharply with the "take it or leave it" stance of both of the original

applicants. Northwest has at least informally suggested that the state take an equity share in the pipeline system and take part in its planning and operation. The company also has approached, or plans to approach, Alaska-based corporations for participation, including the Inuit-owned Arctic Slope Regional Corporation and the Athabaskan-owned Doyon, Ltd., and has suggested that a block of shares in the enterprise be offered to the general public in Alaska. The effect of these innovations would be to ensure that the system within Alaska would be closely identified with local interests and be responsive to them.

Regional interests outside of Alaska: The Alaska Highway pipeline proposal offers significant advantages over the two other proposed systems to a wide variety of regional and sectoral interests outside of Alaska.

British Columbia

For British Columbia, introduction of Prudhoe Bay gas will more fully utilize the existing facilities of Westcoast Transmission, and thereby reduce the cost of British Columbia gas delivered to consumers in the province. Construction of the pipeline would provide a stimulus to the development of northern British Columbia and Yukon Territory, and strengthen the territory's links with market and financial centres in British Columbia. The proposal is now being discussed in the province as a possible justification for extending the British Columbia Railway to Whitehorse and eventually to Fairbanks. For these reasons, the provincial government has endorsed, and is reportedly considering joining in the pipeline project, perhaps as an equity participant.

Alberta

The project could be supported by the crucially important Province of Alberta (which now opposes the Arctic Gas application) because it would contribute to the optimum use of Alberta's own gas transmission system, rather than establishing a competing trunkline through the province. Unlike Arctic Gas, moreover, the new system would not in the immediate future compete with, and require the shutting in of, Alberta gas now dedicated to markets in eastern Canada.

Canada

For Canada as a whole, the Alaska Highway proposal would postpone the necessity of deciding when how and by whom the Mackenzie Delta — Beaufort Sea region was to be developed, and whether that region or the Arctic Islands should take first priority for develop-

ment among Canadian frontier regions. By reducing the total amount of new construction and shifting a substantial part of the construction out of Canada and into Alaska, the Alaska Highway system would reduce the stress on Canadian capital and labour markets and on the nation's foreign exchange position.

Pacific Northwest

The system proposed by Northwest Pipeline is by far the most economical method of moving North Slope gas into the Pacific Northwest, and it is for that reason supported by the gas distributors of the region. In contrast to the Arctic Gas proposal (which is a second-best gas supply alternative for the Northwestern states), construction of an Alaska Highway system would rely mainly on Seattle-Tacoma and other ports in the region as supply and transportation bases for the northern half. The Alaska Highway route would not make as large a contribution to Port of Seattle activity and revenues as would El Paso's LNG project but the latter is not in my judgement likely to prevail, and the Alaska Highway system therefore offers maritime interests and construction in the Northwest the greatest volume of business they are actually likely to obtain from any Alaska gas transportation system.

California

For California, the Alaska Highway system offers a comparatively economic and (because it utilizes conventional technology) reliable source of incremental gas supply. Unlike the El Paso project it would not raise novel safety issues nor would it threaten to displace California's present low price gas from the Permian Basin in favour of high price LNG imports from Alaska.

Midwest & East

For the United States' Midwest and East, the Alaska Highway project (like the Arctic Gas project) would provide an assured supply of natural gas directly into the market areas where the shortages are most acute. Because of its smaller risk of construction delays and cost overruns, however, the Alaska Highway system should, on balance, be preferable. By preserving Canada's option to develop the Arctic Islands and the Polar Gas pipeline earlier than the Mackenzie Delta and Beaufort Sea, the Alaska Highway proposal may offer a better possibility (however remote) of increasing producible and transportable Canadian reserves to such a quantity that the Canadian government would be willing to consider new export commitments.

There cannot help but be some losers. First, of course, are those gas transmission companies whose projects would be turned down and the construction and service firms who hoped to build a bigger system or a different system from the one which is finally approved. There is Exxon, whose affiliate Imperial Oil is part of the Canadian Arctic Gas group, and other producers with interests in the Mackenzie, who would be deprived of an early hookup to their Arctic reserves, however superfluous that hookup may be at the present time from the standpoint of Canada's energy economy. Finally, there are those who would expect to build and operate the LNG tankers if the El Paso project prevailed, together with those (in the Port of Seattle, for example) who hope for a larger demand for their transportation and other services than an Alaska Highway project can generate.

For Canada as a whole, the Alaska Highway proposal would postpone the necessity of deciding when, how and by whom the Mackenzie Delta-Beaufort Sea region was to be developed, and whether that region or the Arctic Islands should take first priority for development among Canadian frontier regions.

On balance, however, if we take into account the lower front-end cost, the smaller vulnerability to cost overruns, and the widely agreed-upon environmental advantages of the Alaska Highway route, a system similar to that proposed for the Alcan may be the best practical alternative for almost every region in both Canada and the United States. Together with its broad acceptability to Alaskans these considerations make a system like that proposed by Northwest and Foothills a possible winner despite its late entry into the competition.

Arlon R. Tussing

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What's in it for Canada?

The probable reception of any Alcan proposal by Canadian authorities has been a most difficult issue to forecast. A major appeal of the Arctic Gas project is purportedly its early (if not necessarily more economical) attachment to the Mackenzie reserves. Without this feature, it may be asked, what is the advantage to Canada of accommodating the United States in moving Alaska gas?

The attachment of the Mackenzie reserves may, on the other hand, be seen as a major disadvantage of the Arctic Gas system, from at least one Canadian standpoint. There is no particular reason why Canada should not accommodate the United States with a transit line across Canadian territory; after all, a substantial portion of Canada's oil and gas supplies transits the United States. There would seem to be little objection in Canada on nationalistic grounds to American gas moving in either an American or a Canadian-owned pipeline across Canada. The Mackenzie project, in contrast, raises the issue of an American-dominated consortium developing an important frontier area of Canada. The fact that an early Mackenzie connection is being justified in the United States by the (doubtful) proposition that it would lead to greater Canadian exports to the United States aggravates its potential difficulties in Canada. Both its timetable and logistics would be dictated by the convenience of the American interests. The native claims and environmental complications of this route are also well known.

If Congress and the Canadian Parliament have any inkling now about the long journey on which they are about to embark, they may hesitate.

The 60 trillion cubic feet of proved reserves in the western provinces are enough to sustain the expected growth of Canadian demand plus present export contracts for about ten years. This would be the case even if there were no further discoveries, but recent exploratory results in Alberta have been rather encouraging, more so in fact than in the delta area. For this reason a decision on an Arctic pipeline carries much less urgency for Canada than it does for the United States.

More importantly, however, a decision today in favour of immediate development of the Mackenzie Delta-Beaufort Sea region can be seen to prejudice whether that region or the Arctic Islands (where recent exploration seems to have been more successful) shall be developed first. Either project could strain the capacity of domestic capital markets so that simultaneous construction of two major pipeline systems under Canadian majority ownership is almost out of the question.

It is not obvious which of several competing considerations is likely to be dominant in the eventual decision by the National Energy Board and the Cabinet, but on balance there now appears to be a favourable climate for a co-operative project with the United States concerning Alaskan gas. If the Alcan project were not a serious contender, this means that the Arctic Gas proposal would be approved. The Maple Leaf project is not timely either in terms of known reserves or in terms of Canadian demand, and it is not a serious contender at this time.

A decision in favour of Arctic Gas would, however, be a reluctant one and would be opposed from many quarters within the Canadian federal government, by several provinces and by a large body of Canadian opinion. These objections rest on a broad range of environmental, economic, nationalistic and native claims considerations, and most decisively perhaps on the fact that the approval of Arctic Gas might effectively preclude or postpone for many years the Polar Gas alternative. For these reasons, my own tentative judgement is that the Canadian government will — once it has had an opportunity to consider the alternative — welcome the opportunity to avoid an early decision one way or another regarding the Mackenzie. This is likely the biggest benefit to Canada from the Alcan proposal.

Arlon R. Tussing

Exhibit 12

NATURAL GAS SUPPLY
OUTLOOK FOR
THE WEST

SUMMARY OF COMMENTS

BY

ARLON R. TUSSING

AT

NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC.

WORKSHOP ON ECONOMIC GROWTH IN THE WEST

AND RELATED ENERGY PROBLEMS

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1. It no longer means much to speak of a gas supply outlook for the Pacific states as distinct from the outlook for the contiguous 48 states as a whole. With a nearly complete nationwide gas transmission network and transmission loads that are stagnant or declining, an abundance or shortage of gas in one region can be shifted to any other region or spread evenly across the country, without major investments in new transportation capacity.

2. The emergence of a single national market for natural gas is of course inhibited by FPC wellhead price controls, which discourage both interstate sales generally and reallocation of gas among interstate purchasers. And existing long term sales contracts together with the need for certification and abandonment proceedings before the FPC and state commissions make even the most economically logical exchange and displacement arrangements difficult to put into effect.

3. Nevertheless, if institutional obstacles effectively prevent the smoothing out of gross regional disparities in gas supply, we can expect Congress to give the FPC authority to reach into intrastate markets, to allocate new natural and synthetic gas among regions, and perhaps even to reallocate flowing gas among interstate pipelines.

4. Congress would surely direct the FPC to allocate gas nationally if it were to approve any LNG system for the delivery of North Slope natural gas, which would require large areas of the United States to receive new gas supplies by displacement rather than directly. Approval of a MacKenzie or Alcan system without a western leg would also strengthen the demand that the FPC have direct allocation authority. Such an outcome would be unfortunate because any non-market allocation system would blunt the incentives of transmission companies and gas utilities to solve their own supply problems.

5. It is possible to make some broad generalizations about both the commodity value and the cost of gas on a national scale. The demand for gas can be separated into three main components: (a) a premium market in which only electricity is a competitive energy source, (b) an intermediate market in which refined petroleum products (distillate fuel oil, naphtha, propane, etc.) are effective substitutes, and (c) the "black fuels" market in which natural gas can displace coal and residual fuel oil only when it is cheaper.

6. The intermediate market, which is composed of household and small commercial space heating, and use for crop drying, in combustion turbines and for chemical feedstocks

(plus utility boiler fuel in times and places with severe air quality problems), is by far the major part of total consumption, so that all plausible projections of United States natural gas supplies through 1990 fall into this intermediate segment of the demand function. For this reason the long-term commodity value of gas will be equivalent, more or less, to the cost of refined petroleum products. Assuming that the real price of imported crude oil remains about the same as it is today, we can anticipate a long-term demand price for gas of \$2.50 to \$3.00 in 1976 dollars.

7. The demand price for gas will be somewhat higher than that of distillate fuel oil if total gas supplies continue to decline over the period, because the alternative to gas for many consumers will not be simply the substitution of a petroleum product but will also include the cost of converting or replacing existing gas-burning equipment.

8. The average (rolled in) cost of gas will be just about equivalent to this commodity value or demand price. Pipelines and distributors will continue to get some quantity of gas purchased on long term contracts or controlled at less than its commodity value. They will therefore be able to augment these low price conventional supplies with just enough high cost gas "supplements" at \$4, \$5, \$6 or more per Mcf, to bring their average price up to the demand price.

9. For this reason deregulation (or the level of regulated gas prices) can not be expected to have a great effect on the average price consumers pay for gas.

It might, however, have a powerful influence on how much gas is available at that price (although the direction of this influence is not obvious -- see footnote), and upon the economic cost to the nation as a whole of its gas supply.

(The national economic cost would be lowest under deregulation, but the larger part of the net benefit would be captured by gas producers rather than by consumers.).

10. The most certain and economical source of additional gas for premium and intermediate markets are the volumes now being burned under industrial and electric utility boilers and as refinery fuel. End use controls

The question hinges on the responsiveness of conventional gas supplies to price. If supply is relatively price-inelastic, the main impact of deregulation or higher wellhead prices would be to transfer revenue to gas producers and royalty owners at the expense of the pipelines and distributors. Since the latter would otherwise have used this revenue to finance the purchase or production of high-cost gas supplements, total gas supply would be less than it would be at the old regulated prices. On the other hand, if the supply of new reserves of conventional gas is highly responsive to price (as I believe is more likely), an additional dollar paid to the gas producers will elicit a greater volume of gas than the same dollar spent on such projects importing LNG or manufacturing SNG from coal or oil.

by the FPC and state authorities are already encouraging such a shift. But in order to employ existing reserves most efficiently around the year, elimination of interruptible sales for low-priority use must go together with investments in storage facilities and in increased peak deliverability in the field. Incentives for the latter adaptation are now blunted by price controls, but added storage is probably a worthwhile investment for almost every gas transmission company or utility.

11. The main supplemental sources of gas appear to be Canadian pipeline imports, LNG imports, Alaskan natural gas and SNG from coal and petroleum.

12. The price of future Canadian imports is reasonably predictable, but their volume is not. The Canadian federal government and Alberta have adopted an explicit commodity value standard for gas pricing in both domestic and export markets (though it is being implemented more slowly for Canadian consumers), and there is little reason to believe that this policy will be changed.

13. The approximately 60 TCF of presently proved reserves in the Western Provinces are sufficient to serve projected Canadian demand plus existing export commitments for about 10 years without creating deliverability problems. A continuation of recent Alberta discovery

trends may be sufficient to assure that existing export contracts will in fact be honored. But there is no development, short of huge discoveries (perhaps another 60 TCF) in the Arctic that would be likely to induce the Canadian government to approve new export commitments.

13. The sufficiency of present supplies to Canada for about ten years, means

that any Mackenzie or Polar pipeline will be superfluous to Canada's needs for at least that period, unless reserve volumes justifying exports are developed. This implies that there is no urgency for Canada in an early determination regarding the desirability, scale or timing of a Mackenzie Valley pipeline.

14. Large LNG import projects, coal gasification, and facilities to deliver gas from the Alaskan (and/or Canadian) Arctic to Lower 48 markets share several features which raise serious questions about their economic viability or practical feasibility. Each of them requires large, "lumpy" investments -- in the billions or tens of billions of dollars -- and involves unproved technology or a substantial scale-up of proved technology. Some proposals involve a unique physical or institutional environment (e.g., the Arctic Gas proposal and Indonesian LNG)

in which no engineering projects of their magnitude has ever been attempted. Each of them involves numerous regulatory jurisdictions, including more than one sovereignty or quasi-

sovereignty (states and provinces). Each of them involves major environmental and safety issues, real or imagined, usually in more than one regulatory jurisdiction.

15. The construction and operating cost projections offered by the proponents of each of these gigantic capital-intensive projects are already near the margin of economic feasibility, even assuming the absence of major delays, technological or engineering false starts, or cost overruns.

16. Recent experience with military procurement, nuclear power plants, the Trans-Alaska pipeline and other large custom-engineered construction projects indicates that all the large supplemental gas projects are exceptionally vulnerable to delay and cost-overruns, if not to non-completion.

17. The scale of these projects typically exceeds the net worth of their sponsors, precluding conventional secured financing. Uncertainty about construction costs and completion dates, aggravated by political and licensing uncertainty make no-recourse debt financing equally improbable. Each project therefore probably requires government loan guarantees (increasing their vulnerability to political opposition) and/or all-events tariffs, which state commissions are unlikely to approve.