

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 86/2/5

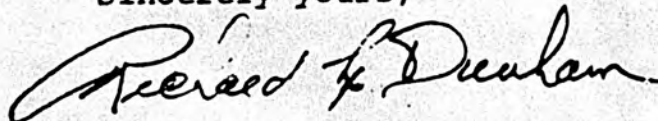
645 SCOMM21: ROYALTY OIL & GAS FILES 1977-78

The President

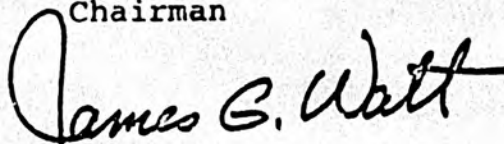
May 2, 1977

The decision now before you, we recognize, will significantly influence this nation's energy future. Therefore, beyond providing our best thinking in these recommendations, the commissioners and staff of the Federal Power Commission stand ready to assist you in every way.

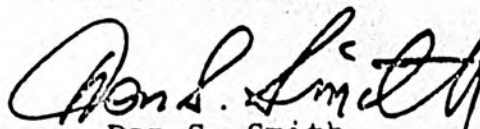
Sincerely yours,



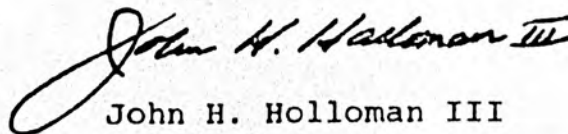
Richard L. Dunham
Chairman



James G. Watt
Vice Chairman



Don S. Smith
Commissioner



John H. Holloman III
Commissioner

For Monday Release
May 2, 1977

Office of Sen. John Sparkman
Contact: Grover Smith, Press Sec'y
202-224-4124, Wash., D.C.

Federal Power Commission Decision
Not Final, Says Sparkman Noting
Congressional-Presidential Role

(NOTE TO REPORTERS: This release is a comment on the Federal Power Commission release anticipated during the afternoon of Monday May 2).

WASHINGTON, D.C.---Foreign Relations Committee Chairman John Sparkman (D., Ala.), noted today that the Federal Power Commission recommendation for a Trans-Canadian pipeline running from Alaska to the United States still must be approved by the Congress and the President.

"The recommendation of the Federal Power Commission is not final," said Sparkman. "It is but one step in the process of selecting a project for bringing Alaskan gas to the lower 48 states.

"The Federal Power Commission is not structured for considering the foreign policy implications of this issue, and these considerations will now be fully explored by the President and the Congress," he stated.

In the face of three proposals submitted for natural gas routes from Alaska, the FPC today voted 4-0 for a Trans-Canada route, rather than a route involving Trans-Alaska pipeline and U.S. shipping to a Southern California distribution point. In a vote on which of two Trans-Canada routes proposed, the Commission voted two for a route along the Alcan Highway and two for a \$10.4 billion line beginning on the Alaskan North Slope, running southeast through Canada to a point in Alberta near the U.S. border where the line would split with one route going down the U.S. Pacific Coast and the other to the Midwest.

FPC Divided in Recommendation of Alaskan Gas Transportation System; Two Members
Recommend Alcan and Two Recommend Arctic Gas

On 5/2/77 the FPC forwarded a 460-page report to the President on the three competing Alaskan gas transportation proposals, together with a letter of transmittal containing a split (two-two) recommendation. "Under present circumstances and expectations," Chairman Dunham and Commissioner Watt recommended the Alcan project (the 48-inch alternative filed in March 1977), while Commissioners Holloman and Smith recommended Arctic Gas.

The report was submitted pursuant to the Alaskan Natural Gas Transportation Act of 1976 which requires the President to issue a decision by 9/1/77 regarding the transportation system to be built. This decision may be delayed for up to 90 days if the President should determine the need for an additional or supplemental environmental impact statement or the need otherwise for additional time to render a sound decision. The President's decision requires Congressional approval to become effective.

All four Commissioners favored selection of an overland system through Canada, provided such a route is made available by the Government of Canada on acceptable terms and conditions. However, they said, in deciding between the two overland routes (Alcan and Arctic Gas), further information is needed, as well as knowledge of the intentions of the Canadian Government. "Based on today's circumstances, reasonable men can disagree on the right course of action."

The preference of Commissioners Holloman and Smith for the Arctic Gas project was conditioned upon "timely affirmative decisions" by the Government of Canada to make the route available and, after development, to allow simultaneous transportation of Canadian natural gas reserves from the Mackenzie Delta. Absent a Canadian determination to permit development and transportation of Mackenzie Delta reserves, Messrs. Holloman and Smith supported the Alcan project. Failing "timely and acceptable agreements" with the Canadian Government regarding a route for an overland system, selection of the El Paso Alaska project was recommended.

Assuming selection of an overland system, the FPC recommended deferral of a decision on the Western Leg for one to two years until further information may be available regarding the continuation of Canadian exports under licenses due to expire in the early and mid-1980's and the extent of idle capacity on existing systems.

Neither the transmittal letter nor the FPC's report explained the specific basis for the recommendation of Arctic Gas by Commissioners Holloman and Smith, or for the recommendation of Alcan by Chairman Dunham and Commissioner Watt.

The Commission's transmittal letter stressed the following conclusions as most important: (1) at least 20 Tcf of producible gas reserves are contained in the Prudhoe Bay Field of Alaska, enough to provide about 5% of U.S. natural gas consumption for the next 25 years, and this gas can be delivered to the Lower 48 States and successfully marketed by any one of the three competing applicant groups; (2) each system will have some adverse environmental impacts, all of which are deemed acceptable given proper precautionary measures, although Alcan and El Paso Alaska have a "distinct environmental advantage" in generally following existing utility corridors; (3) an overland route can deliver gas more cheaply on a unit basis than a combined land and water route using liquefied natural gas technology, and Arctic Gas having a slight advantage over Alcan in this regard; (4) if the Canadian Government decides not to proceed with development of Mackenzie Delta reserves at this time, the overall balance of cost advantages shifts from

Arctic Gas to Alcan; (5) net national economic benefits are roughly the same for all systems, although El Paso Alaska has an advantage in the calculation because all of its tax payments go to the United States and virtually all of its wage and material payments go to Americans; (6) based on best estimates of likely ultimate construction costs (not the applicants' figures), the El Paso Alaska system would require the least capital, with Alcan and Arctic Gas costing somewhat more; (7) Arctic Gas has the greatest risk of major cost overruns, primarily because of its difficult winter construction schedule, while El Paso Alaska is least vulnerable to such overruns; (8) each of the systems should operate reliably once service begins, although El Paso Alaska is slightly more susceptible to service interruption due to its complex nature and greater seismic risks; (9) El Paso Alaska would be the easiest system to finance because of its slightly lower initial cost and the availability of federal loan guarantees for tanker construction under Title XI of the Merchant Marine Act; (10) Arctic Gas can expand to deliver up to 3.5 Bcf/d and Alcan to deliver up to 3.2 Bcf/d from the Prudhoe Bay Field at small cost, while expansion costs for El Paso (for ships, terminal facilities and operating expenses) would be greater relative to increased deliveries; (11) North Slope gas should be distributed as widely as possible throughout the United States, both to encourage broad-based financing for the selected project and to avoid too heavy a dependence by any area of the country on Alaskan gas; and (12) any of the proposed systems can be financed without extraordinary risk-bearing by consumers or taxpayers if investors are allowed an opportunity to earn an adequate return commensurate with the unusual size and degree of risk of the project. Alternatively, consumers and taxpayers could assume the risks of noncompletion of the system or interruption of service in return for a lower delivered cost of gas.

The FPC's 460-page report summarized major comparative advantages and disadvantages of the three projects from the standpoint of economics, environmental impact, system reliability and LNG safety, and financeability.

(1) Arctic Gas is economically superior -- in view of an estimated 20-year national average cost of service of 76¢/MMBtu (in 1975 dollars) compared to 79¢/MMBtu for Alcan and \$1.09/MMBtu for El Paso Alaska. On the other hand, Arctic Gas is the most likely to suffer substantial cost overruns, due to potential construction delays in completing its North Slope section. However, even with a \$270 million cost overrun in the Prudhoe Bay lateral section and a one-year delay before commencement of service from Prudhoe Bay (an "extreme assumption"), the unit cost of service for Arctic Gas would increase only 12%, or from 76¢ to 85¢/MMBtu. Neither Alcan nor El Paso appear to be subject to large cost overruns due to the forces of man or nature, even though Alcan's average 20-year cost would undoubtedly be somewhat higher than 79¢/MMBtu (in 1975 dollars) because of the unlikelihood of meeting its projected construction schedule. Finally, both Alcan and Arctic Gas can expand inexpensively from the initial flow rate of 2.25 Bcf/d by adding compression. By comparison, in order to expand deliveries, El Paso Alaska's LNG tankers, liquefaction and regasification facilities must all be scaled-up at costs roughly proportional to their initial costs.

(2) Alcan is environmentally preferable because of use of existing utility corridors and all-weather roads over much of its route.

(3) El Paso Alaska, because of its more complex LNG processing and transportation system, is subject to a slightly higher risk of service interruption. El Paso Alaska also presents the risk of hazard to a limited population in the event of an LNG accident, but the probability of such an accident is low and, if one should occur, damage to human life would be minimal.

(4) El Paso Alaska holds a distinct advantage in terms of financeability, even considering the likelihood of cost overruns for all three systems. Among other things, El Paso Alaska can obtain 20% of its total capital requirements easily and cheaply through U.S. Government guarantees available under Title XI of the Merchant Marine Act.

The Commission stressed the need to establish a field price for Prudhoe Bay gas as soon as possible, and indicated its intent to initiate a proceeding toward this end in the near future. In addition, the Commission suggested that field price (including gathering and conditioning) be determined on the basis of market value less transportation costs. In applying this formula, the Commission said "market value" would most likely be set by reference to the city gate cost of incremental gas or energy supplies, while the most appropriate transportation cost would be the national average cost to selected major market areas. Such a pricing formula, the Commission declared, would remove the possibility that producers could exercise monopoly power in the pricing of Alaskan gas, avoid the problem of allocating joint costs of gas produced in association with oil, and offer consumers significant protection against paying a price higher than market value for Alaskan gas since transportation cost increases would be offset by corresponding reductions in field price.

The report also discussed two possible approaches to financing -- one involving guarantee of debt service by project sponsors (assuming additional creditworthy parties can be induced to participate in financing) and the other involving consumer debt guarantees. Under the first approach, the FPC recommended an 18% rate of return on equity -- to be allowed so long as the delivered cost of gas (field price plus transportation cost) does not exceed the market value of the gas, but subject to reduction if market value is exceeded. Under the consumer debt guarantee approach, the Commission would allow a maximum rate of return on equity of 15%. In addition, the Commission recommended adoption of a consumer guarantee fee equal to the difference between the cost of service under the project sponsor debt guarantee approach and the cost of service with consumer guarantees. The consumer guarantee fee would be added to the out-of-pocket transportation cost for purposes of calculating gas field price (under a market value approach).

The FPC specifically did not recommend federal financial assistance to construct a gas transportation system. "Federal backstopping is a default option to be employed only if it is determined that the social benefits of a transportation system are overriding and private parties are unwilling to undertake the project alone at a reasonable cost." Here, however, the "private benefits are substantial and the risks bearable" under the proposed financing alternatives.

The FPC's conclusions differ in certain respects from those of Judge Litt who, in an initial decision issued 2/1/77, recommended Arctic Gas as superior to El Paso Alaska, found that El Paso Alaska nonetheless had a viable project which could be certificated if Arctic Gas were unable to go forward, and held that Alcan had no "possibility" of certification. (The Alcan project before Judge Litt, however, was its original 42-inch project which contemplated commingling of Alaskan gas and Canadian gas; in part because of Judge Litt's criticism, this proposal was replaced in March 1977 by a 48-inch express line alternative to carry only Alaskan gas to Lower 48 markets, with no commingling of Canadian gas.) Another difference was that Judge Litt urged approval of Western Leg facilities at this time rather than a deferral of decision. In regard to financing, Judge Litt recommended federal participation to the extent of an insurance or completion guarantee arrangement to facilitate raising project debt capital at a more reasonable cost, thereby reducing the cost of gas to consumers. (See REPORT NOS. 1090, App. ppl-23; 1095, App. ppl-26.)

The FPC's report to the President is summarized in greater detail in an Appendix to this REPORT.

Canadian Prime Minister Appoints Northern Pipeline Commissioner

On 4/29/77 Prime Minister Trudeau announced the appointment of Basil Robinson as Northern Pipeline Commissioner. Mr. Robinson will be responsible for coordinating all advice to the Canadian Government on the need for a northern gas pipeline, the choices open to the government and the advantages and disadvantages of each proposal. Among other things, he will assist the government in assimilating existing analyses and the forthcoming reports of the Berger Commission, the FPC, the National Energy Board and the two panels operating in the Yukon. Mr. Robinson's role will be to ensure that the Cabinet has before it all the analysis and advice required to make a decision in accordance with the broad national interest.

As part of his responsibilities, Mr. Robinson will consult closely with United States officials concerned with northern pipeline matters.

Mr. Robinson is presently Under-Secretary of State for External Affairs. He has previously been Deputy Minister of Indian Affairs and Northern Development.

Justice Department Concludes General Antitrust Investigation of Natural Gas Industry Not Justified at This Time

On 5/2/77 Donald Baker, Assistant Attorney General of the Antitrust Division, Department of Justice, replied to a letter dated 2/9/77 from Ralph Nader (and certain associates) requesting that the Antitrust Division conduct a general investigation into the natural gas industry to determine whether natural gas producers are engaged in an unlawful conspiracy to withhold gas from the market. In view of actions now being taken by the Antitrust Division on several fronts to scrutinize the natural gas industry, Mr. Baker stated that a more general antitrust investigation cannot be justified at this time. "There is to date no probative evidence of collusion, and a less precisely focused investigation would in large part merely duplicate the efforts of other government agencies Of course, if either our efforts or those of other agencies reveal any significant indications of collusion, we will rapidly undertake whatever additional investigation is necessary to determine whether an antitrust prosecution is warranted."

The bulk of Mr. Baker's letter described the Antitrust Division's current efforts in regard to the natural gas industry.

First, he said, the Division is closely monitoring the Interior Department's investigation into whether development and production of natural gas in the Gulf of Mexico has been intentionally withheld. The Secretary of Interior has indicated that the Justice Department will receive any evidence of deliberate withholding, and such evidence will be reviewed to determine whether an antitrust violation has occurred or whether further investigation is warranted. "An independent Antitrust Division investigation of possible collusive withholding of natural gas would be largely duplicative of the Interior Department's efforts."

Second, the Antitrust Division is following up on FPC inquiries into whether gas producers and pipelines have unlawfully colluded to withhold gas from the interstate market. "The FPC determined several years ago, based upon data submitted by jurisdictional pipelines, that there may be substantial amounts of dedicated natural gas reserves in the Gulf of Mexico that are not being produced." Also, in

5/23

Summary of FPC gas route
decision.

Suggest you glance at pages 12-16
which speak of:

- (1) State of AK & federal assistance
in project financing.
- (2) Early establishment of a field price.
- (3) Federal auditing of construction
costs during construction & determina-
tion of costs to be included in tariff.
(Wouldn't that have been nice for
the oil pipeline?)

CB

SUMMARY OF FPC REPORT TO PRESIDENT ON
ALASKAN NATURAL GAS TRANSPORTATION PROPOSALS

On 5/2/77 the FPC forwarded a 460-page report to the President on the three competing proposals to transport Alaskan North Slope gas to the Lower 48 States, together with a 5-page letter of transmittal containing a split (2-2) recommendation. "Under present circumstances and expectations," Chairman Dunham and Commissioner Watt recommended the Alcan project (the 48-inch alternative filed in March 1977), while Commissioners Holloman and Smith recommended Arctic Gas.

The report was submitted pursuant to the Alaska Natural Gas Transportation Act of 1976 which requires the President to issue a decision by 9/1/77 regarding the transportation system to be built. This decision may be delayed for up to 90 days if the President should determine the need for an additional or supplemental environmental impact statement or the need otherwise for additional time to render a sound decision. The President's decision requires Congressional approval to become effective.

All four Commissioners favored selection of an overland system through Canada, provided such a route is made available by the Government of Canada on acceptable terms and conditions. However, they said, in deciding between the two overland routes (Alcan and Arctic Gas), further information is needed, as well as knowledge of the intentions of the Canadian Government. "Based on today's circumstances, reasonable men can disagree on the right course of action."

The preference of Commissioners Holloman and Smith for the Arctic Gas project was conditioned upon "timely affirmative decisions" by the Government of Canada to make the route available and, after development, to allow simultaneous transportation of Canadian natural gas reserves from the Mackenzie Delta. Absent a Canadian determination to permit development and transportation of Mackenzie Delta reserves, Messrs. Holloman and Smith supported the Alcan project. Failing "timely and acceptable agreements" with the Canadian Government regarding a route for an overland system, selection of the El Paso Alaska project was recommended.

Assuming selection of an overland system, the FPC recommended deferral of a decision on the Western Leg for one to two years until further information may be available regarding the continuation of Canadian exports under licenses due to expire in the early and mid-1980's and the extent of idle capacity on existing systems.

Neither the transmittal letter nor the FPC's report explained the specific basis for the recommendation of Arctic Gas by Commissioners Holloman and Smith, or for the recommendation of Alcan by Chairman Dunham and Commissioner Watt.

The report summarized the major comparative advantages and disadvantages of the three projects from the standpoint of economics, environmental impact, system reliability and LNG safety, and financeability, as follows:

(1) Arctic Gas is economically superior -- in view of an estimated 20-year national average cost of service of 76¢/MMBtu (in 1975 dollars) compared to 79¢/MMBtu for Alcan and \$1.09/MMBtu for El Paso Alaska. On the other hand, Arctic Gas is the most likely to suffer substantial cost overruns, due to potential construction delays in completing its North Slope section. However, even with a \$270 million cost overrun in the Prudhoe Bay lateral section and a one-year delay before commencement of service from Prudhoe Bay (an "extreme assumption"), the unit cost of service for Arctic Gas would increase only 12%, or from 76¢ to 85¢/MMBtu. Neither Alcan nor El Paso appear to be subject to large cost overruns due to the forces of man or nature, even though Alcan's average 20-year cost would undoubtedly be somewhat higher than 79¢/MMBtu (in

1975 dollars) because of the unlikelihood of meeting its projected construction schedule. Finally, both Alcan and Arctic Gas can expand inexpensively from an initial flow rate of 2.25 Bcf/d by adding compression. By comparison, in order to expand deliveries, El Paso Alaska's LNG tankers, liquefaction and regasification facilities must all be scaled-up at costs roughly proportional to their initial costs.

(2) Alcan is environmentally preferable because of use of existing utility corridors and all-weather roads over much of its route.

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The FPC report suggested that a field price (including gathering and conditioning) for Prudhoe Bay gas be determined on the basis of market value less transportation costs. In applying this formula, the Commission said "market value" would most likely be set by reference to the city gate cost of incremental gas or energy supplies, while the most appropriate transportation cost would be the national average cost to selected major market areas. The Commission also indicated the need to establish a field price for Prudhoe Bay gas as soon as possible, and announced its intent to initiate a proceeding toward this end in the near future.

The report discussed two possible approaches to financing -- one involving guarantee of debt service by project sponsors (assuming additional creditworthy parties can be induced to participate in financing) and the other involving consumer debt guarantees. Under the first approach, the FPC recommended an 18% rate of return on equity -- to be allowed so long as the delivered cost of gas (field price plus transportation cost) does not exceed the market value of the gas. Under the consumer debt guarantee approach, the Commission would allow a maximum rate of return on equity of 15%. In addition, the Commission recommended adoption of a consumer guarantee fee equal to the difference between the cost of service under the project sponsor debt guarantee approach and cost of service with consumer guarantees. In calculating the gas field price, the consumer guarantee fee would be added to the out-of-pocket transportation cost.

The FPC specifically did not recommend federal financial assistance to construct a gas transportation system. "Federal backstopping is a default option to be employed only if it is determined that the social benefits of a transportation system are overriding and private parties are unwilling to undertake the project alone at a reasonable cost." Here, however, the "private benefits are substantial and the risks bearable" under the financing proposals suggested above.

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The FPC report is summarized in greater detail below. The summary covers the following topics:

- Gas Reserves and Deliverability
- Comparative Cost of Service
- Net National Economic Benefits
- Environmental Impacts
- Socio-Economic Impacts
- Geotechnical Issues Affecting System Reliability
(Including LNG Safety and Siting)
- Construction Costs and Scheduling
- Western Leg
- Financing and Tariffs (Including Methodology
for Determining Field Price)
- Competitive Impact Assessment
- Other Matters

Gas Reserves and Deliverability

The FPC stated that in-place gas volumes in the Prudhoe Bay Field exceed 40 Tcf (estimates range from 35.1 Tcf to 42.8 Tcf). Assuming a recovery efficiency of 75% to 80% and a 26% shrinkage factor, recoverable gas is 22.2 Tcf to 23.7 Tcf. Further, the Commission stated, available evidence indicates that at least 2.0 Bcf/d and possibly 2.5 Bcf/d, or even slightly higher, can be made available to any of the proposed gas transportation systems from the Prudhoe Bay Field. Gas deliveries can be sustained for 25 to 35 years depending on the sales rate and ultimate gas recovery efficiency, and assuming gas sales commence within roughly four to five years after oil production commences.

The Commission pointed out that the Prudhoe Bay Field is an oil reservoir, and that gas produced during at least the early years can be advantageously used for reinjection in order to maintain reservoir pressure and thus sustain oil production. Thus, the gas should not be viewed as a by-product that has to be sold, or that should even necessarily be sold during the initial years of oil production. However, the Commission added, reinjection of produced gas will require approximately 4% usage as fuel for compression. Therefore, the longer gas sales are postponed, the less total gas will be available for sale.

Possible future gas supplies which might be available in other areas of Alaska were also discussed by the Commission in the context of assessing system expansibility requirements of the three proposed systems. Based on review of available information, the Commission stated that (1) the possibility of significant supplies from Naval Petroleum Reserve No. 4 appears "slight" -- the most realistic resource estimate now available is about 14 Tcf which, assuming a maximum of 50% and a minimum of 15% capable of economic development, could be expected to provide maximum daily salable volumes ranging from roughly 0.3 Bcf/d to 0.9 Bcf/d (with the upper end of this range "highly speculative"); (2) geological and limited geophysical information suggests the possibility of substantial gas reserves under the Arctic National Wildlife Range, but no credible resource estimate can be made at this time; (3) high resource

potential exists for the Beaufort Sea (north of the Prudhoe Bay Field) and, to a lesser extent for the Chukchi Sea (west of NPR No. 4); and (4) the interior basins of Alaska hold little promise of natural gas.

In short, the Commission declared, there exists "some possibility" of increased deliveries from the North Slope of perhaps up to an additional 1.5 Bcf/d (from NPR No. 4, Arctic National Wildlife Range, the Beaufort Sea, and other reservoirs in or near the Prudhoe Bay oil field). Thus, the Alaskan gas transportation system should be designed to carry initially 2.0 to 2.5 Bcf/d, and be capable of expansion to an additional 1.0-1.5 Bcf/d. Each of the systems is so designed.

In regard to the Mackenzie Delta region, the Commission disagreed with Judge Litt's finding of a reasonable likelihood of 1 Bcf/d of deliveries in the first year of operations, rising to 1.5 Bcf/d in the fifth year. Rather, based on all available information, including gas supply information recently submitted to the NEB (in early 1977), the FPC concluded that the most realistic level of gas availability from the Mackenzie Delta area that can be projected at this time is 1 Bcf/d.

While additional exploration will likely result in new discoveries, the Commission explained, exploration and development activities to date have not been "totally encouraging," and the magnitude and timing of future reserves are uncertain. The three largest fields discovered thus far contain reserves (proved, probable and possible) of approximately 3 Tcf, 1.5 Tcf and 1 Tcf. No other discovered field has reserves in excess of 0.2 Tcf or 0.4 Tcf, according to recent estimates by Foothills and Canadian Arctic. Moreover, the Commission continued, there is no information presently available to indicate that future Mackenzie Delta discoveries (at least with respect to the onshore and shallow water area) would be different from the fields discovered to date. While there is some expectation that the Mackenzie Delta offshore area in the Beaufort Sea could hold substantial amounts of hydrocarbons, the Commission added, estimates of gas potential offshore are even more speculative than onshore. Also, "the pattern of onshore discoveries to date makes the likelihood of realizing any additions of reserves from the offshore Mackenzie Delta area -- at least during the near future -- highly questionable."

The Commission discounted the argument that the presence of a gas transportation system in the Mackenzie Delta area would result in a rapid escalation of drilling activity. If the best onshore prospects have already been drilled, and if technological and economic considerations require a high degree of selectivity for offshore activities, "no appreciable escalation in drilling activity is guaranteed by the mere presence of a gas transportation system." Nor, the Commission added, does the rate of reserves additions in the past, when most drilling activity was conducted onshore, provide a valid basis for projecting the level of reserves additions in the future, when much of the drilling activity may be offshore.

The FPC said projected deliverability of 1 Bcf/d could be met initially from the three largest fields discovered to date (Taglu, Parsons Lake and Niglintgak). However, to sustain this deliverability level for 20 years, additional reserves amounting to an approximate doubling of the claimed 3.8 Tcf of proved reserves (as of July 1975) would be required. To sustain this level for 30 years would require cumulative marketable reserves of 11 Tcf.

A gas deliverability rate of 1 Bcf/d from the Mackenzie Delta, the Commission noted further, is also supported by current plans for operating the Mackenzie Delta fields, including use of several centrally located gas conditioning plants to handle gas produced from all of the fields. This mode of field operations will most likely result in sequential production of various fields rather than simultaneous production

of all or a substantial number of fields. Moreover, even if the most optimistic recent estimate of current reserves (including proven, probable and possible categories) were accepted, "it seems questionable whether gas delivery rates substantially greater than 1 Bcf/d could be sustained long enough to justify expenditures for gas processing facilities capable of handling volumes greater than 1 Bcf/d."

However, the Commission added, if future Mackenzie Delta exploratory efforts should result in the discovery of more fields -- and particularly larger fields -- than have been discovered through past exploratory efforts, the projected deliverability of 1 Bcf/d could prove to be an understatement of the pipeline capacity required to handle Mackenzie Delta gas. In assessing the degree of pipeline system expansibility that may be required to handle gas supplies in excess of 1 Bcf/d, it is "conceivable" that the Mackenzie Delta area deliverability (including substantial offshore gas) could be sustained at 1.5 Bcf/d or even higher. Therefore, "the degree of gas transportation expansibility that should be attributed to the Mackenzie Delta area is 0.5 Bcf/d."

Comparative Cost of Service

The FPC compared unit transportation costs for the three projects using cost of service data recently submitted by the three applicants at the Commission's request. (See REPORT NO. 1101, App. pp13-14.) All costs are expressed in 1975 dollars.

	<u>First Five Years</u>				<u>Twenty Years</u>			
	<u>East</u>	<u>Midwest</u>	<u>West</u>	<u>Natl. Avg.</u>	<u>East</u>	<u>Midwest</u>	<u>West</u>	<u>Natl. Avg.</u>
	---(Dollars per Million Btu)---				---(Dollars per Million Btu)---			
Arctic Gas	\$1.23	\$1.19	\$1.07	\$1.17	\$0.76	\$0.74	\$0.76	\$0.76
El Paso Alaska	\$1.71	\$1.66	\$1.28	\$1.53	\$1.23	\$1.19	\$0.91	\$1.09
Alcan	\$1.30	\$1.28	\$1.15	\$1.24	\$0.80	\$0.79	\$0.74	\$0.79

The above estimates, the Commission stressed, indicate that all three systems can deliver Alaskan gas at a reasonable cost to the consumer. "Even El Paso could deliver gas at an average price of less than \$2.10/MMBtu, assuming a field price of \$1.00/MMBtu. We have no doubt that the gas is worth much more than this. Even with extremely large cost overruns, there is insignificant marketability risk for this gas, even on an incremental basis."

Net National Economic Benefit

The FPC determined that all three projects would yield substantial net national economic benefits, with the results close between Alcan and Arctic Gas and lower for El Paso Alaska (due to its higher operating costs and lower fuel efficiency). However, it was noted, unlike Arctic Gas and Alcan, El Paso Alaska would pay no Canadian taxes, which offsets in part its greater fuel consumption.

Using alternative discount rates of 6% and 10%, the Commission calculated NNEB for the three projects -- in 1975 dollars -- as follows:

	<u>6% Discount Rate</u>	<u>10% Discount Rate</u>
	----- (Billions of 1975 Dollars) -----	
Arctic Gas	\$15.15	\$7.12
El Paso Alaska	\$12.86	\$5.80
Alcan	\$15.66	\$7.65

The Commission added that Alcan's construction costs underlying the above calculations may be somewhat low, so that Alcan cannot be found superior to Arctic Gas on NNEB grounds.

Environmental Impacts

The FPC concluded that each of the three proposed systems is environmentally acceptable -- but that the Alcan route (48-inch alternative) would pose the least environmental impact assuming proper mitigative measures during final design, construction and operation. Compared with Arctic Gas, the Commission said the Alcan project would (1) use existing corridors to the maximum, thereby requiring less development of rights-of-way in virgin or unimpacted areas; (2) avoid crossing the Arctic National Wildlife Range, similar areas in Canada, and related waterfowl breeding areas; and (3) avoid caribou calving grounds in Alaska and Canada. Compared with El Paso Alaska, Alcan would avoid construction of a pipeline through the Chugach National Forest, construction of two LNG terminals in high seismic risk areas, and impacts on marine and wildlife resources in Prince William Sound.

At the same time, the FPC indicated that crossing of the Arctic National Wildlife Range by Arctic Gas could be accomplished without adverse environmental impact if proposed mitigative measures are undertaken. In this connection, the Commission dismissed fears of the Conservation Interveners and the State of Alaska that Arctic Gas' snow road construction plans to mitigate damage to tundra and permafrost areas would turn out to be technically infeasible or lead to problems which could cause abandonment of such plans and resort instead to gravel roads and workpads to complete construction. The Commission expressed the view that Arctic Gas' proposed snowroad construction can be made technically and environmentally feasible and that sufficient water exists to make snow without undue environmental impact. Moreover, the Commission noted, Arctic Gas would have two years of snowroad experience before beginning construction in the Wildlife Range. However, if Arctic Gas should encounter schedule difficulties in this phase, the Commission would oppose any deviation in the original construction proposal. In short, if construction could not be completed by the original deadline, "then completion of the project would simply have to be delayed."

Nor did the Commission agree with the contention of the Conservation Interveners that crossing of the Arctic National Wildlife Range would necessarily lead to an "inevitable progressive violation of the Range." Alaska and the Department of Interior have full authority to limit any further activity, the Commission noted. Further, while selection of Arctic Gas would probably serve as an "important catalyst for expansion into areas adjacent to the Range" due to increasing energy demands, any verified natural gas reserves "could readily and economically be attached to the proposed Arctic Gas system" and liquid hydrocarbons could be transported west to Prudhoe Bay and then into the Alyeska system. "The presence of the Arctic Gas pipeline thus would not constitute an additional incentive to later development." In short, a decision on crossing the Range now is not "an irrevocable choice between total development or no intrusion at all on the Range." Rather, "the Range would continue to support its current wildlife species, provided that strict controls and superior mitigation techniques are employed by builders of the pipeline."

The Commission also found that alignment in an existing utility corridor -- an advantage stressed by both Alcan and El Paso Alaska -- was not a compelling reason to choose one transportation system over another. Specifically, although construction and operational impacts for El Paso Alaska and Alcan would be smaller than for a wholly new route, "the overall difference is not substantial." El Paso, for example, will require a new right-of-way within the utility corridor since it runs parallel, but not adjacent to, the Alyeska line. Alcan's proposed alignment is adjacent to

Alyeska, "but it appears that an entirely new workpad will be required with its attendant gravel requirements." Moreover, the Commission noted, "adjacent" alignment to Alyeska will create oil pipeline integrity problems and could require additional costs for this reason.

Finally, the Commission indicated that it was not necessary to consider Mackenzie Delta gas in comparing the environmental impacts of the three systems. In other words, construction of a separate line to the Mackenzie Delta should not be considered in evaluating the El Paso Alaska and Alcan projects. Any such line, the Commission said, would be exclusively Canadian. "Canadian authorities have exclusive jurisdiction over timing of development and method by which Mackenzie Delta reserves will be brought to market. There is no point to our hypothesizing about those decisions."

Socio-Economic Impacts

The FPC stated that evaluation of socio-economic impacts of the three proposed projects provides little guidance for choosing between the three. These impacts will be greatest on the State of Alaska, and the principal benefits to Alaska -- from royalty payments and severance taxes and, to a lesser extent, from the operation of the pipeline itself -- will be largely independent of which pipeline system is certified.

In general, the Commission concluded that El Paso would generate more jobs, more personal income, more property subject to tax, and more indirect economic activity than the other proposals, but it would also require more social services and probably also result in the highest unemployment. These impacts would be much smaller for Arctic Gas and somewhere in between for Alcan. On the other hand, "there is a possibility that Arctic Gas, with its lower projected transportation costs, would produce higher royalty income for Alaska, which will in turn aid the state in financing industrial development and expanding its social services."

Geotechnical Issues Affecting System Reliability, and LNG Siting Issues

The FPC concluded that, on balance, all three systems are adequately reliable for the transportation of Alaskan natural gas. Of the three, however, the El Paso Alaska system is most susceptible to some form of temporary interruption because of the location of its facilities in extremely active seismic zones and the complexity of its interrelated network of pipelines, ships and terminal facilities. On the other hand, the segmented nature of El Paso Alaska's operation, involving use of multiple ships and gasification trains, suggests that, "under most circumstances, the outcome of an untoward event will be a partial, rather than a total, cessation of supply."

In regard to particular geotechnical issues, the Commission declared that (1) seismic risk is greatest for El Paso Alaska, but its system can be designed to limit this risk to an acceptable level and is not likely to be completely destroyed by seismic activities; (2) frost heave and thaw settlement problems face all of the systems (although for differing distances), further work is required to determine the best solution, and whatever design is ultimately adopted will be available to all of the applicants; (3) metallurgy problems are also common to all of the projects, and none of the competing proposals appear to have a clear advantage in this area; and (4) LNG safety considerations do not render an LNG system inherently less reliable or more dangerous than a high pressure buried pipeline, although liquefaction and regasification facilities must be planned with the utmost care.

In regard to the proposed LNG terminal sites for the El Paso Alaska project, the Commission declared that Point Gravina had been shown to be an acceptable location in Alaska but that Cape Starichkof in the Cook Inlet -- an alternative site suggested by the FPC Staff -- may also be acceptable, depending on resolution of navigational questions posed by ice conditions. The Commission recommended further investigation of this alternative before any firm decision is made on location of the LNG plant in Alaska in the event that the El Paso Alaska system is selected.

As to regasification facilities in California, the Commission agreed with both Judge Litt and Staff that Oxnard (a developing industrial area) would be a preferable location to the proposed Point Conception site (an essentially undeveloped area) and should be certificated if the El Paso Alaska project is chosen, despite increased costs due to the need for larger tankers or an additional tanker to compensate for some 70 additional miles of shipping from the terminal in Alaska. As compared with Oxnard, the Commission said choice of Point Conception would cause construction of facilities on land otherwise lightly used, "thus spoiling that portion of the environment and inviting further development."

The Commission added that it was not necessary to decide at this time the further issue of whether there should be one single terminal or multiple terminals in California to accommodate the El Paso Alaska, Pacific Alaska and Pacific Indonesia LNG projects. Nevertheless, the Commission commented, while Western LNG Terminal Co. (which advocates three separate sites) argues that multiple facilities will ensure greater reliability, multiple terminals also impose considerably greater capital costs and cause greater environmental impact. Further, the Commission declared, the prospects of a major catastrophe are "sufficiently remote that little weight should be given to providing additional protection against such events through dispersed terminals. The sites [proposed by Western Terminal] are close enough together that a truly major catastrophe, such as a devastating earthquake or ocean storm could affect more than one of the terminals. Finally, the possibility of accidents which would affect a particular loading berth, gasification train, or storage tank, would be approximately the same whether concentrated at one location or spread out along various miles of coast line."

Construction Costs and Scheduling

The FPC indicated that capital cost estimates for the three projects (as developed by the respective applicants) are within a close range, as follows (in millions of 1975 dollars):

	<u>Including AFUDC</u>	<u>Excluding AFUDC</u>	<u>System Capacity</u>
Arctic Gas	\$6,728.5	\$5,620.5	2.25 Bcf/d
El Paso Alaska	\$6,570.8	\$5,587.5	2.36 Bcf/d
Alcan	\$6,761.2	\$5,780.9	2.4 Bcf/d

With construction continuing through 1983, the Commission noted, inflation will significantly increase actual dollar expenditures for all of the systems from those shown above. Moreover, none of the systems is free from risk of cost overruns and delays in completion. "Each applicant will be operating at the margin of current technology; construction conditions are frequently harsh; and final plans for design and construction are not yet developed." Nevertheless, each system's risk of cost overrun and completion delay appears to be "acceptable," and "there is virtually no chance that any system would become so costly as to be uneconomic."

In specific regard to the Arctic Gas project, the Commission stated that substantial evidence in the record supports the feasibility of winter construction (using snowroads and snowpads), if reasonable protective measures are applied; that Arctic Gas had devised a reasonable program for execution of such construction; that adequate water had been identified to overcome the risk of abnormally low natural snowfall on the North Slope to build snowroads and workpads; that a pipe laying productivity rate of 0.71 miles per spread per working day projected for the North Slope is "reasonably achievable"; and that cost estimates submitted by Arctic Gas are "reasonably reliable," although some additional expenditures are likely on North Slope segments of the project, as well as on extreme northern sections of the mainline in Canada. In this last connection, the FPC assigned a "high probability" of direct cost increases in the range of 7% to 10% for North Slope construction and in the range of 5% for construction of the overall system, due primarily to the risk of weather conditions more severe than normal.

With respect to the risk of construction delays for Arctic Gas, the Commission reviewed El Paso Alaska's risk analysis (which, among other things, indicated a 100% probability of at least a 1.5-year delay) at some length, but found this study lacked "sufficient realism to make the result a credible test of Arctic Gas' plan." Among other things, the Commission said, the analysis deprived Arctic Gas of 25-30 days of prime construction time on the North Slope in the fall and accumulated seasonal deficiencies throughout the entire construction program, with no provision for mitigative measures. Nevertheless, the Commission asserted, there exists some risk that adverse weather conditions could delay entry upon the tundra, prevent winter work for an extended period, or force premature cessation of construction in the spring. On the other hand, should such conditions occur and construction not be completed on schedule, a full year delay is unlikely. Rather, a delay of eight to nine months is more probable.

Even if an additional winter construction season were required and deliveries delayed for one year, the Commission added, the impact on unit transportation costs for Arctic Gas would be only 12%.

As to the El Paso Alaska project, the Commission found the construction schedule to be "basically credible" and overall construction cost estimates "reasonably reliable." However, the Commission indicated a "high probability" of a 7% to 10% cost increase for facilities in Alaska to cover additional geotechnical research, seismic design and certain other activities required prior to construction. In addition, if Oxnard is selected as the regasification plant site in California, El Paso Alaska would be required either to add another ship to transport the LNG to California (at an estimated capital cost of \$200 million) or to expand the capacity of the eight ships now proposed. ^{1/} The Oxnard site, on the other hand, would result in cost savings for other facilities to be constructed in California.

^{1/} Judge Litt concluded that an additional ship would be required by El Paso Alaska regardless of whether the California terminal is located at Oxnard or Point Conception and, in addition, that an additional (seventh) liquefaction train would be required at the Gravina Point LNG plant to handle the projected volumes of LNG. By contrast, the Commission concluded that an eight-ship fleet would be adequate to deliver LNG from Gravina Point to Point Conception (but not to Oxnard) and that the six liquefaction trains now contemplated at the Gravina Point plant would provide sufficient reliability.

In the Lower 48 States, the Commission noted that El Paso proposes to construct a new 42-inch pipeline from Waha in the Permian Basin to Refugio, Texas, at an estimated cost of \$223 million, to transport approximately 800,000 Mcf/d to pipelines serving the eastern U.S. However, as demonstrated by experience this past winter under the Emergency Natural Gas Act of 1977, excess capacity currently exists on intrastate pipelines traversing the same route. Therefore, if the El Paso Alaska project is selected, the Commission urged consideration of legislation which would enable use of intrastate gas pipelines for transmission of Alaskan natural gas. While the amount of available intrastate capacity in 1982 cannot be predicted at this time, it is nonetheless probable that capital expenditures for the proposed new pipeline could be "substantially reduced through the use of existing intrastate facilities."

Finally, with respect to Alcan, the Commission concluded that cost estimates for the 48-inch alternative -- although not subjected to detailed cross-examination -- appeared to be reasonable in Alaska, although an undetermined cost increase could result from reexamination and modification of the currently proposed alignment along the Alyeska right-of-way so as to locate the gas pipeline further from the oil pipeline than now planned. Specifically, there exists a "high probability" of a cost increase up to 5% of Alcan's estimates for construction in Alaska. For Canadian segments, the Commission added, Alcan's cost estimates -- which are considerably lower than estimates by Arctic Gas for construction in similar terrain -- are subject to uncertainty and hence must be assigned a "high probability" of at least a 10% increase to account for possible underestimation.

The Commission further concluded that Alcan could not complete construction by its scheduled deadline of October 1981, because of both additional time required for preconstruction activities and the potential for delay posed by "extraordinary labor demands" in Canada. At the same time, the Commission considered it probable that the Alcan pipeline could become operational in mid-1982, up to one year earlier than Arctic Gas or El Paso Alaska.

Western Leg

The FPC recommended deferral of a decision on certification of a Western Leg for one to two years when more information will be available regarding the need for additional looping of existing pipeline systems which import gas from Canada. The amount of looping required, the Commission said, is dependent on two currently unknown variables: the quantity of future Canadian imports, and the quantity of Alaskan gas contracted for sale in the western states.

In recommending deferral, the Commission partially accepted the position of its Staff which opposed construction of a Western Leg because of the likelihood of idle capacity on existing facilities in the near future but, at the very least, urged postponement of a decision on the issue until a later stage of the proceedings. The Commission thus rejected the conclusion of Judge Litt that Staff's displacement approach rested on "an unduly pessimistic view" respecting Canadian curtailments and "largely illusory" projections of transportation cost savings, and hence was not a preferable alternative.

The present Western Leg proposals, the Commission noted, assume roughly a 30% division of Alaskan gas for western states and 70% for midwestern and eastern states -- conforming to the division reflected in earlier advance payment agreements which were determined by the Commission in late 1975 to be contrary to the public interest. Since no gas sales contracts have been entered into, the Commission said, the actual division of Alaskan gas volumes between various regions and states cannot be determined now. "Any attempts to establish definitively the division of Alaskan

gas would require that the FPC, in effect, set up a mandatory gas allocation program. Such a measure is neither required nor desirable at this time."

In regard to future imports from Canada, the Commission observed that if three current export licenses expire as scheduled in 1981, 1985 and 1986, Pacific Gas Transmission will have idle capacity of approximately 140 MMcf/d in December 1981, 325 MMcf/d in October 1985, and 745 MMcf/d in October 1986. This excess capacity by 1986 would be sufficient to transport Alaskan gas volumes to West Coast and Mountain states -- assuming such states purchase Alaskan gas in proportion to their current share of U.S. interstate consumption, i.e., approximately 25% of 2.25 Bcf/d or 560 MMcf/d. The future level of gas exports from Canada will be determined by the Canadian Government, the Commission declared, and Canada's views and plans must be known to enable a determination of the extent of idle capacity on present gas importation systems when Alaskan gas becomes available. "These decisions may be affected by the timing and procedures Canada selects for developing its frontier gas supplies. If no new export licenses are granted and existing licenses are not extended, substantial idle capacity will be available on existing transportation facilities."

The FPC also assessed the possibility of delivering Alaskan gas to western states by displacement from the Permian Basin or other traditional producing areas in the Southwest. This would require both sufficient gas supplies to effectuate a displacement plan and idle capacity to transport the displacement gas. In this connection, the FPC concluded that sufficient gas would appear to be available to effectuate a displacement plan if El Paso Natural and Transwestern are assumed to purchase the same share of projected Permian Basin supplies (as projected in the FPC National Gas Survey Report) in the future as they purchased in 1975 (37%). "It is conceivable that at least 1 Bcf/d could be displaced westward by 1990, which is greater than the 659 MMcf/d gas volume entitlement assumed by the western states to be their share of Alaskan gas. Thus, by shifting 659 MMcf/d from other interstate lines to El Paso Natural and Transwestern, the displacement could be done." Also, comparing future supplies projected by El Paso Natural and Transwestern with their current system capacities, the Commission said estimated idle capacity commencing in 1982 is approximately 1.7 Bcf/d on El Paso's system and 0.3 Bcf/d on Transwestern's system. Even if El Paso is authorized to abandon one of its lines from the Permian Basin to California for conversion to oil transportation, its remaining gas transportation facilities would still have idle capacity of approximately 0.5 Bcf/d in 1977 and 1978, and approximately 0.7 Bcf/d in 1979. "These excess capacities are sufficient to deliver a significant share of the western states' purchase of Alaskan gas by displacement."

Deferral of a decision on the Western Leg, the Commission added, will not disadvantage the western states or deny them access to a share of Alaskan gas. Rather, when the final gas transportation system is "fine-tuned" in a subsequent phase of these proceedings, "attention should be focused on overall costs to consumers, fuel efficiency of the systems, and operating flexibility in determining the best method for providing direct access to Alaskan gas for the western states."

Financing and Tariffs (Including Methodology for Determining Field Price)

The FPC agreed with Judge Litt's conclusion that, in the absence of additional creditworthy parties, financing of an Alaskan gas transportation system will require either consumer or government backstopping, or both, to guarantee project completion. The Commission expressed the view, however, that additional creditworthy parties can be induced to back the project. In this connection, the Commission noted an assertion by the State of Alaska during oral argument that it is searching for a way to participate meaningfully in financing of the El Paso Alaska project and that, if this project is ruled out, it would then seriously consider whether to assist the financing of the Alcan project. Further, the Commission noted, Atlantic Richfield Co. "indicates an open mind regarding gas transportation system investments," and the Treasury Department continues to suggest the possibility of participation by industrial gas consumers. Also, participation of more gas pipeline and distribution companies in the purchase of Alaskan gas and in transportation system financing would be desirable.

Consequently, the Commission focused on financing and tariff proposals designed to provide adequate incentives to private parties and the State of Alaska to make the necessary capital investments, while bearing acceptable risks. In addition, the Commission considered an alternative approach requiring consumers to guarantee repayment of project debt financing but at the same time compensating them for the bearing of increased risks. 1/

The FPC specifically did not recommend federal financial assistance for an Alaskan gas transportation system. "Federal backstopping is a default option to be employed only if it is determined that the social benefits of a transportation system are overriding and private parties are unwilling to undertake the project alone at a reasonable cost." Given the large positive net national economic benefits of all three systems, the FPC continued, the social benefits are undoubtedly adequate to warrant the construction and operation of any of the systems. Also, numerous questions have been raised regarding the achievement of a private financing. Nevertheless, "private benefits are substantial and the risks bearable . . ." under the proposals advanced here. For these reasons plus the opposition of the Treasury Department to federal financial assistance, the Commission decided not to recommend a financial plan contingent on federal guarantees.

Regardless of financing approach adopted, the Commission recommended the following measures to facilitate financing: (1) rolled-in pricing, although "Alaskan gas most likely could be sold competitively on an incremental pricing basis; (2) "reasonably broad" distribution of Alaskan gas across domestic markets, thereby reducing proportional equity investments required of gas pipeline and gas distribution company sponsors to a more manageable size and spreading the economic burdens of extended service interruptions over a wider number of consumers in the event that consumer debt guarantees are required; and (3) establishment of a field price for Prudhoe Bay gas as soon as possible.

In the last connection, the Commission indicated its intent to initiate a proceeding in the near future to determine an appropriate field price (defined to include gathering and conditioning) for Prudhoe Bay gas, as well as to examine venting and throughput agreement issues. Prompt action is necessary, the Commission explained, since North Slope producers have identified establishment of a sale price as a precondition to entering into gas sales contracts and since financing is infeasible in the absence of gas sales contracts determining which companies will receive the

1/ Since some of these proposals were not fully considered in the record, the Commission said, a special proceeding to perfect the details may be needed in the near future.

gas and hence be willing to supply equity capital. Also, the Commission noted, if the maximum price for Prudhoe Bay gas is set relatively high, it might be possible to attract gas producer participation in the transportation system financing either directly or through debt guarantees.

Based on estimated gas gathering and conditioning costs including a 15% after-tax rate of return on investment, the Commission computed a field price of approximately 70¢/MMBtu in current dollars (and approximately 50¢/MMBtu in 1975 dollars).

As an alternative to setting a fixed field price for Prudhoe Bay gas, the Commission suggested determination on the basis of market value less transportation cost, subject to allowance of a minimum field price to ensure that producers recover their incremental costs for producing and conditioning gas. While further evidence is needed to determine a precise definition, the FPC said "market value" of Alaskan gas would most likely be set by reference to the city gate cost of incremental gas or energy supplies, ^{1/} and the most appropriate transportation cost would seem to be the national average cost to selected major market areas.

Such a pricing formula, the FPC declared, would (1) remove the possibility that producers could exercise monopoly power in the pricing of Alaskan gas, (2) avoid the difficult problem of allocating joint costs of gas produced in association with oil, and (3) provide significant protection to consumers against the possibility of paying a higher than market value for Alaskan gas (even with a cost of service tariff and rolled-in pricing) since transportation cost increases would be offset by corresponding reductions in field price. Further, the "upside profit potential" offered by the formula, as well as the "downside protection" provided by a minimum wellhead price, could stimulate gas producers to assist in financing since they would have a direct incentive to see that the transportation system is constructed and operated as efficiently as possible in order to maximize their profits. "Such considerations might prompt gas producers to desire some amount of management control over the project and thus to invest some equity capital."

In short, the Commission declared, a formula approach to determining the field price for Alaskan gas has "considerable merit." However, because the Commission's authority to approve such a pricing procedure under the just and reasonable standard of the Natural Gas Act is "doubtful," the President should submit legislation to authorize the FPC "to determine field or wellhead rates for Prudhoe Bay gas on the basis of market factors and alternative fuel prices."

The FPC then outlined two alternative financing approaches -- one involving guarantee of debt by the project sponsors, and the other involving consumer debt guarantees.

^{1/} In this connection, the FPC noted testimony by an Arctic Gas witness (submitted in mid-1976) that the incremental Btu equivalent price of distillate fuel oil at the city gate in 1975 dollars was \$2.61/MMBtu and that natural gas should command a premium above this amount. (See REPORT NO. 1059, App. pp17-18.) The FPC report, however, did not mention a recent market value study (submitted on 4/5/77 by Atlantic Richfield) which, on the basis of current statistics, determined an average incremental city gate value of distillate fuel oil and electricity (in residential and commercial markets) of \$5.42/MMBtu. Subtracting an estimated transportation cost of \$1.60, the study arrived at a market value of \$3.82/MMBtu at the pipeline inlet in Alaska. (See REPORT NO. 1101, App. pp6-7.)

A. Project Sponsor Debt Guarantee Approach

The basic objectives of this approach, the Commission said, are to (1) achieve a successful private financing by providing incentives to stimulate the maximum amount of risk bearing by the projects' potential sponsors; (2) minimize the likelihood that consumers will have to pay higher than market value for Alaskan gas, or incur substantial expenses in the case of project noncompletion or extended service interruption; and (3) provide incentives for efficiency in construction and operation of the project.

The essence of the approach is "to allow gas producers and project investors the potential of earning profits equal to the market value of the gas less the cost of producing and transporting it to market, while assuring a minimum return on investment as long as minimum gas deliveries are met." It is hoped that gas producers, additional gas utility companies, the State of Alaska, and creditworthy corporations looking for an attractive investment will thereby assist in financing the gas transportation system. If this approach is not successful in attracting both the required equity investments and debt financing guarantees, the Commission "would be inclined to endorse consumer debt guarantees only after obtaining a better understanding of why the indicated parties did not participate in the financing more fully."

In addition to guarantee of debt by the project sponsors, other elements of this approach would include: (1) a cost of service tariff during normal operation -- subject to automatic reduction to disallow recovery of a proportional amount of net plant and working capital accounts if the average level of gas deliveries fell for 30 days below 60% of a level defined to constitute normal operation; (2) tracking of both gas purchase and transportation costs to gas shippers, and thence to local distribution companies, with limitation of the FPC's suspension powers to proposed increases in operation and maintenance expenses; (3) quarterly audit of project construction costs, with the Commission to determine within 120 days after such audits, whether such costs were prudently incurred and may be recovered through the project's tariff; (4) a 50/50 debt-equity ratio, conforming generally to the capitalization of major natural gas companies in the Lower 48 States; and (5) a variable rate of return on equity ranging from a maximum of 18% to a minimum of 11%.

More specifically, with regard to rate of return on equity, the Commission stated that a 23% overall pretax return on rate base would yield approximately a 13.7% after-tax rate of return on equity (assuming a 10% interest rate and a 50% income tax rate) at a 25/75 debt to equity ratio, an 18% after-tax return at a 50/50 debt-equity ratio, and a 31% after-tax return at a 75/25 debt-equity ratio. "Such after-tax returns on equity are in line with the returns petroleum companies currently earn on their integrated operations, and will likely earn on the Alaskan oil pipeline if comparable D/E ratios are assumed." Thus, with a 50/50 debt-equity ratio, a maximum 18% after-tax return on common equity would appear "just and reasonable" under current financial market conditions for the project sponsor debt-guarantee financing approach.

An 18% rate of return on equity, the Commission added, would be allowed so long as the delivered cost of gas (field price plus transportation cost) does not exceed the market value of the gas. If the minimum field price plus transportation cost were to exceed market value of the gas, however, return on equity would be reduced as necessary to maintain the delivered cost of gas equal to its market value. In other words, the rate of return would be adjusted so as to equate the transportation cost to the difference between the market value of the gas and the minimum field price. At the same time, to provide investors some protection against the project being uneconomic, the Commission recommended a minimum after-tax return on equity of 11% so long as a minimum volume of gas is delivered for a minimum period of time.

While an 11% return is lower than the level currently allowed for most regulated utilities, the Commission noted, "the proposed automatic tracking of costs through to the distribution companies means that project equity investors can have confidence that these returns will be realized."

Should both the field price for gas and the return on transportation system investment be reduced to their minimum levels, the FPC added, consumers would then begin to pay a price higher than market value for Alaskan gas.

B. Consumer Debt Guarantee Approach

Because of uncertainty whether additional creditworthy parties can be induced to participate in financing or whether private parties will be willing to finance the project on the basis described above, the Commission said it is necessary to consider a consumer debt guarantee financing alternative. Such alternative requires measures to protect consumers from bearing unnecessary costs and risks, as well as realistic compensation for the risks that must be borne. "Consumers should not bear a major portion of the project's risk while other parties reap the bulk of the economic benefits."

Above all, the Commission stressed, equity investors should bear the risk of loss of their total equity investment in the event of extended service interruption or noncompletion.

The elements of the consumer debt guarantee approach suggested by the Commission would include, among others, (1) once the project begins operation, an all-events cost of service tariff under which gas shippers, and their customers in turn, would be charged an amount adequate to cover the total dollar cost of service less return on and recovery of equity capital in the event of extended service interruption; (2) non-completion agreements whereby gas shippers would be committed to cover debt service payments in the event that the project was not completed, with federally regulated gas shippers authorized to flow through such payments to their customers on a current basis; (3) a maximum rate of return on equity of 15%, reflecting the reduction in financial risk to the project sponsors due to consumer guarantees for debt service payments, with a minimum return of 11%; (4) possible adoption of some form of consumer surcharges prior to project operations under certain circumstances, subject to resolution of tax problems regarding such surcharges; and (5) a consumer guarantee fee equal to the difference between the cost of service if the project were financed under the project sponsor debt guarantee approach and the cost of service under a consumer debt guarantee form of financing.

The consumer guarantee fee would be added to the out-of-pocket transportation cost for purposes of calculating the gas field price (under the "market value" formula described above). Thus, "the allowed field price would be approximately the same whether the project sponsor or consumer debt guarantee financing approach were used. However, since the delivered cost of gas is equal to the sum of the field price for gas plus the out-of-pocket transportation cost, consumers would receive gas at a delivered cost lower than market value, as compensation for their risk bearing."

To illustrate, the Commission calculated that, under the project sponsor debt guarantee approach, first year pretax cost of capital payments would be approximately \$2.3 billion assuming a \$10 billion capital cost, a 50/50 debt to equity ratio, an 18% after-tax return on equity, and a 10% interest rate on debt. Under the consumer debt guarantee financing approach, first year pretax cost of capital payments would be approximately \$1.5 billion assuming a 75/25 debt-equity ratio and a 15% return on equity. Therefore, at a gas flow rate of 2.25 Bcf/d (or 821 million Mcf per

year), the first year (1983) consumer guarantee fee would be approximately \$0.97/Mcf in nominal dollars, or \$0.66/Mcf in 1975 dollars. "Such a fee would be equal to approximately 11% of the project's outstanding debt."

In the event a consumer debt guarantee approach were adopted, the Commission urged various actions to protect consumers from bearing unnecessary risks and costs. These included: (1) imposition of limits, if required, on the initial purchase of Alaskan gas reserves to ensure a reasonably broad distribution across domestic markets; (2) project equity investment to be at risk in the case of noncompletion or service interruption; (3) limitation of consumers' noncompletion liability to approximately 75% of total prudently incurred costs; (4) retention of residual power by federal regulatory authorities to terminate prospectively the all-events cost of service tariff, noncompletion agreements, and consumer surcharge arrangements, if extraordinary cost overruns should occur and the project becomes uneconomic to complete; and (5) contractual commitments by producers regarding minimum average daily volumes to be delivered to shippers, so that the extent of the consumer's risk can be better assessed.

The Commission also recommended certain actions to reduce regulatory risk. First, a procedure should be adopted whereby federal authorities would periodically decide whether costs during a given portion of the construction period were prudently incurred and are recoverable through the project's tariff. Second, if all-events cost of service tariffs and/or noncompletion agreements are required, the FPC would support legislation to bind future federal regulatory authorities to maintain and enforce such arrangements. Third, subject to reserving the right to review whether costs were prudently incurred, the FPC would support passthrough of costs on a current basis, as well as legislation binding federal regulatory authorities to maintain this treatment. Finally, the Commission declared, the Federal Government must maintain a dialogue with state utility commissions to discuss financing alternatives, and it should perhaps sponsor a conference in the near future to consider issues of regulatory risk at the state level, possible actions by the states to alleviate investor concerns, and the need for federal legislation to assure flow through of approved costs at the gas distribution company level.

In regard to financing plans proposed by the three applicants, the Commission considered the El Paso Alaska plan to be most feasible because of the anticipated availability of Title XI federal ship financing guarantees, avoidance of so-called "Canadian Basket" limitations on Canadian investments by U.S. life insurance companies, and its operation solely under the regulatory supervision of the United States. "Operating under a single regulatory authority makes it easier to implement innovations such as the variable rate of return on investment or all-events tariff concepts, which may prove to be essential in arranging a private financing."

Competitive Impact Assessment

The FPC's report to the President included a competitive impact assessment pursuant to a provision of the Alaska Natural Gas Transportation Act requiring the Commission to evaluate the "impact upon competition" for "each transportation system reviewed or considered." Because of the lack of information regarding which U.S. pipelines and distribution companies will obtain Alaskan gas, how much this gas will cost and what pricing method will be used, the Commission said any assessment of the competitive impact of the proposed transportation routes must necessarily be "judgmental."

The FPC concluded that certification of a particular Alaskan gas transportation system will not have any significant impact on pipeline competition within the United States. Though the choice of a particular system will affect the cost of

Alaskan gas between regions, that choice will not significantly affect inter-pipeline competition between regions because such competition generally occurs within a region.

The competitive impact of the Alaskan gas transportation system, the Commission continued, will be determined by a complex interaction of economic, regulatory and engineering factors. The two most important factors will be (1) extensive use of displacement procedures, and (2) imposition of a broad distribution of gas.

Transporting Alaskan gas through the Lower 48 States by displacement, the Commission stated, will entail a greater degree of coordination among U.S. pipelines than has existed to date. This need for coordination "could create the potential for collusive market conduct." On the other hand, if the ownership of Alaskan natural gas is to be widespread (as is recommended), "then transportation economics and the location of existing facilities dictate delivery by displacement for some gas under each proposed transportation system." The Commission stated its opinion that displacement procedures proposed by the various applicants are not in violation of the antitrust laws, although negotiations to implement these procedures could produce agreements of a noncompetitive nature beyond those necessary to effectuate the procedures. "The use of displacement cannot be allowed to serve as a vehicle for the proliferation of restrictive practices." Accordingly, the Commission will permit "only those practices which are indispensable to the successful operation of the displacement procedure."

The Commission stressed its intent to ensure widespread distribution of Alaskan gas through its authority to certificate sales. This means that volumes received by any individual pipeline will be limited, and that impact on overall supply costs will be approximately the same for all pipelines. Consequently, Alaskan gas will have a "neutral effect" on competition between pipelines in regional markets.

More difficult to assess, the Commission asserted, is the competitive impact of a broad distribution plan on the Alaskan gas supply market which, considering pre-1976 advance payment agreements which apportioned nearly all North Slope gas to sponsors of the Arctic Gas project, does not appear to have operated competitively in the past. Even though the advance payment program has been terminated, there is no assurance that the market for Alaskan gas will now operate competitively. The Commission, in fact, is "concerned about the potential for noncompetitive side agreements that may result from Alaskan gas sales." For example, with buyers unable to compete for Alaskan gas on the basis of price, "there will be an incentive for the oil companies to favor pipeline and gas distribution companies that can provide other benefits. One of these benefits could include an agreement by the buyer that he will not compete against the oil company or the oil company's affiliates in various energy markets. If these agreements do take place, they are likely to be tacit understandings that are not readily observed by government agencies."

Even though imposition of a plan for widespread distribution of Alaskan gas is an interference with the gas supply market, the Commission concluded, the overall impact "may be competitive if it reduces the likelihood of restrictive agreements in other energy markets."

The Commission added that the Alaska Natural Gas Transportation Act appears to require that the selected transportation system operate as a common carrier. While common carrier status is desirable under most circumstances because of its pro-competitive effect, the Commission declared, such status for an Alaskan gas transportation system is "incompatible" with the goal of effecting a private financing. Specifically, the presence of a common carrier creates an incentive to become a "free rider" and a disincentive to invest in the system. Hence, from a financing perspective, elimination of the common carrier provision may be required.

Other Matters

Section 5(c) of the Alaska Natural Gas Transportation Act directed the FPC to include in its report to the President a discussion of (1) volumes of Alaskan natural gas which would be available under each transportation system to each region of the U.S. -- directly, indirectly by displacement, or otherwise -- for each year of a 20-year period; (2) transportation costs and delivered prices of gas by region, again by year over a 20-year period; (3) the effects of such volumes, transportation costs and delivered prices on projected natural gas supply and demand in each region and on projected supplies of alternative fuels available by region to offset natural gas shortages occurring in such regions in each year; and (4) estimates of the total delivered cost to users of the natural gas to be transported by each system by year over a 20-year period.

In an effort to comply with the above provision, the FPC requested assistance from FEA which, in response, provided a series of long-term energy supply/demand and price projections under a variety of scenarios. These projections were developed from an existing FEA model (Project Independence Evaluation System -- PIES). The model was run for 1980 (as the base year), 1985 and 1990, applying delivered volumes and estimated costs of each project to 10 demand regions. Volumes were apportioned to the 10 regions on the basis of relative historical consumption. The model assumed a \$13 price of imported oil and Alaskan field prices of \$1 and \$1.50/MMBtu. Three alternatives were examined under each price: (1) rolled-in pricing (Alaskan gas rolled-in with other interstate gas, assuming continued regulation of wellhead prices at current FPC-set rates); (2) incremental pricing (gas consumed in the industrial sector priced on an incremental basis, but with gas consumed in the residential and commercial sectors priced on a rolled-in basis); and (3) deregulation of new interstate gas at the well-head.

The FPC stated that any conclusions possible from the FPC projections were subject to "considerable qualification" in view of the assumptions and methods.

Finally, the FPC report included some 52 recommended environmental and technical terms and conditions.



Alaska State Legislature

Senate

JUNEAU, ALASKA

Tuesday May 24

TO: Sen Rader

FR: Connie

RE: FPC gas route decision - discussion of financing & tariffs

The May 1 FPC document contains 80 pages on the subject of financing and tariffs. Several interesting points:

- (1) Although the State's interest in financing is mentioned, no mention is made of the State's sale of its royalty gas (even though reference is made to the unwillingness of producers to sell.)
- (2) Rate of Return - The report acknowledges that a higher return will be needed to attract financing due to the high risks. The hearing record concluded that with a 75/25 debt/equity ratio, a 15-17 % return on equity was too low. The TAPS line is referenced, predicting that with a 7-8% return allowed by the ICC on total assets, this will yield a 28-32% return on equity. (p. 44-45)
- (3) Field Price for Gas - "Several factors indicate the need for an early resolution of the issue of the field price for Alaskan gas. First, according to Judge Litt, the gas producers have set as preconditions to entering into gas sales contracts, '...the prior establishment of a sale price, a disclaimer of vintage pricing, and a reversal of Commission policies interpreted by the procurers as requiring that they guarantee future minimum delivery volumes regardless of field production capabilities.' Until such time as gas sales contracts are entered into, it will not be possible to determine which gas pipeline and distribution companies will receive the gas and thus which utilities will have an incentive to provide equity financing for a gas transportation system. Without parties willing to supply equity capital, no private financing for the project is feasible, For this reason alone, it is important to determine an appropriate field price as soon as possible...We, therefore, propose to establish in the near future a proceeding to determine an appropriate field price for Prudhoe Bay gas as well as to examine the vintaging and throughput agreement issues." (p. 32-33)

- (4) Daily volume The FPC notes how important an assured rate of gas flow is for obtaining financing. This leads me to believe that it is especially crucial for Alaska's conservation authority to not be overly optimistic now, nor expect that it will be allowed to halt flow in the future even if ultimate oil production is threatened: "Finally, the economic viability of any of these huge projects require the availability of substantial quantities of gas for shipment. If customers assume the risk or repaying the project's debt financing in the case of extended service interruption, it would be desirable to have a contractual commitment by the producers regarding the minimum average daily volume that will be delivered to the shipper so that the extent of the consumers' risk can be better assessed. We understand that similar through-put guarantees were made in the Alaskan oil pipeline financing. If gas producers are confident about their ability to supply adequate amounts of gas to justify building a gas transportation system then entering into an agreement would pose little risk to these companies. On the other hand, if the producers have significant uncertainties about the minimum deliverable volumes of gas, Federal decisionmakers and project sponsors should know the full details of such uncertainties before finally approving the design of the authorized system and proceeding with the project" (p. 69)

Note: I find it a bit disturbing that the FPC appears to think that the producers have full control over the gas volume produced. No where is the State of Alaska's authority to regulate production for conservation purposes ever mentioned, nor is the initial Plan of Operation referenced.

- (5) Financing Alternatives - The report cites the testimony of the 3 competing routes, state public utilities and the US Treasury Dept. The FPC makes its recommendation that federal back-stopping should not be used until it becomes clear that private financing cannot be obtained otherwise. (The report notes that lack of a field price is a major reason why private financing has not yet proven up.)
- (6) Incremental vs. Rolled-In Pricing - Despite assertions that Alaskan gas will be of a marketable price, the FPC suggests rolled-in pricing (just like Judge Litt), largely in order to induce financing. (p. 31)
- (7) Gas distribution - The FPC argues strongly that gas sales should be made to a large number of purchasers with broad geographic distribution. This is for maximizing equity financing and to prevent economic disruption in the event of an extended interruption in service. (p. 37-38)

SCOMM

#21:17

Summary of Conversation with Mr
Swanson of Jensen + Associates
of November 30, 1976 - Gregg
was in on the full conversation

~
Wanted to have some questions answered
mostly dealing with provisions in
contract dealing with

- removal of liquids
- pricing schemes
- transportation costs to state
- "cut outs" for State and
Companies as well
- other things, such as
- termination provisions

~
His estimate after discussing some of
these things and getting a better
idea was essentially as follows:

- They will provide us with an
independent / objective analysis, regardless
of "where the chips may fall".

- The portion which will take up most time will be the various pricing provisions
 - it will take time for colleagues, and
 - it will take time for bouncing ideas around

① The analysis will probably take the following amt of time.

Eight days of "senior" time; James Jensen and Swanson at \$640/d + \$520/d (\$650/d for testimony) respectively

\$4,640 ±

Fifteen days of "junior" time / people to do the detailed analysis and some of the pricing schemes (they have one person who is quite good and well versed in this area) at \$300+/d

\$4,500 ±

② Memo (or trip to ARL) after analysis has been completed to confer with us and legislators (committee members). Gregg

suggested that instead of a trip to Alaska, the telephone would probably do almost as well considering the cost. The telephone costs were estimated at

\$ 500.00 ±

③ Two days of testimony by Swanson at \$ 650/d \$ 1,300
Two days travel at 520/d 1,040
Four days expenses at appx. \$ 50.00/d + transportation at \$ 600.00 at appx. \$ 800 ±

\$ ~~11,940~~
12,780
?

* Materials →

Gregg seemed to think that ~~the~~ figures mentioned on the phone ^{Gregg} was reasonable. ~~Gregg~~ mentioned \$ 12,000
\$ 14,000
on the outside.

* They operate ^{charge} on time + materials

12/1/76

8:30

Summary of Zipton Call

Will be available for comment on the contract(s).

Either he or someone else from his org will be available although he prefers to come himself.

would like to be scheduled as late as possible for appearance at hearings to review and "digest" other testimony and presentations. I told him that this would be alright. I further told him, we could keep him posted and informed on these things which we have some control over (such as the submission of consultants' analyses of the contract - he said he appreciated that).

12/2/76

Summary Call With Rush
Moody - 12/2/76 - 11:30

- ① Rush Moody has a trial scheduled for the dates we have tentatively scheduled for the hearings. The judge did not delay the dates. He will be unavailable from Jan 24 through 31. Therefore, he can be here the week of Jan. 17 or after the 31st.

He would also like to ~~visit~~ visit with Sen Rader and other legislators for a couple of days before testifying (similar to Lipton, but for different reasons)

- ② Fee Schedule -
Prefers to work on an hourly basis, but will work on a fixed fee if Sen Rader insists.

Here is his estimate -

Analysis
Prepare Summary

2 days
1

3 - 3 1/2 days

Written Vials to Sen
Rader in Advance of
his arrival

1/2 day

4 + days

travel (coming up)
"visiting" before testifying
testimony
travel (returning)

1
2
1
1

9 + days

Plus travel expenses and
per diem while here
(~ \$1,000.00?)

He charges \$100.00/hr;
plus 9 days at \$100.00/hr \$7,200.
plus
travel + per diem \$1,000.

\$8,200

\$10,000 on the outside

③ He asked that we advise
him ASAP of our dec.
so he can start and
schedule the work

12/3/76

Left word with Moody's firm for
Moody to send us a confirming,
brief note on the fee arrange-
ment and the work he will
do for us for our piles.

JENSEN ASSOCIATES, INC.

84 STATE STREET BOSTON, MASSACHUSETTS 02109

TELEPHONE (617) 227-8115
TELEX 94-0057

November 30, 1976

Ms. Elke Kallab
Legislative Affairs Agency
Pouch Y
Juneau, Alaska 99811

Dear Ms. Kallab:

As we discussed over the telephone on Monday, November 29, 1976, Jensen Associates, Inc. is pleased to submit this proposal to the Legislative Affairs Agency to analyze the economics of the recently signed contract by which the State of Alaska has sold its royalty gas to Tenneco, Southern Natural Gas Company and El Paso Natural Gas Company.

OBJECTIVES

The objective of our analysis is to determine if the contract protects the interests of the State of Alaska and provides it with maximum economic values in the sale of its royalty natural gas over the term of the contract. We shall review the entire Contract, but we shall focus upon the pricing provisions and determine if they protect Alaska's interest in light of different future developments in the United States energy picture.

We shall also scrutinize the renegotiation and termination options, to insure that Alaska is protected in the event of major changes in energy policy and markets. We shall recommend changes in the contract where we believe they are appropriate. The weaknesses and strengths in the contract shall be identified.

We shall analyze the contract in light of recent legislative initiatives in natural gas and their economic impact. However, because others are examining the legal aspects of

the contract, we shall not address issues in the sphere of legal counsel or concerning the standing of the contract and its provisions in the eyes of the Federal Power Commission or Legislation.

While we are prepared to perform such analysis, it is our understanding that this task will not involve analysis of the sale of natural gas liquids.

METHOD OF APPROACH

We shall draw upon our knowledge of the United States and world energy markets and future trends for this task. In particular we shall draw upon our extensive work in natural gas markets, pricing, and contracting to analyze this contract.

The output of our analysis shall be one or more memorandums which detail our findings, telephone consultation, and the presentation of our findings to the Alaska Legislature.

Our analysis shall be objective and based upon factual analysis and our independent judgement.

CONFLICT OF INTEREST

We do not believe that there is any conflict of interest in our analyzing this contract for the State of Alaska. As professional business and economic analysts our work is objective. While we do present our findings publicly where appropriate, it is as the results of objective analysis. We do not act as public advocates for clients.

As we discussed in our telephone conversation, I have recently presented expert testimony in FPC curtailment hearings on United Gas Pipe Line Company Docket Nos. RP71-29 and RP 71-120 (Phase II). This testimony was on behalf of

Ms. Elke Kallab

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November 30, 1976

six intervenors: General Motors Corporation, Mississippi River Transmission Corporation, Natural Gas Pipeline Company of America, Southern Natural Gas Company, Texas Eastern Transmission Corporation, and Texas Gas Transmission Corporation. This was rebuttal testimony to United Gas Pipe Line Company witnesses. My testimony argued that the category II industrial customers in the United service area in East Texas, Louisiana, Mississippi, Alabama, and the Panhandle of Florida have no greater difficulty in obtaining alternate fuels when natural gas is curtailed than industrial customers further to the north. This work began in mid July, 1976 and ended after the testimony was presented in mid November, 1976. Our fees to Southern Natural Gas are about one percent of our annual billings.

We are performing no work at this time, or in the recent past, for the other purchasers of the royalty gas or for Exxon, Arco, BP or Sohio.

QUALIFICATIONS

Jensen Associates, Inc. is highly qualified by previous experience to perform this analysis. A statement of our qualifications is attached.

JENSEN ASSOCIATES, INC.

Ms. Elke Kallab

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November 30, 1976

BUSINESS RELATIONSHIP

Jensen Associates, Inc., proposes that this work be performed on a time and expenses basis. Until we receive the contract we are not able to estimate the time required to perform proper analysis of it. After we have had a chance to review the contract we will provide a more detailed estimate of costs. However, for your budgeting purposes we would suggest that you plan for professional service fees of \$10,000 - 15,000 plus expenses not to exceed 15% of professional service fees unless more than one trip to Alaska were to be required.

We will bill the Legislative Affairs Agency monthly, for payment within ten days, for professional services and expenses. Professional services will reflect the time spent on your behalf. Expenses incurred while working in your behalf on this assignment will be billed at their cost to us and will include travel, communications, report production, and other directly related costs.

Professional services will be billed at our customary rates for the individuals involved. For consulting these rates are: Mr. James T. Jensen, \$640 per day; Dr. Carl V. Swanson, \$520 per day; Ms. Nancy Pozar, \$280 per day; Mr. Edwin F. Hardy, \$480 per day; and Mr. John C. Gault, \$360 per day. For the presentation of expert testimony the rates are: Mr. Jensen, \$900 per day; and Dr. Swanson, \$650 per day.

STAFF AND SCHEDULE

Based on present staff schedules I will be in charge of the project here. Mr. James T. Jensen, Mr. Edwin F. Hardy, Mr. John C. Gault, and Ms. Nancy J. Pozar are expected to work with me. When appropriate, other staff members with backgrounds

Ms. Elke Kallab

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November 30, 1976

particularly appropriate to this study may be assigned to the project. Biographies of Mr. Jensen, Mr. Hardy, Mr. Gault, Ms. Pozar, and me are attached. We understand that we should look to you and Mr. Greg Ericson for general direction and policy decisions on behalf of the Legislative Affairs Agency of the State of Alaska.

Based on current commitments, we expect that we will send a memo describing our findings approximately one month after your authorization to proceed with this assignment. I am holding open my schedule for the week of January 24, 1977 for the legislative hearings.

GENERAL PROVISIONS

In the past we have provided analysis and counsel to clients in areas included in this proposal. This experience helps to qualify us to undertake the assignment described above and we expect to continue such work in the future.

To protect your interests we agree that any confidential information we may develop or have furnished to us by you during this assignment will be safeguarded and held in confidence. Furthermore, it is our practice in considering new assignments to decline them whenever it appears to us at all probable that our experience with a past or present client might be used improperly in the new assignment.

ACCEPTANCE

For the purpose of staff scheduling this proposal is made subject to acceptance within 30 days. Should you like more time to consider the proposal or to discuss modifications to it, please let us know.

JENSEN ASSOCIATES, INC.

Ms. Elke Kallab

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November 30, 1976

We look forward to working with you on the analysis of Alaska's royalty gas sales contract, and we will devote our best efforts to accomplishing the objectives described above. If this proposal is acceptable to you, would you please sign and return the enclosed copy as authorization for us to proceed with the work.

Very truly yours,



Carl V. Swanson
Executive Vice President

CVS/jd

Accepted for _____

By _____

Title _____

Date _____

JENSEN ASSOCIATES, INC.

Consultants

in

ENERGY PLANNING, ECONOMICS, AND LOGISTICS

BOSTON

GENEVA

WASHINGTON

CONSULTANTS IN ENERGY

Jensen Associates, Inc. is an independent consulting firm specializing in energy planning, economics and logistics.

We advise businesses, governments and investors worldwide in the interrelated areas of petroleum, natural gas, natural gas liquids, petrochemical feedstocks and electric power. Our focus is upon the business, government policy and economic issues of energy as they are shaped by the interplay of markets, technology, supply, the policies of governments, investments, and the paths of the world's economies.

Jensen Associates, Inc. provides expertise counseling based upon objective, factual analysis and independent judgment. Where appropriate and requested by the client, we will present and defend our findings publicly.

BOSTON

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Boston, Massachusetts, U.S.A. 02109
Telephone: (617) 227-8115
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GENEVA

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1625 I Street, N.W.
Washington, D.C., U.S.A. 20006
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SERVICES

Market Analysis

Jensen Associates, Inc. has analyzed the pricing, supply routes, supply quantities, interfuel competition, and fuel buyer's plans and price sensitivity of markets. This analysis has examined markets ranging in size from world markets to areas 100 miles in diameter. We have analyzed markets which have included all buyers of energy to specific buyers of specific fuels.

Planning

We provide planning services to energy companies on business strategy, annual plans, and planning techniques, and to large energy consumers on energy supply and fuel purchasing.

Forecasting

Jensen Associates, Inc. forecasts energy supply, demand, and price for clients and it forecasts the course of development of new energy sources. This has involved forecasts of world energy balances, natural gas supplies for the U.S., world LPG supply and demand, prices for petroleum, natural gas and liquefied petroleum gases, and the technical, financial, market and government policy forces acting upon emerging energy sources.

Investment Feasibility and Valuation

We have analyzed the economic feasibility of supply, logistic, and marketing investments in the energy business and have assisted clients to place a value upon existing energy businesses.

Pricing and Contracting

Jensen Associates, Inc. has helped both private and governmental clients set prices for energy, design price indexation formulas, and evaluate and design the price and terms of purchase and sale and logistical contracts. In addition, we have reviewed pricing and purchasing in governmental review and court proceedings as well as assisted in tax and royalty negotiations between producers and host governments.

Governmental Policy and Regulation

Jensen Associates, Inc. has recommended policies to governments and advised them on developments in energy. We have also presented expert testimony before legislative, regulatory, and judicial bodies concerning petroleum, natural gas, natural gas liquids and electric power issues.

Fuel Supply

We have assisted users of energy in their fuel planning and purchasing by analyzing energy development and its impact upon price and security of supply, evaluating price and supply arrangements, identifying supply sources, recommending logistical paths, and, where appropriate, presenting expert testimony.

CLIENTS

Jensen Associates, Inc. serves clients in North America, the Middle East, Europe, the Far East, and Latin America. Much of our consulting is confidential. Consequently, we do not publicize either our clients or the project work. However, the types of clients we serve include:

- integrated oil companies
- national oil companies
- electric power utilities
- governments
- natural gas and oil pipelines
- independent energy marketers
- gas utilities
- importers
- terminal operators
- international shippers
- oil and gas producers
- industrial consumers of energy
- legislatures
- chemical companies
- banks
- investors
- industry associations

PROJECT EXPERIENCE

The representative projects undertaken by Jensen Associates, Inc. provide a measure of our capabilities and experience.

International

- For a multinational oil company, an historical examination of petroleum movements in the Far East and the relationship of oil flows and tanker rates and product pricing in one country.
- For an OPEC country, development of a long-term international petroleum marketing strategy.
- For large fuel buyers, forecasts of international LPG supply and demand.
- For an OPEC national oil company, an analysis of worldwide energy supply and demand forecasts.
- For a foreign producer of LPG, identification of U.S. markets and customers for its product.
- For a national oil company of an OPEC nation, a survey of the major staff departments--economics and planning, supply and distribution, and tanker--of the major international oil companies with recommendations as to the function, organizational structure, and responsibilities of similar departments to be created within the nation's own national oil company.
- For a group of Middle East investors, analysis of the economic viability of a proposed crude and products transshipment terminal.
- For a client negotiating a contract with an OPEC national oil company, analysis and recommendations for a price index in a long-term contract based upon various prices for heating and fuel oil on the U.S. East Coast and Rotterdam.
- For a U.S. company, assistance in negotiations for the development and production of a newly-discovered oil field in an OPEC nation.
- For an international petroleum product shipper, an analysis of the U.S. LPG markets.
- For a European chemical company, analysis of natural gas feedstock contracts.

The representative North American projects undertaken by Jensen Associates, Inc. are classified below under the headings "Energy Industry" and "Government and Regulatory."

Energy Industry--North America

- For a natural gas pipeline company, an analysis of industrial markets, fuel pricing and interfuel competition.
- For oil and gas producers, analysis of Federal Power Commission and Congressional proposals and decisions upon interstate natural gas prices.
- For a petroleum marketer, fuel oil market analysis for a proposed oil terminal acquisition.
- For a major U.S. industrial manufacturing company, a forecasting of the supply of natural gas within the United States.
- For an oil and gas producer, analysis of provincial and federal policies on natural gas prices and contracts in Canada.
- For a major U.S. chemical company, forecasting the development of coal gasification and liquefaction plants in the U.S. considering technical, financial, regulatory, environmental and political factors.
- For a products transportation company, a market analysis for a proposed LPG import terminal.
- For an electrical power generation utility, forecasting the growth of electricity demand by petrochemical producers.
- For a medium-size oil producer, a forecast of the price of propane for twenty years including U.S. propane economics as well as estimates of worldwide availability.
- For a group of gas distribution companies, an analysis of the impact upon natural gas supply to them if the Federal Power Commission were to assume jurisdiction over wellhead sales of natural gas to intrastate pipelines.

- For an energy importer, an analysis of the risks and potential of alternatives of indexing the price of a product to various published price series within the United States and Europe.
- For a major manufacturing company, assistance in locating, negotiating for, and contracting to purchase supplies of natural gas at the wellhead, and assistance in negotiating for the wildcat drilling for natural gas.
- For an importer, economic and logistical analysis of liquefied natural gas (LNG) projects using a computer simulation model.
- For a major industrial company, assistance in the establishment of an energy forecasting program including evaluation of and recommendations upon the use of energy supply and demand models.

Government and Regulatory--North America

- For the Federal Energy Administration, an evaluation of the natural gas supply and curtailment situation for the heating season November 1975 to March 1976 and recommendations for and evaluation of alternative changes in regulations to bring increased supply to the interstate gas markets.
- For industrial consumers, pipelines and the U.S., extensive, expert testimony on the allocation of natural gas shortages before the Federal Power Commission, state public utility commissions and the U.S. Senate Committees on Commerce and on Interior and Insular Affairs.
- For an industry group of electricity consumers, analysis of the economic impact of changing electric power rate structures and expert testimony before the U.S. House of Representatives' Subcommittee on Energy and Power concerning the marginal cost pricing of electricity.
- For a government agency, an analysis of the impact upon petrochemical development of changes in pricing and regulation of natural gas.

- For the U.S. Congress, an analysis of natural gas shortages and a review of alternative policies.
- For the American Gas Association, expert testimony on natural gas reserves estimates before the U.S. House of Representatives' Subcommittee on Oversight and Investigation.
- For an electric power utility, expert testimony in a court proceeding on the future price of fuel oil.

STAFF

Jensen Associates, Inc. has an experienced and highly qualified staff of consultants with backgrounds in business, economics, engineering and governmental policy analysis. Most of the senior staff have advanced degrees and all have published papers or books, and have been asked to speak before professional groups. Biographies of individual staff members are available.

CARL V. SWANSON

Dr. Swanson is the Executive Vice President of Jensen Associates, Inc., an independent energy consulting firm with offices in Boston, Massachusetts, Washington, D.C., and Geneva, Switzerland. Dr. Swanson has consulted with private and government clients for the past fourteen years. His work addresses economic, and planning issues in petroleum, natural gas, LPG's and electricity rate design. This work has required forecasting supply, demand, and price of various forms of energy; analysis of markets; analysis of and recommendations for governmental action; assistance in pricing; the design of contract terms; examination of logistics; evaluation of supply sources; testimony in regulatory and legislative proceedings; and evaluation and analysis of proposed investments.

Dr. Swanson's recent consulting work includes:

- For producers, transporters, and marketers, several studies on the future supply, demand, pricing and markets for propane and butane.
- Testimony before the U. S. House of Representatives' Subcommittee on Energy and Power on marginal cost pricing of electricity.
- Analysis and policy recommendations to the U. S. government on natural gas supply and curtailment for the 1975-76 winter.
- Several studies on the logistics and economics of liquefied natural gas (LNG) import projects using models representing the shipping, terminalling, storage, and distribution of LNG.
- For a Mid-east client, evaluation of the economic feasibility of a crude and products transshipment terminal.
- Assistance on pricing and contract terms in natural gas, LPG and LNG purchase and sale, and transportation contracts including the development of price index formulas.
- Testimony on alternate fuels before the Federal Power Commission in the United Gas Pipe Line curtailment proceeding.

- Development and implementation for a chemical manufacturing organization of a model-based planning and strategic decision-making process which integrates marketing, production, raw material supply, and finance.
- For a petroleum products marketer, an evaluation of the market opportunities and risks faced by a pipeline terminal being considered for purchase.
- Forecasts of U. S. energy balances and petroleum products demand to 1985.

Prior to the founding of Jensen Associates, Inc., Dr. Swanson headed North Cape Associates which provided energy planning, logistics and economic consulting services. For five years, Dr. Swanson was on the faculty of M.I.T.'s Sloan School of Management where his teaching and research focused upon the practical use of computer information systems and models to improve marketing, production, investment and supply decision-making.

While at the Massachusetts Institute of Technology, Dr. Swanson consulted with private and governmental organizations including: Arthur D. Little, Inc., the RAND Corporation, the MITRE Corporation, the U. S. Army, and the Institute Nationale de la Recherche Agronomique in Paris.

Dr. Swanson has taught at the Graduate School of Business Studies in London; he was a U. S. delegate to the first U. S./U.S.S.R. Management Conference, "Use of Computers for Management in Industry," Torino, Italy, 1970; and he has presented and published papers on information systems, modeling, planning, energy, and management. He received the degrees of Bachelor of Science in Economics and Electrical Engineering from the Massachusetts Institute of Technology, and Doctor of Philosophy in Management, with emphasis upon Economics and Finance, from M.I.T.'s Sloan School of Management.

NANCY J. POZAR

Nancy J. Pozar is a member of Jensen Associates, Inc. research staff and is primarily concerned with analysis of the supply side of energy questions, both in the United States and worldwide.

Ms. Pozar participated in an analysis of the Far East in which the region was examined as a supply/demand situation in and of itself. A net import/export balance for regional crude production and products availability for the Far East as a whole and then for each of six distinct sub-regions was derived. Sub-regional flows of crude and products were then examined and ultimately related to refining economics, tanker rates and then to product pricing in one particular country in the Far East.

On the supply side of U.S. energy problems, Ms. Pozar has examined both natural gas and petroleum availabilities in detail. She assisted in the preparation of legal testimony related to the currently limited domestic supply of natural gas. Final testimony was presented before Federal district court. Ms. Pozar has examined availability assumptions presented in recently published domestic energy analyses (among them the Project Independence Blueprint and the Ford Foundation energy study) looking comparatively at estimates of present reserves of energy resources, forecasts of future reserves additions and alternative resource availability as well as the effects of shifts in sectoral and regional demand on resource supplies.

Ms. Pozar has also been active in analyzing U.S. natural gas markets, regulation and pricing. In a recent major study, she focussed on the effects of gas price on gas supplies in both interstate and intrastate gas markets as well as on the interaction of these two markets. Federal Power Commission regulation was reviewed from the Natural Gas Act through more recent pricing mechanisms (emergency sales, limited-term certificates, optional pricing procedures, the small producer exemption and the uniform national rate). The interstate regulatory actions were then correlated with interstate gas supply and prices. On the intrastate side, major gas consuming and producing states were identified and the nature of the intrastate market in each was analyzed. Intrastate markets in the major gas producing states were then scrutinized as to changes in gas production, intrastate vs. interstate sales and sectoral consumption in the last few years. This analysis was subsequently used in forecasting both intrastate and interstate gas price levels.

Nancy J. Pozar
Page two

Prior to joining Jensen Associates, Inc., Ms. Pozar was employed in the energy section of Arthur D. Little, Inc. She holds a Bachelor of Arts degree from the Department for Near and Middle Eastern Studies of the University of Michigan in Ann Arbor, Michigan.

EDWIN F. HARDY

Mr. Hardy is a Senior Professional and Washington Office Manager of Jensen Associates, Inc. He has managed and performed technical and economic analysis and lent his experience to business investment, supply, and marketing decisions in the energy area. Mr. Hardy has worked extensively in the analysis and forecasting of supplies and reserves of natural gas and the development of sources for synthetic and other supplemental supplies of gas. In addition, he has broad experience in the technology and economics of petroleum refining including market analysis and economics, and refinery technology and economics.

Prior to joining Jensen Associates, Inc., Mr. Hardy was Director of the Planning Division of the American Gas Association, responsible for its planning activities. He held the responsibility for coordinating and publishing the annual reserve estimates of natural gas and natural gas liquids in the United States, initiating and coordinating gas industry efforts to increase supply of natural gas and supplemental gas, developing research programs, and providing information, analysis, and forecasts for the public, the government, and the gas industry. In addition, Mr. Hardy had the responsibility for analysis of gas curtailments, LPG supply and demand, oil supply and oil imports. Mr. Hardy was the American Gas Association staff executive for the Gas Supply Committee and the Committee on Natural Gas Reserves and its observer for the Potential Gas Committee.

Prior to joining the American Gas Association, Mr. Hardy was in line management with the Atlantic Research Corporation for a number of years, becoming a Director and Plant Manager with overall responsibility for business acquisition, planning, budgeting, pricing, production, personnel administration, and all other activities associated with his plant.

Immediately after college, Mr. Hardy worked with the Humble Oil and Refining Company (now Exxon, USA) in Baton Rouge, Louisiana. There Mr. Hardy coordinated engineering and construction during the building of new petroleum refining units. He designed new petroleum products, performed the accompanying market and economic analysis, supervised the start-up of new plants and supported follow-on production operations. His last assignment at Humble was Technical Group Head in charge of mechanical engineering for all petroleum products with responsibility for economic evaluation, environmental impacts, utilization of waste heat, and the design of process units.

Edwin F. Hardy
Page two

Mr. Hardy has a Bachelors Degree in Civil Engineering from the University of Virginia and has completed graduate courses at Louisiana State University in civil engineering, finance and business. Mr. Hardy is a registered professional engineer in the state of Louisiana and is a member of Tau Beta Pi, Phi Eta Sigma, and the Raven Society.

Mr. Hardy has presented a number of papers including "The Emergence of Gas Utilities as a Factor in World Petroleum Economics," "Future Natural Gas Supply Reactions to Higher Prices--Projections of the AGA TERA Model," and "SNG Supply and Demand."

JOHN C. GAULT

Dr. Gault is a member of the Professional Staff of Jensen Associates, Inc., an independent energy consulting firm, with offices in Boston, Massachusetts and Washington, D.C. Dr. Gault has consulted for several years for private and government clients in areas of energy planning and economics.

His fields of particular interest include energy economics, public utility regulation, the study of the effects of taxation upon the use of exhaustible resources, and analysis of legislation, markets, and investment proposals. Dr. Gault has contributed to research reports in the areas of electricity demand forecasting, peak load pricing, electric generation plant siting, and natural gas pricing and curtailment methods.

Other subjects of recent research have included analysis of Canadian petroleum tax policy, forecasting U.S. natural gas prices, forecasting energy demand and supply in the United States and Canada, study of the siting of oil transshipment terminals, and analysis of oil price indexing, alternative electric rate structures, and the effects of horizontal divestiture on the U.S. oil industry.

Dr. Gault also has experience in the negotiation and analysis of petroleum production agreements and collateral investment projects in oil producing countries.

Prior to joining Jensen Associates, Inc., Dr. Gault worked for approximately five years in Jordan, Lebanon, and Saudi Arabia. Assignments included teaching Economics at the American University of Beirut and feasibility analysis of large projects for an international investment bank, headquartered in Beirut. While pursuing his graduate education, Dr. Gault was a Research Associate in a natural gas cost analysis project.

Dr. Gault received a B.A. in Economics from Yale University and a Ph.D. in Economics and Middle Eastern Studies from Harvard University. He is a member of Phi Beta Kappa and received a Harvard Graduate Prize Fellowship. The title of his Ph.D. dissertation is "Natural Gas Price Regulation and the Theory of Exhaustible Resources."

JAMES T. JENSEN

Mr. Jensen is President of Jensen Associates, Inc., an independent energy consulting firm located in Boston, Massachusetts. For eighteen years prior to his establishment of Jensen Associates, Inc., Mr. Jensen was a Senior Staff Member of the Energy Group of Arthur D. Little, Inc. Throughout his career, he has concentrated on petroleum, natural gas, and energy economics and their applications to the management of energy-oriented organizations. His major interests have been in the fields of energy planning, economics, and forecasting, and in the judgment of investment and feasibility decisions in the energy industries.

His clients cover a broad international spectrum from government agencies to corporate clients in energy or energy-related businesses. He is a recognized authority on the allocation of U.S. natural gas shortages and has testified extensively before the Federal Power Commission, various state public utility commissions, and U.S. Senate Committees on Interior and Insular Affairs and on Commerce. Trends in energy demand and competition have been a major part of his work. He has been in charge of several long-range research planning reports for the American Gas Association. He was responsible for an analysis and forecast of the United Kingdom energy market to 1990 and the probable impact of North Sea gas discoveries on energy competition and pricing there. For an oil producing government he undertook a study entitled, "The Outlook for the Worldwide Petroleum Industry."

Investment feasibility has been an important part of his assignments. His project feasibility studies have included refineries, transport facilities, petrochemical plants, and liquefied natural gas projects. The studies have involved projects in Europe, South America, North Africa, and the Far East as well as the United States.

Some of his recent publications include: "Prospects for Tanker Shipments of Liquefied Natural Gas into the Continental United States," A.I.M.E., February, 1967; "The Chemical Refinery in Perspective," American Chemical Society, 1970; "Energy Policy Issues for the United States During the Seventies," The National Energy Forum, 1971; "An Economic Rationale for Rationing Gas Supplies in the United States," A.I.M.E., 1973; "International Oil--Shortage, Cartel, or Emerging Resource Monopoly?" Vanderbilt Journal of Transnational Law, 1974.

He has been a visiting faculty member of the Petroleum Economics and Management Seminar conducted by Northwestern University and of both the Financial Analysts Seminar and Life

Officers Investment Seminar under the sponsorship of the University of Chicago Business School. He has also lectured on energy topics for programs at Harvard University and at M.I.T.

Mr. Jensen holds a Bachelor's degree in Chemical Engineering from the Massachusetts Institute of Technology and a Master's degree from the Harvard Graduate School of Business Administration. He is a member of the American Petroleum Institute, the Society of Petroleum Engineers, and the American Chemical Society.

Summary of Conversation with
Rush Moody (from the time
I came in) November 24 or 25?

Is interested! Will get back to
us by Monday, if possible
with a fee arrangement.

Will do legal analysis of the
relative benefits and burdens
of the contracts if they are
approved:

He thought he would need
2 days for analysis
2 days for testimony
2 days for travel

We told Mr Moody —

① That we did not want a long brief
no one will read. Just a good
review and analysis

② We informed him of our concern
about C-o/- I. He agreed to

Count from A
Dymer's Court
But day

resend the list of clients they
have (which he originally sent
to Eric)

③ We told him of the tentative
dates for the hearings - Jan 24-26? -

THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

LEGISLATIVE COUNCIL
JUNEAU, ALASKA 99811
907-465-2800

December 20, 1976

MEMORANDUM

SUBJECT: Obligation of Funds

TO : ~~Murt~~ Charney
Director

FROM : Elke Kallab *ek*
Research Analyst

Please obligate the following amounts from the Joint Gas Pipeline Impact Committee account:

\$19,000 Jensen Associates, Inc.

\$11,000 Rush Moody

Attached are telegrams contracting for the services of the above organization and individual. Formal contracts for both will follow.

In addition, Gregg Erickson received verbal authorization from Senator Rader on December 17, 1976 to obligate the remaining Joint Gas Pipeline Impact Committee Funds to the Legislative Council. A confirming authorizing letter from Senator Rader will follow.

EK:cm

TO: Sen. Jackson Rader
FYI
Elke K.

NIGHT LETTER

12/17/76

Rush Moody
Suite 1120
1701 Pennsylvania Avenue, N.W.
Washington, D.C. 20006

298- 5550

JUST CONTACTED SENATOR JOHN RADER THIS AFTERNOON AND HE HAS CONFIRMED THE ARRANGEMENTS OUTLINED IN YOUR LETTER OF DECEMBER 3. FORMAL CONTRACT FOR YOUR SIGNATURE WILL FOLLOW. DATES OF APPEARANCE WILL BE WORKED OUT AT MUTUAL CONVENIENCE. TOTAL AMOUNT OF CONTRACT INCLUDING TRAVEL AND EXPENSES NOT TO EXCEED \$11,000.

GREGG K. ERICKSON

DIRECTOR OF RESEARCH

ek/mo/cm

NIGHT LETTER

12/17/76

Carl V. Swanson
Jensen Associates, Inc.
84 State Street
Boston, Massachusetts 02109

227-8115

JUST CONTACTED SENATOR RADER THIS AFTERNOON AND HE HAS CONFIRMED THE
ARRANGEMENTS OUTLINED IN YOUR LETTER OF NOVEMBER 30. FORMAL CONTRACT
FOR YOUR SIGNATURE WILL FOLLOW. DATES OF APPEARANCE WILL BE WORKED OUT
AT MUTUAL CONVENIENCE. TOTAL AMOUNT OF CONTRACT INCLUDING TRAVEL AND
EXPENSES NOT TO EXCEED \$19,000.

GREGG K. ERICKSON
DIRECTOR OF RESEARCH
ek/mo/cm

Summary of conversation with
messrs Swanson and Jensen
12/1/76 1:45

- ① They have received the contract & on first examination it appears well drafted.

However, it is their feeling that gas shipments will not begin before 1983-1985.

- They feel that the perceptions on pricing policies will differ quite markedly in the '80s than from today, making their review of the economics of the sale much more subject to judgement & much longer term experience in their field than previously anticipated.
- Furthermore, FPC's most recent ruling, 7-70-A, exempt Alaska specifically. While the FPC has been dealing with developing

nationwide rate-making policy, thus giving some indication what can be expected, the ruling makes it questionable what will happen in Alaska; again as it pertains to pricing. This will make their work more difficult since they cannot rely on lower ~~to~~ pricing developments.

(for budgeting purposes)
Thus they wish to advise that the outside figure of \$15,000 should be considered the more reasonable one with the 15% maximum for expenses. (Thus, we are now talking about ~~\$17,250~~ \$17,250 + travel + per diem, or almost \$19,000.)

- ② Both, Jensen and Swenson felt that it might be necessary to ~~provide~~ provide for two trips to Alaska.

The additional trip - which would take place in early January - would be for the purpose of

discussing issues of concern, which

you may not want "public".
(In reply to my question whether meaning this
Mr. Jensen mentioned something

about a client who he had
considered what he thought was
private; ~~it was~~ it was ^{subsequently} released
and Mr Jensen said he would
have handled it differently had
he known that his remarks
would be made public.)

(again)

I told both that at the moment the
chairman of the Jt GPIC did not
see the legislature ^{as being} in an advisory
position vis-à-vis the administra-
tion as regards the sale

~
They called to let us know how to
"budget" for their services now that
they have seen the contract.

M E M O R A N D U M

SUBJECT: Telephone Conversation with C.V. Swanson of Jenson Associates on November 29, 1976

TO : Gregg K. Erickson
Director of Research

FROM : Elke Kallab *Ek*
Research Analyst

I called Mr. Swanson today ^{11/29/76} to inquire if he (his firm) would be interested and available to do the economic analysis of the royalty gas sales contracts.

The following is a summary of the conversation.

1. Yes, they can review the contract. They are well versed in the sale of natural gas. They are energy consultants, doing work for
 - producers
 - transporters
 - consumers

2. They could meet the tentative hearing date of January 24.

3. Conflict of Interest-

Mr. Swanson said that this must be determined, to a certain degree, by us since we might have our own ideas. He stated that they are an economic analysis firm, and that they perform objective work.

Mr. Swanson mentioned the following examples of conceivable C-of-I.

- a. Jensen Associates represented the following companies in the United Gas Pipeline pro tem proceeding before

the FPC:

General Motors

Texas Eastern Gas Pipeline

Southern Natural

Texas Gas

Mississippi River Transmission

Natural Gas Pipeline of America

If I got the story straight, the issue involved a situation where United Gas Pipeline (are they the same as United Gas Transmission? They were one of the companies which had applied for a share of the royalty gas but "dropped out" since the share was too small. If they are we could have a problem, I suppose. I mentioned United Gas Transmission as a non-purchaser to Mr. Swanson, but did not get a reaction at the time. The similarity in name struck me only now! I will check with the Royalty Board) decided to restrict/curtail its sales of natural gas to certain industrial customers, which UGP claimed would have a difficult time converting to alternate fuels.

The above six companies, were (are) industrial customers of UGP affected negatively by the attempt of UGP to curtail deliveries.

In any event, I have asked that he give us the details in writing.

b. They represent two medium-sized oil companies

-Amerada-Hess

-American Independent Oil Co; as well as

-Signal Oil and Gas

(I guess only A-H could conceivably cause a problem).

c. Jenson Associates have represented major gas pipelines in the past.

Mr. Swanson said he would mail us the following immediately.

- their professional credentials;
- a list of some of their clients (past and present, particularly those which might be relevant to our contracting with them)
- their fee schedule;
- a copy of their standard contract form;
- an elaboration on possible C-of-I clients.

I indicated to Mr. Swanson that we were pressed for time, and that we wanted to finalize a contract as quickly as feasible, but that no decision would be made until all the data was available to submit to you and John, so he could decide.

EK:cm

Contract Between
State of Alaska
LEGISLATIVE AFFAIRS AGENCY
On Behalf Of
The Joint Gas Pipeline Committee
And
JENSEN ASSOCIATES, INC.

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, acting on behalf of the Alaska State Legislature, hereinafter referred to as the "Agency" and JENSEN ASSOCIATES, INC., hereinafter referred to as the "Consultant."

THE PURPOSE OF THIS AGREEMENT is to provide specialized professional economic consulting services to the Alaska State Legislature.

IT IS, THEREFORE, MUTUALLY AGREED THAT:

CLAUSE I - STATEMENT OF WORK

(a) The Consultant shall assume responsibility for the preparation of, and submit to the Agency, a brief written economic analysis of the State of Alaska's Proposed Royalty Gas Sales Agreements. This analysis shall be as described in the Consultant's proposal of November 30, 1976, attached to this contract as Appendix "A" and incorporated herein by this reference as though set out in full.

(b) The Consultant shall be available to appear and present expert witness testimony before committees of the Tenth Alaska State Legislature, First Session, on the subject of the above analysis.

CLAUSE II - PERIOD OF PERFORMANCE

(a) The Consultant shall submit to the Agency a final report containing the completed economic analysis on or before January 20, 1977.

(b) The Consultant shall be available to testify before committees of the Tenth Alaska State Legislature, First Session, at a time mutually agreeable to the Consultant and the Agency.

(c) This agreement may be terminated--

(1) By mutual consent; or

(2) For breach of the agreement or any material part thereof.

(d) This agreement expires June 30, 1977, or with the adjournment of the First Session of the Tenth Alaska State Legislature, or with the completion of the contract as provided in paragraphs (a) and (b) of Clause I.

CLAUSE III - COMPENSATION AND METHOD OF PAYMENT

(a) For the economic analysis of the State of Alaska's Proposed Royalty Gas Sales Agreements and two days of expert witness testimony thereon before legislative committees of the Tenth Alaska State Legislature, First Session, the Consultant shall receive up to \$15,000.00 as follows:

(1) The amount of \$10,000.00 upon completion and submission to the Agency of the economic analysis; and

(2) The amount of \$5,000.00 upon the completion of expert witness testimony to legislative committees.

(b) The Consultant shall be reimbursed for expenses incurred in travel as follows:

(1) The costs of coach class air transportation to and from Alaska for the purpose of testifying before legislative committees; and

(2) The expenses incident to such travel, which shall be reimbursed according to AS 39.20 (currently, this provides reimbursement at a flat per diem rate of \$50.00 per day).

(c) The Consultant shall be reimbursed for actual costs of telephone expenses incurred in the preparation of the economic analysis.

(d) Payments under paragraphs (b) and (c) of Clause III of this contract shall be made by the Agency to the Consultant in response to billings submitted to the Agency on a monthly basis.

(e) Total payments, including travel and expenses, to the Consultant under this contract shall not exceed \$19,000.00, except by written authorization, in advance of the work or the incurring of the expense, by the Agency.

(f) In the event this contract is terminated prior to completion of the work specified in paragraphs (a) and (b) of Clause I, the Consultant's basic charge shall be recomputed on a prorated basis according to the percentage of work satisfactorily completed.

CLAUSE IV - RECORDS, DOCUMENTS, AUDIT

The Consultant shall maintain accurate records, including detailed time records. The records are subject to inspection at all reasonable times. All documents, reports and writings generated as a consequence of work done under this contract shall become the property of the State of Alaska, and on completion of the work or at the termination of this contract shall be delivered to the Agency.

CLAUSE V - RESOURCE AND REFERENCE MATERIAL NEEDED FOR PREPARATION OF THE ANALYSIS

- (a) The Agency will assist the Consultant in obtaining source material as necessary, but final responsibility for these items rests with the Consultant.
- (b) It is not contemplated that any confidential resource or reference material will be required to prepare the analysis.

CLAUSE VI - CONFIDENTIALITY OF COMMUNICATIONS

It is contemplated that all work done under this contract will be made public by the Legislature. However, all communications between the Agency or the Legislature and the Consultant, including the final report, shall be held confidential by the Consultant until released by the Agency, or other Legislative entity to which they were addressed.

CLAUSE VII - PRIOR, CURRENT AND FUTURE REPRESENTATION

- (a) The letter of proposal from the Consultant, dated November 30, 1976 describes the past representation of a client known to have an interest in the disposition of Alaska natural gas. The Agency has determined that this does not constitute a conflict of interest for the purposes of this contract.
- (b) The Consultant shall, during the period of this agreement, notify the Agency of any new clients or change in status of any existing clients which might tend to create a conflict of interest.
- (c) The Consultant agrees that prior to the termination of the contract in accordance with Clause II, he shall not undertake to represent any client--
 - (1) In proceedings on Alaska natural gas transportation issues before the Federal Power Commission or the U.S. Department of the Interior; or
 - (2) In proceedings concerning Alaska natural gas before any agency or instrumentality of the State of Alaska.

CLAUSE VIII - OTHER AGREEMENTS OR UNDERSTANDINGS

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement.

JENSEN ASSOCIATES, INC.

Carl V. Swanson

Date

LEGISLATIVE AFFAIRS AGENCY

(By direction of the
Chairman of the
Joint Gas Pipeline Committee)

Gregg K. Erickson

Date

Approved as to Form

Agency Legal Counsel

Date

JENSEN ASSOCIATES, INC.

94 STATE STREET BOSTON, MASSACHUSETTS 02109

TELEPHONE (617) 227-8115
TELEX 94-0057

November 30, 1976

Ms. Elke Kallab
Legislative Affairs Agency
Pouch Y
Juneau, Alaska 99811

Dear Ms. Kallab:

As we discussed over the telephone on Monday, November 29, 1976, Jensen Associates, Inc. is pleased to submit this proposal to the Legislative Affairs Agency to analyze the economics of the recently signed contract by which the State of Alaska has sold its royalty gas to Tenneco, Southern Natural Gas Company and El Paso Natural Gas Company.

OBJECTIVES

The objective of our analysis is to determine if the contract protects the interests of the State of Alaska and provides it with maximum economic values in the sale of its royalty natural gas over the term of the contract. We shall review the entire Contract, but we shall focus upon the pricing provisions and determine if they protect Alaska's interest in light of different future developments in the United States energy picture.

We shall also scrutinize the renegotiation and termination options, to insure that Alaska is protected in the event of major changes in energy policy and markets. We shall recommend changes in the contract where we believe they are appropriate. The weaknesses and strengths in the contract shall be identified.

We shall analyze the contract in light of recent legislative initiatives in natural gas and their economic impact. However, because others are examining the legal aspects of

the contract, we shall not address issues in the sphere of legal counsel or concerning the standing of the contract and its provisions in the eyes of the Federal Power Commission or Legislation.

While we are prepared to perform such analysis, it is our understanding that this task will not involve analysis of the sale of natural gas liquids.

METHOD OF APPROACH

We shall draw upon our knowledge of the United States and world energy markets and future trends for this task. In particular we shall draw upon our extensive work in natural gas markets, pricing, and contracting to analyze this contract.

The output of our analysis shall be one or more memorandums which detail our findings, telephone consultation, and the presentation of our findings to the Alaska Legislature.

Our analysis shall be objective and based upon factual analysis and our independent judgement.

CONFLICT OF INTEREST

We do not believe that there is any conflict of interest in our analyzing this contract for the State of Alaska. As professional business and economic analysts our work is objective. While we do present our findings publicly where appropriate, it is as the results of objective analysis. We do not act as public advocates for clients.

As we discussed in our telephone conversation, I have recently presented expert testimony in FPC curtailment hearings on United Gas Pipe Line Company Docket Nos. RP71-29 and RP 71-120 (Phase II). This testimony was on behalf of

JENSEN ASSOCIATES, INC.

Ms. Elke Kallab

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November 30, 1976

six intervenors: General Motors Corporation, Mississippi River Transmission Corporation, Natural Gas Pipeline Company of America, Southern Natural Gas Company, Texas Eastern Transmission Corporation, and Texas Gas Transmission Corporation. This was rebuttal testimony to United Gas Pipe Line Company witnesses. My testimony argued that the category II industrial customers in the United service area in East Texas, Louisiana, Mississippi, Alabama, and the Panhandle of Florida have no greater difficulty in obtaining alternate fuels when natural gas is curtailed than industrial customers further to the north. This work began in mid July, 1976 and ended after the testimony was presented in mid November, 1976. Our fees to Southern Natural Gas are about one percent of our annual billings.

We are performing no work at this time, or in the recent past, for the other purchasers of the royalty gas or for Exxon, Arco, BP or Sohio.

QUALIFICATIONS

Jensen Associates, Inc. is highly qualified by previous experience to perform this analysis. A statement of our qualifications is attached.

JENSEN ASSOCIATES, INC.

Ms. Elke Kallab

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November 30, 1976

BUSINESS RELATIONSHIP

Jensen Associates, Inc., proposes that this work be performed on a time and expenses basis. Until we receive the contract we are not able to estimate the time required to perform proper analysis of it. After we have had a chance to review the contract we will provide a more detailed estimate of costs. However, for your budgeting purposes we would suggest that you plan for professional service fees of \$10,000 - 15,000 plus expenses not to exceed 15% of professional service fees unless more than one trip to Alaska were to be required.

We will bill the Legislative Affairs Agency monthly, for payment within ten days, for professional services and expenses. Professional services will reflect the time spent on your behalf. Expenses incurred while working in your behalf on this assignment will be billed at their cost to us and will include travel, communications, report production, and other directly related costs.

Professional services will be billed at our customary rates for the individuals involved. For consulting these rates are: Mr. James T. Jensen, \$640 per day; Dr. Carl V. Swanson, \$520 per day; Ms. Nancy Pozar, \$280 per day; Mr. Edwin F. Hardy, \$480 per day; and Mr. John C. Gault, \$360 per day. For the presentation of expert testimony the rates are: Mr. Jensen, \$900 per day; and Dr. Swanson, \$650 per day.

STAFF AND SCHEDULE

Based on present staff schedules I will be in charge of the project here. Mr. James T. Jensen, Mr. Edwin F. Hardy, Mr. John C. Gault, and Ms. Nancy J. Pozar are expected to work with me. When appropriate, other staff members with backgrounds

JENSEN ASSOCIATES, INC.

Ms. Elke Kallab

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November 30, 1976

particularly appropriate to this study may be assigned to the project. Biographies of Mr. Jensen, Mr. Hardy, Mr. Gault, Ms. Pozar, and me are attached. We understand that we should look to you and Mr. Greg Ericson for general direction and policy decisions on behalf of the Legislative Affairs Agency of the State of Alaska.

Based on current commitments, we expect that we will send a memo describing our findings approximately one month after your authorization to proceed with this assignment. I am holding open my schedule for the week of January 24, 1977 for the legislative hearings.

GENERAL PROVISIONS

In the past we have provided analysis and counsel to clients in areas included in this proposal. This experience helps to qualify us to undertake the assignment described above and we expect to continue such work in the future.

To protect your interests we agree that any confidential information we may develop or have furnished to us by you during this assignment will be safeguarded and held in confidence. Furthermore, it is our practice in considering new assignments to decline them whenever it appears to us at all probable that our experience with a past or present client might be used improperly in the new assignment.

ACCEPTANCE

For the purpose of staff scheduling this proposal is made subject to acceptance within 30 days. Should you like more time to consider the proposal or to discuss modifications to it, please let us know.

JENSEN ASSOCIATES, INC.

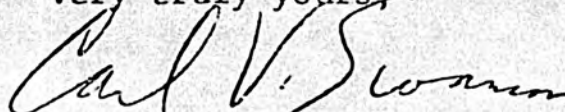
Ms. Elke Kallab

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November 30, 1976

We look forward to working with you on the analysis of Alaska's royalty gas sales contract, and we will devote our best efforts to accomplishing the objectives described above. If this proposal is acceptable to you, would you please sign and return the enclosed copy as authorization for us to proceed with the work.

Very truly yours,



Carl V. Swanson
Executive Vice President

CVS/jd

Accepted for _____

By _____

Title _____

Date _____

Contract Between
State of Alaska
LEGISLATIVE AFFAIRS AGENCY
On Behalf Of
The Joint Gas Pipeline Committee
And
RUSH MOODY, JR., ESQ.
Of
Vinson, Elkins, Searls, Connally & Smith

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, acting on behalf of the Alaska State Legislature, hereinafter referred to as the "Agency," and MR. RUSH MOODY, JR., hereinafter referred to as the "Consultant."

THE PURPOSE OF THIS AGREEMENT is to provide specialized professional legal consulting services to the Alaska State Legislature.

IT IS, THEREFORE, MUTUALLY AGREED THAT:

CLAUSE I - STATEMENT OF WORK

- (a) The Consultant shall assume responsibility for the preparation of, and submit to the Agency a short written legal analysis of "the benefits and burdens" accruing to the State of Alaska's Proposed Royalty Gas Sales Agreements. This analysis shall be as described in the Consultant's letter of December 3, 1976, attached to this contract as Appendix "A" and incorporated herein by this reference as though set out in full.
- (b) The Consultant shall, at a time mutually agreeable to the Consultant and the Agency, appear and present expert witness testimony before committees of the Tenth Alaska State Legislature, First Session, on the subject of the above analysis.

CLAUSE II - PERIOD OF PERFORMANCE

- (a) The Consultant shall submit to the Agency the report containing the legal summary on or before January 20, 1977.
- (b) The Consultant shall be available to testify before committees of the Tenth Alaska State Legislature, First Session, at a time mutually agreeable to the Consultant and the Agency.

(c) This agreement may be terminated--

(1) By mutual consent; or

(2) For breach of the agreement or any material part thereof.

(d) This agreement expires June 30, 1977, or with the adjournment of the First Session of the Tenth Alaska State Legislature, or with the completion of the contract as provided in paragraphs (a) and (b) of Clause I.

CLAUSE III - COMPENSATION AND METHOD OF PAYMENT

(a) For the legal analysis of the State of Alaska's Proposed Royalty Gas Sales Agreements and two days of expert witness testimony thereon before legislative committees of the Tenth Alaska State Legislature, First Session, the Consultant shall receive up to \$9,000.00 as follows:

(1) The amount of \$6,000.00 upon completion and submission to the Agency of the legal analysis; and

(2) The amount of \$3,000.00 upon the completion of expert witness testimony to legislative committees.

(b) The Consultant shall be reimbursed for expenses incurred in travel as follows:

(1) The costs of coach class air transportation to and from Alaska for the purpose of testifying before legislative committees; and

(2) The expenses incident to such travel, which shall be reimbursed according to AS 39.20 (currently, this provides reimbursement at a flat per diem rate of \$50.00 per day).

(c) The Consultant shall be reimbursed for actual costs of telephone expenses incurred in the preparation of the economic analysis.

(d) Payments under paragraphs (b) and (c) of Clause III of this contract shall be made by the Agency to the Consultant in response to billings submitted to the Agency on a monthly basis.

(e) Total payments, including travel and expenses, to the Consultant under this contract shall not exceed \$11,000.00, except by specific written authorization of the excess amount by the Agency.

(f) In the event this contract is terminated prior to completion of the work specified in paragraphs (a) and (b) of Clause I, the Consultant's basic charge shall be recomputed on a prorated basis according to the percentage of work satisfactorily completed.

CLAUSE IV - RECORDS, DOCUMENTS, AUDIT

The Consultant shall maintain accurate records, including detailed time records. The records are subject to inspection at all reasonable times. All documents, reports and writings generated as a consequence of work done under this contract shall become the property of the State of Alaska, and on completion of the work or at the termination of this contract shall be delivered to the Agency.

CLAUSE V - RESOURCE AND REFERENCE MATERIAL NEEDED FOR PREPARATION OF THE ANALYSIS

- (a) Specific requests for information regarding details of negotiations and areas of compromise leading to the finalization of the Proposed Royalty Gas Sales Agreements will be made available to the Consultant by appropriate state agencies.
- (b) The Agency will assist the Consultant in obtaining other source material as necessary, but final responsibility for these items rests with the Consultant.
- (c) It is not contemplated that any confidential resource or reference material will be required to prepare the analysis.

CLAUSE VI - CONFIDENTIALITY OF COMMUNICATIONS

It is contemplated that all work done under this contract will be made public by the Legislature. However, all communications between the Agency or the Legislature and the Consultant, including the final report, shall be held confidential by the Consultant until released by the Agency, or other Legislative entity to which they were addressed.

CLAUSE VII - PRIOR, CURRENT AND FUTURE REPRESENTATION

- Except as disclosed in Consultant's letter of December 30, 1974,*
- (a) The Consultant and his Firm do not represent any client who has, a material interest in the disposition of the Alaska natural gas to be disposed of under this contract, as provided in paragraph (d) of Clause II.
 - (b) The Consultant shall, during the period of this agreement, notify the Agency of any clients, new clients, or change in status of existing clients which might create a conflict of interest.
 - (c) The Consultant agrees that prior to the termination of the contract provided in Clause II, ~~whichever comes first~~; he shall not undertake to represent any client--
 - (1) In proceedings on Alaska natural gas transportation issues before the Federal Power Commission or the U.S. Department of the Interior; or
 - (2) In proceedings concerning Alaska natural gas before any agency or instrumentality of the State of Alaska.

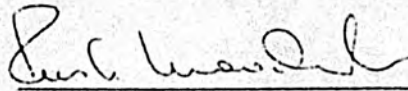
CLAUSE VIII - OTHER AGREEMENTS OR UNDERSTANDINGS

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the sub-

ject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement.

VINSON, ELKINS, SEARLS, CONNALLY & SMITH


Rush Moody, Jr.

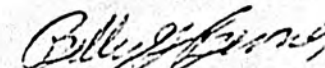
Jan 11, 1977
Date

LEGISLATIVE AFFAIRS AGENCY
(By direction of the
Chairman of the
Joint Gas Pipeline Committee)


Gregg K. Erickson

2/27/76
Date

Approved as to Form


Agency Legal Counsel

Dec 27, 1976
Date