95th Congress
1st Session

COMMITTEE PRINT

DECISION AND REPORT TO CONGRESS ON THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

SELECTED MATERIALS

PRINTED AT THE REQUEST OF

HENRY M. JACKSON, *Chairman*

COMMITTEE ON ENERGY AND NATURAL RESOURCES

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MEMORANDUM OF THE CHAIRMAN

To Members of the Senate Committee on Energy and Natural Resources:

The Alaska Natural Gas Transportation Act (Public Law 94–586), passed by Congress on October 1, 1976, and signed by the President on October 22, 1976, established a special decisionmaking process for the selection of a transportation system to move natural gas from the North Slope of Alaska to United States markets. The act was designed to expedite the selection of such a transportation system and to provide for the participation of the President and Congress in the final decision. Ordinarily, the Federal Power Commission has the final authority to approve proposed natural gas transmission systems.

As mandated by the act, the FPC reported its recommendations to the President on May 2, 1977, and other Federal departments and agencies submitted their comments and responses to the FPC report on July 1, 1977. The President is directed by the act to issue a decision as to whether or not a transportation system for the delivery of Alaska natural gas should be approved and, if so, to designate such a system.

Pursuant to the act, the President's decision designating an approved transportation system for the delivery of Alaska natural gas shall take effect upon the enactment of a joint resolution of Congress. Beginning on the date after the receipt of such decision, the Congress has 60 calendar days of continuous session to enact a joint resolution. If not approved within 60 days, the act allows the President an additional 30 days to propose a new decision.

In order to provide members of the committee, the Congress, and the public with access to the various reports and comments submitted by the FPC and other Federal departments and agencies, I have asked that the President's decision transmitted to the Congress on September 22, 1977, and selected summaries of relevant documents be assembled in a committee print and made available.

HENRY M. JACKSON, *Chairman.*

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DECISION OF THE PRESIDENT

DECISION ON AN ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PREFACE - STATUTORY REQUIREMENTS FOR A DECISION ON AN ALASKA NATURAL GAS TRANSPORTATION SYSTEM

Section 7(a)(4) of the Alaska Natural Gas Transportation Act of 1976 (ANGTA) states:

> If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he shall in such decision-
>
> (A) describe the nature and route of the system designated for approval;
>
> (B) designate a person to construct and operate such a system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system;
>
> (C) identify those facilities, the construction of which, and those operations, the conduct of which, shall be encompassed within the term "construction and initial operation" for purposes of defining the scope of the directions contained in Section 9 of this Act, taking into consideration any recommendation of the Commission with respect thereto; and
>
> (D) identify those provisions of law, relating to any determination of a Federal officer or agency as to whether a certificate, permit, right-of-way, lease, or other authorization shall be issued or be granted, which provisions he finds (i) involve determinations which are subsumed in his decision and (ii) require waiver pursuant to Section 8(g) in order to permit the expeditious construction and initial operation of the transportation system.

As part of these determinations, an Agreement on Principles concluded with the Government of Canada prescribes various terms and conditions applicable to the construction and operation of the pipeline. The Agreement on Principles is attached hereto as Section 7 of this Decision and made an integral part of the Decision by this reference.

With the incorporation of the aforesaid Agreement, and the finding that it is in the national interest to expeditiously undertake to construct an Alaska Natural Gas Transportation System, the system designation and related statutory determinations are as follows:

SECTION 1 - DESIGNATION OF PERSON TO CONSTRUCT AND OPERATE THE SYSTEM

The Alcan Pipeline Company, now a wholly owned subsidiary of Northwest Pipeline Corporation[1/], or its successor, is hereby designated to construct and operate the portion of the system within the State of Alaska.

The Northern Border Pipeline Company, a partnership consisting of subsidiaries or affiliates of Columbia Gas Transmission Corporation, Michigan-Wisconsin Pipeline Company, Natural Gas Pipeline Company of America, Northern Natural Gas Company, Panhandle Eastern Pipe Line Company, and Texas Eastern Transmission Corporation, or its successor, is hereby designated to construct and operate the portion of the system from the United States-Canada border near Monchy, Saskatchewan, to a point near Dwight, Illinois.

The Alcan Pipeline Company, or its successor, and the Northern Border Pipeline, or its successor, shall be publicly held corporations or general or limited partnerships, open to ownership participation by all persons

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1/ Northwest Pipeline owns and operates a 4,300-mile pipeline system for transporting gas in the states of Colorado, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming. Northwest Pipeline is a wholly-owned subsidiary of Northwest Energy Company, a holding company whose principal asset is all the outstanding common stock of Northwest Pipeline.

without discrimination, except producers of Alaskan natural gas.

The Pacific Gas Transmission Company is hereby designated to construct and operate the portion of the system from the United States/Canada border near Kingsgate, British Columbia, to the border between the States of California and Oregon.

The Pacific Gas and Electric Company is hereby designated to construct and operate the portion of the system from the border between the States of California and Oregon through the State of California.

SECTION 2 - DESCRIPTION OF THE NATURE AND ROUTE OF THE APPROVED SYSTEM

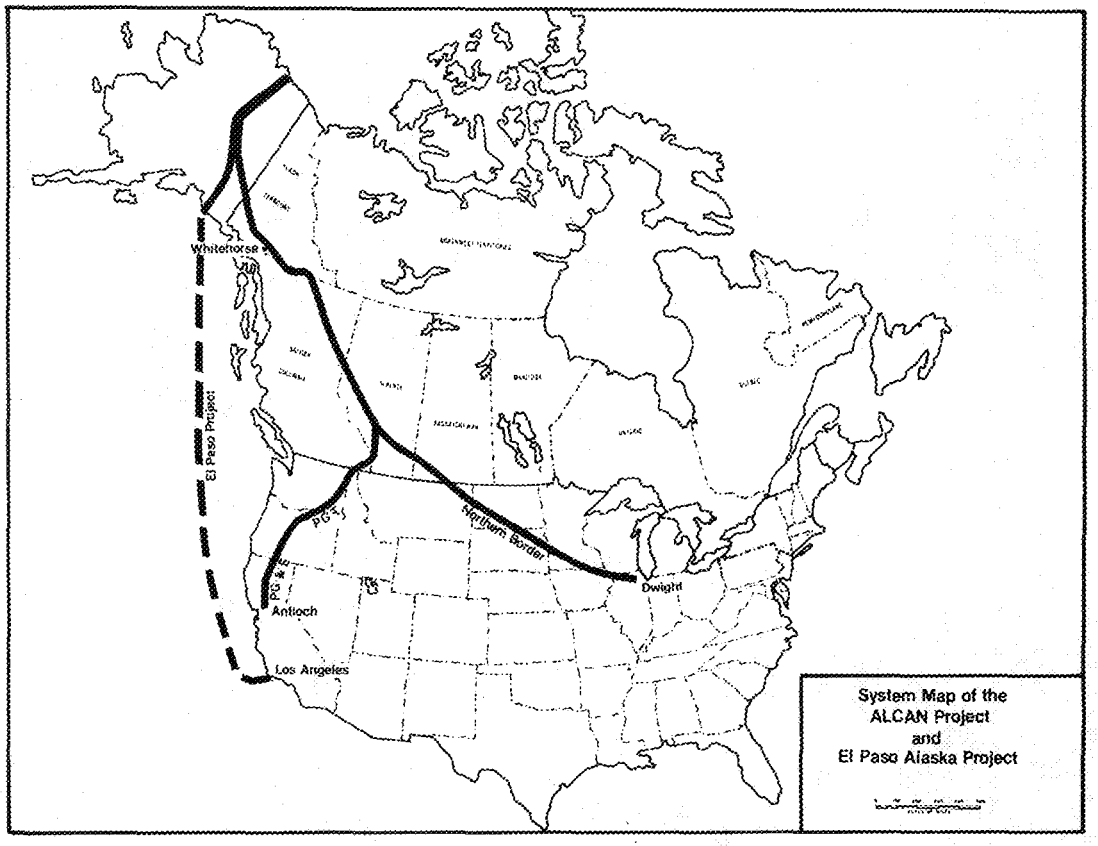
The Alcan system is an overland pipeline system to transport natural gas from the Prudhoe Bay area of Northern Alaska through Alaska and Canada into the Midwest and Western sections of the contiguous United States. See Exhibit 1.

The expected volume of gas to be available initially from the Prudhoe Bay field is 2.0 to 2.5 billion cubic feet per day (bcfd). The system described herein is designed to handle this throughput volume. The capacity of the system could be increased in the future to accommodate additional volume throughput by construction of additional facilities.

Alcan Pipeline Route in Alaska

The proposed Alcan pipeline will commence at the discharge side of the gas plant facilities in the Prudhoe Bay field. The pipeline will parallel the Alyeska oil pipeline southward from the North Slope of Alaska, cross the Brooks Range through the Atigun Pass, and continue on to Delta Junction.

At Delta Junction, the Alcan Pipeline will diverge from the Alyeska oil pipeline and follow the Alaska Highway and the Haines oil products pipeline right-of-way, passing near the towns of Tanacross, Tok, and Northway Junction


Whitehorse
El Paso Project
PG &
Antioch
Los Angeles
Northern Border
Dwight
System Map of the
ALCAN Project
and
El Paso Alaska Project

in Alaska. The right-of-way of the Haines oil products pipeline is at present approximately fifty feet wide and is closely parallel to the Alaska Highway. The Alcan pipeline will then connect with the proposed new facilities of Foothills Pipe Lines (South Yukon) Ltd. at the Alaska/Yukon Territory border.

From Prudhoe Bay to Delta Junction, Alcan expects to construct its line approximately eighty feet from the Alyeska oil pipeline. As proposed by Alcan, construction will be carried out by extending the existing Alyeska work pads. However, Alyeska advised Alcan that its "preliminary general guidelines" indicate that the Alyeska and Alcan lines must be separated by 100 to 200 feet where blasting to build the pipeline trench would occur (approximately 350 miles of pipeline length). Additional studies will determine the minimum distance between the Alyeska oil pipeline and the Alcan line that is necessary to permit safe construction and operation.

Alcan Pipeline Route Through Canada

The Canadian portion of the Alcan Project will commence at the Alaska/Yukon border in the vicinity of the towns of Border City, Alaska and Boundary, Yukon.

From the Alaska/Yukon border, the Foothills Pipe Lines (South Yukon) Ltd. pipeline will proceed south until it

reaches the White River (milepost 44), where it will take a more eastward course across the Yukon Territory. The pipeline will cross the Territory generally parallel to the Alaska Highway. Along most of the pipeline route through the Yukon, the separation between the pipeline route and highway route will be approximately one mile. There will be several points, however, where the pipeline route will divert substantially from the route of the Alaska Highway. These departures from the Alaska Highway route will permit the pipeline to continue on a more direct course than if it were to follow the Alaska Highway.

At approximately milepost 246, the pipeline will be routed north of Whitehorse and cross the Yukon River near the intersection of the Alaska and Klondike Highways. Near this intersection, approximately 9 miles northwest of Whitehorse, the pipeline will be constructed to permit a later connection with the proposed Dempster Line from the Mackenzie Delta, if and when the Dempster Line is constructed.

After it crosses the Yukon River north of Whitehorse, the pipeline will turn southeast and again travel parallel to the Alaska Highway, entering British Columbia at approximately milepost 397 and reentering the Yukon Territory at approximately milepost 435. The pipeline will continue

to follow the Alaska Highway eastward through the Yukon Territory and again cross the border into British Columbia, approximately twelve miles southwest of Watson Lake, Yukon. At this point, the Foothills Pipe Lines (South Yukon) Ltd. pipeline will terminate, and the Foothills Pipe Line (North B.C.) Ltd. interconnecting pipeline will commence.

After it passes the British Columbia border, the pipeline will proceed generally southeast across the northeastern part of the Province to the British Columbia/ Alberta border, crossing the existing Westcoast Transmission Company Ltd. main line some 35 miles south of Fort Nelson. At Boundary Lake on the British Columbia-Alberta border, the pipeline would connect with the Foothills Pipe Lines (Alta.) Ltd. pipeline. In Alberta, the Foothills Pipe Lines (Alta.) Ltd. pipeline will proceed generally southeast from Boundary Lake to Gold Creek Junction. After Gold Creek Junction, the pipeline will follow the existing Alberta Gas Trunkline Co., Ltd. (AGTL) pipeline right-of-way to James River Station.

From James River Station, the western leg of the pipeline will proceed separately to the south, approximately following the existing AGTL right-of-way to the Alberta/ British Columbia border near Coleman, Alberta. It will then connect with the Foothills Pipelines (South B.C.)

Ltd. pipeline, continue to the southwest across British Columbia, and finally connect with the Pacific Gas Transmission (PGT) pipeline at the United States/Canada border near Kingsgate, British Columbia. The pipeline route through southern British Columbia will generally parallel the existing pipeline route of Alberta Natural Gas Company Ltd.

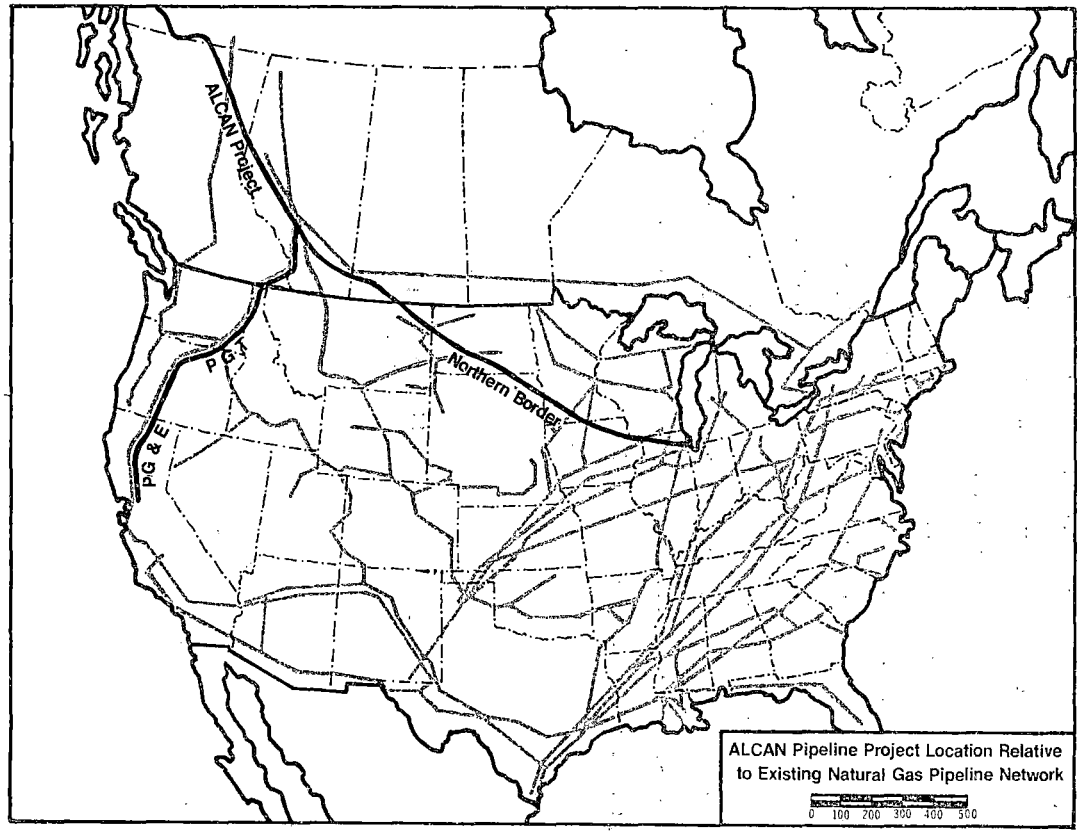
For the eastern leg from the James River Station, the pipeline will proceed generally to the southeast until it reaches the Alberta/Saskatchewan border near Empress, Alberta. The eastern leg will then connect with the Foothills Pipe Lines (Sask.) Ltd. pipeline. The pipeline will then continue to the southeast across Saskatchewan and join with the Northern Border Pipeline system at the United States/Canada border near Monchy, Saskatchewan.

Alcan Pipeline Route in the Contiguous United States

On the western leg, the Alaska gas will be transferred at the United States-Canada border near Kingsgate, British Columbia, to the PGT system. The PGT system will transport the gas through northern Idaho, southeast Washington, and central Oregon. At the Oregon/California border, the gas will be transferred to enter the Pacific Gas and Electric Company (PG&E) system and will then be transported throughout California.

On the eastern leg the Alaska gas will be transferred at the Saskatchewan/Montana border from the Canadian-owned portion of the Alcan system to the Northern Border Pipeline system. The Northern Border Pipeline system will then transport the gas across the northeast corner of Montana, the southwest section of North Dakota, the northeast section of South Dakota, the southwest corner of Minnesota, and the northeast section of Iowa, and finally bring the gas just south of Chicago to Dwight, Illinois.

Exhibit 2 on the following page illustrates the respective routes of the eastern and western legs of the Alcan system and their relationship to the existing gas pipeline network in the United States.


ALCAN Project
Northern Border
PG & E
P G T
ALCAN Pipeline Project Location Relative
to Existing Natural Gas Pipeline Network
0 100 200 300 400 500

SECTION 3 - IDENTIFICATION OF FACILITIES INCLUDED WITHIN "CONSTRUCTION AND INITIAL OPERATION"

General Project Description

This section identifies the facilities for the Alcan project which will be entitled to the expedited authorization process prescribed in Section 9 of ANGTA. The facilities which are to be covered are those in the U.S. which are adequate for a throughput of up to 2.4 bcfd and are included in the revised Alcan filing submitted to the Federal Power Commission (FPC) in March 8, 1977. If any modifications to those facilities are required by the Agreement on Principles between the U.S. and Canada, those modified facilities will also be entitled to the expedited authorization process in Section 9.

Uncertainties remain as to the future level of gas exports from Canada's historical gas supply sources. The actual division of Alaska gas among the various regions of the contiguous United States awaits conclusion of gas sales contracts. Routing and design work should be sufficiently complete to allow final certification in late 1978 or early 1979. The final design and location of the facilities, however, will be within the general description set forth.

The gas transportation system will utilize a 48-inch diameter pipeline from Prudhoe Bay to James River, Alberta.

From James River, gas destined for the midwestern and eastern states will be transported through a 42-inch diameter pipeline to Monchy, Saskatchewan, and gas destined for the western states will be transported through a 36-inch pipeline to Kingsgate, British Columbia. PGT and PG&E will complete looping[2/] as necessary of their existing pipeline systems from the Idaho-British Columbia border to Antioch, California (near San Francisco) with a 36-inch diameter pipeline.

All of the pipeline in Alaska and the first forty-one miles of pipeline in the Yukon lie in the continuous and discontinuous permafrost region.[3/] This section will be operated in a chilled state (i.e., below 32°F.) to prevent degradation of the permafrost regime. Gas chilling

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2/ "Looping" is construction of a pipeline parallel to and interconnected with an existing pipeline. Looping may extend to part or all of an existing line.

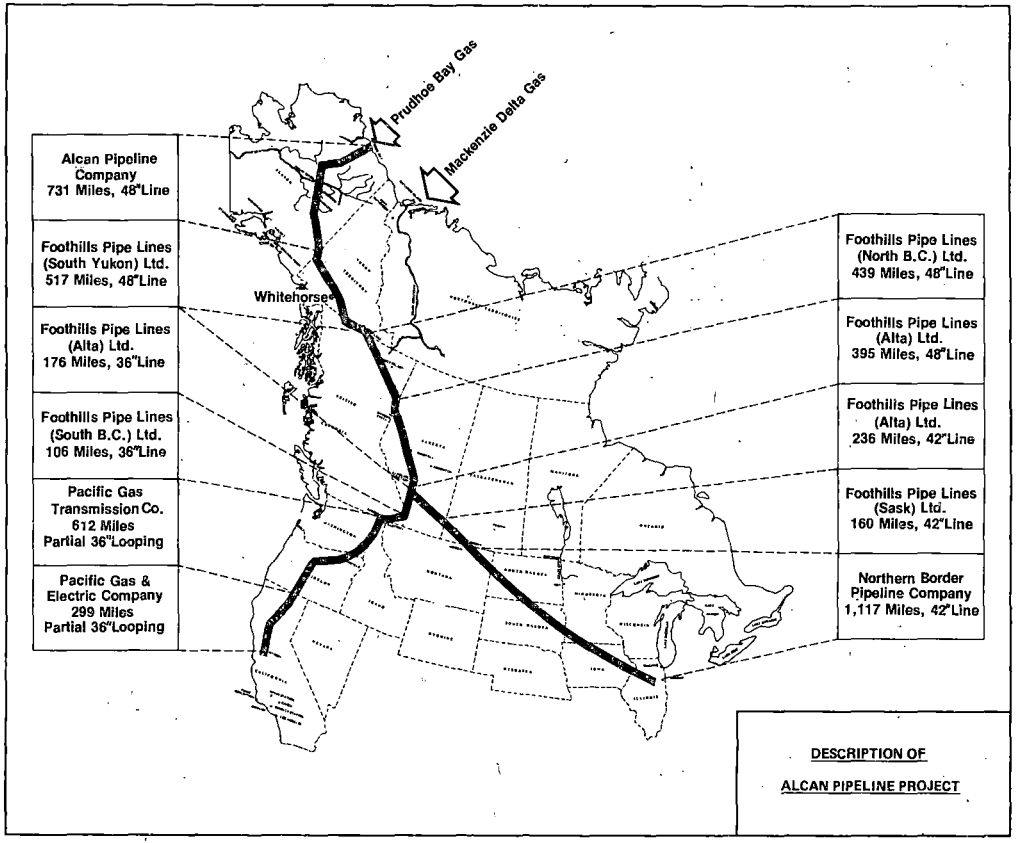
3/ By definition, permafrost consists of soil, rock, or other earth material, the temperature of which remains at or below 32°F. (0°C) continuously for two or more years. Its distribution is not uniform. Factors controlling the distribution of permafrost include the glacial and climatic history of the area, thermal properties of the earth material, ambient temperature, insulation properties of overburden, and amount of exposure to sun (e.g., shading caused by orientation of topographic features). The permafrost would be continuous along approximately the first 240 miles of the pipeline (to near the South Fork of the Koyohuk River). Along the remaining pipeline route to the Yukon border, the permafrost would be discontinuous.

will be accomplished by propane refrigeration systems at all compressor stations in Alaska.

The length of the various pipeline segments will be as follows:

Company	Location	Length (Miles)
Alcan Pipeline Company	Alaska	731
Foothills Pipe Lines (South Yukon) Ltd.	Yukon	517
Foothills Pipe Lines (Sask.) Ltd.	Saskatchewan	160
Foothills Pipe Lines (North B.C.) Ltd.	Yukon/B.C. Border to B.C./Alberta Border	439
Foothills Pipe Lines (South B.C.) Ltd.	Coleman to Kingsgate	106
Foothills Pipe Lines (Alta.) Ltd.	B.C./Alberta to James River	395
	James River to Colemen	176
	James River to Empress	235
Total Alaska and Canada		2,759
Pacific Gas Transmission Co.	Kingsgate to Malin	612
Pacific Gas & Electric Co.	Malin to Antioch	299
Northern Border Pipeline Co.	Monchy to Dwight	1,117
Total Contiguous States		2,028
Total System Length		4,787

Exhibit 3 on the next page identifies and locates the various pipeline segments.


Prudhoe Bay Gas
Mackenzie Delta Gas
Whitehorse
Alcan Pipeline Company
731 Miles, 48"Line
Foothills Pipe Lines (South Yukon) Ltd.
517 Miles, 48"Line
Foothills Pipe Lines (Alta) Ltd.
176 Miles, 36"Line
Foothills Pipe Lines (South B.C.) Ltd.
106 Miles, 36"Line
Pacific Gas Transmission Co.
612 Miles
Partial 36"Looping
Pacific Gas & Electric Company
299 Miles
Partial 36"Looping
Foothills Pipe Lines (North B.C.) Ltd.
439 Miles, 48"Line
Foothills Pipe Lines (Alta) Ltd.
395 Miles, 48"Line
Foothills Pipe Lines (Alta) Ltd.
236 Miles, 42"Line
Foothills Pipe Lines (Sask) Ltd.
160 Miles, 42"Line
Northern Border Pipeline Company
1,117 Miles, 42"Line
DESCRIPTION OF
ALCAN PIPELINE PROJECT

Peak-day capacity utilizing nine compressor stations (see item 4 below) will be 2.6 bcfd, with an average daily volume of 2.4 bcfd. By installation of intermediate compressor stations, the system could be increased to 3.4 bcfd peak capacity, with an average day capacity of 3.2 bcfd. The system capacity could be further increased by addition to the compressor horsepower at each station.

Alcan Compressor Stations and Refrigeration Facilities in Alaska

Centrifugal compressors, powered by natural gas-fueled turbine engines, will be used on the Alcan system. In order to minimize thawing of the permafrost soil, the discharge gas at each compressor station in Alaska will be chilled by a propane refrigeration plant. The following describes the required compression and refrigeration facilities. All of these facilities are required for construction and initial operation.

Station	Milepost	Number of Gas Compressors	Total Installed Horsepower (ISO) Gas Compression	Gas Refrigeration
AL-1	75.0	1	26,500	7,660
AL-2	133.0	1	26,500	7,660
AL-3	242.3	1	26,500	13,830
AL-4	331.8	1	26,500	13,830
AL-5	418.8	1	26,500	13,830
AL-6	504.7	1	26,500	13,830
AL-7	589.9	1	26,500	13,830
AL-8	673.4	1	26,500	13,830
	TOTAL	8	212,000	98,300

Other Alcan Pipeline Facilities in Alaska

Metering facilities for the measurement of gas flow and gas quality will be required in Alaska at the Prudhoe Bay receipt point, at the Fairbanks sales point, and at the transfer point on the Alaska-Yukon border.

A central operating center, located in Fairbanks, will monitor and control all compressor station operations.[4/]

Alcan will utilize staging areas established for the Alyeska oil pipeline at Prudhoe Bay, Fairbanks, and Valdez. Material storage sites will be located at Anchorage, Seward, and Whittier, and at selected locations along the pipeline route.

Existing transportation and communication facilities will be utilized to the fullest extent practicable. Short lateral roads will be constructed to pipeline facilities as required.

Permanent bases for operating and maintaining the system will be selected and located after defining areas in which common problems may occur due to similarities of terrain and

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4/ The compressor stations will be automated for remote control of all normal functions, including discharge gas temperature.

climate. The bases will be located at or near compressor stations to avoid duplication of permanent above-ground facilities. Materials and various spare parts will be located at the bases to facilitate maintenance and repair operations.

All of these facilities will be required for construction and initial operation.

Lower 48 Facilities

For purposes of this part of the Decision, the facilities described generally below are deemed necessary for construction and initial operation, and will be entitled to expedited issuance of authorizations pursuant to Section 9 of ANGTA, provided that the final certification of such facilities shall be determined by reference to the size necessary to provide the transportation capacity certified to the FPC[5/] by the Secretary of Energy, as set forth in the terms and conditions section.

[5/] The final certification function currently resides with the Federal Power Commission under the Natural Gas Act. On October 1, 1977, the Department of Energy will be activated pursuant to the Department of Energy Organization Act, Public Law 95-91, and the functions of the FPC under the Natural Gas Act will be transferred in part to the Federal Energy Regulatory Commission (FERC). Therefore, where reference is made herein to future actions of the FPC, they will be carried out by either the Secretary or the FERC, as the case may be, as of October 1, 1977.

In order to deliver gas contemporaneously to points both east and west of the Rocky Mountains in the lower continental United States, the Alcan system will bifurcate at James River, Alberta and form a Western Leg and an Eastern Leg. First, the Western Leg is described below, and then the Eastern Leg.

Western Leg

Alaskan gas will be transferred at the Canada/United States border near Kingsgate, British Columbia, to Pacific Gas Transmission Company (PGT). PGT will transport the gas through Idaho, Washington, and Oregon. At the Oregon/California border, the gas will enter the intrastate facilities of Pacific Gas and Electric Company (PG&E). The gas will be transported throughout much of California through existing and expanded intrastate gas pipelines.

The additional Western Leg facilities which are part of the Alcan project are those covered by the "1580 Design." The major component of this expansion will add approximately 873 miles of looping and result in complete looping of the 917-mile PGT/PG&E system from the Canada/United States border to Antioch, California (near San Francisco). The two parallel lines will be operated as a single system. Various modifications to the existing compression facilities will be required. However, the increase in system

capacity of 659 mmcfd could be achieved without installation of additional compression horsepower or increase of compression fuel usage. A minor addition of facilities south of Antioch may be made at a later date, depending on conditions prevailing at that time. All Western Leg facilities which are part of the Alcan project are subject to Section 9 of ANGTA.

The Eastern Leg

The Alcan system will transport Alaskan gas for delivery to Midwestern and Eastern markets in the lower continental United States through an Eastern Leg. The Eastern Leg will commence at the bifurcation point of the main express line at James River, Alberta and terminate at Dwight, Illinois (near Chicago). Total length of the Eastern Leg will be 1,352 miles, including 235 miles in Canada and 1,117 miles in the United States. All pipeline for the Eastern Leg will be 42 inches in diameter.

Alaskan gas will be transferred at the Saskatchewan/Montana border from the Canadian-owned portion of the Alcan system to the Northern Border Pipeline system (Northern Border). The Northern Border system will travel diagonally across Montana, North Dakota, South Dakota, Minnesota, and Iowa, and terminate near Chicago, Illinois. Along this

route, direct deliveries of gas will be made by Northern Border into the systems which cross the pipeline: Natural Gas Pipeline Company of America, Northern Natural Gas Company, and Michigan-Wisconsin Pipeline Company. Other purchasers will receive Alaska gas by displacement.[6/]

The specific facilities that will be required to interconnect the various pipelines to receive gas from the Northern Border system, either by direct delivery or by displacement, will be determined when gas sales contracts have been executed. Final design of the required facilities will depend upon the division of Alaskan gas among the various pipeline companies and various regions of the contiguous States. Final design will be complete at the time of final system certification in late 1978 or early 1979. All facilities which are part of the Northern Border system are necessary for construction and initial operation, and all facilities which are part of the Northern Border system as finally certified by the FPC are subject to Section 9 of ANGTA.

6/ "Displacement" of gas is a method by which gas may be supplied to a purchaser from close by in exchange for gas sold to the purchaser elewhere. Displacement, which is a commonly used method in the gas industry, eliminates the cost of physically transferring gas between market..

SECTION 4 - DELINEATION OF PROVISIONS OF LAW THAT ARE SUBSUMED IN THIS DECISION AND REQUIRE WAIVER

Under Section 7(a)(4)(D) of ANGTA, the President shall

> identify those provisions of law, relating to any determination of a Federal officer or agency as to whether a certificate, permit, right-of-way, lease, or other authorization shall be issued or be granted, which provisions the President finds (i) involve determinations which are subsumed in his decision and (ii) require waiver pursuant to section 8(g) in order to permit the expeditious construction and initial operation of the transportation system.

At this time, however, there are only two statutory provisions that involve determinations subsumed in this decision and require waiver pursuant to section 8(g) of ANGTA.7/

Under Section 3 of the Natural Gas Act (15 U.S.C. 717b), the Federal Power Commission must issue an order to authorize any export of natural gas; such an order shall

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7/ Section 8(g)(1) of ANGTA states that the President will have the opportunity at a later date to identify and seek waiver of additional provisions of law. This subsection states:

> At any time after a decision designating a transportation system is submitted to the Congress pursuant to this section, if the President finds that any provision of law applicable to actions to be taken under subsection (a) or (c) of section 9 require waiver in order to permit expeditious construction and initial operation of the approved transportation system, the President may submit such proposed waiver to both Houses of Congress.

issue unless the Commission finds that the export is not consistent with the public interest.

In addition, under Section 103 of the Energy Policy and Conservation Act, the President is required to promulgate a general rule prohibiting exports of natural gas from the U.S., except that he may permit those exports which he determines to be consistent with the national interest and with the purposes of the Act (Section 103(b)(1)). To make such a determination, Section 103(d)(1) directs the President to take into account the need to leave uninterrupted or unimpaired "exchanges in similar quantity for convenience or increased efficiency of transportation with persons or the government of a foreign state."

As a result of the recent Agreement on Principles between the United States and Canada, Alcan will be required to make available limited quantities of Alaskan gas to communities in the Yukon Territory and the western provinces, subject to provision of replacement gas downstream in Canada. This transaction will be an export requiring separate authorizations under the above mentioned two statutes.

The requirements arising under Section 3 of the Natural Gas Act and under Section 103 of the Energy Policy and Conservation Act could be met without waiver of these provisions, but additional, and unnecessary, FPC and Presidential action would be required. Accordingly, both of these statutory subsections shall be waived for the exchange of gas mentioned herein.

SECTION 5 - TERMS AND CONDITIONS AND ENFORCEMENT

To ensure the proper management and timely completion of the construction of the designated transportation system, the following general terms and conditions shall be appropriately incorporated into any certificate, right-of-way, lease, permit or authorization directed to be made by any Federal officer or agency.

As described more fully below, these terms and conditions will be followed by a set of stipulations establishing general standards of environmental and construction performance, and the procedures for the submission and approval of construction plans and environmental safeguards, and then by site specific terms and conditions issued prior to actual construction of any pipeline segment. The terms and conditions described here are not meant to limit or foreclose the adoption of such stipulations and terms and conditions but are intended to begin the process by which a set of effective and workable safeguards are evolved. There is contemplated cooperative action by the Federal and Alaska State Governments in the development and enforcement of stipulations and site specific terms and conditions. Similar cooperative action is contemplated with the governments of all affected states.

Under the proposal made at the end of this section for the organizational involvement of the Federal Government with the successful applicant, the Federal Inspector for construction of the transportation system shall have supervision authority over the enforcement of these terms and conditions subject to the ultimate authority of the Executive Policy Board described below.

Terms and Conditions

The terms and conditions proposed for inclusion into this Congressional authorization are set forth, by category, as follows:

I. Construction Costs and Schedule

Management and Organization

1. Prior to the issuance of the certificate, the successful applicant shall provide a detailed overall management plan, to be approved by the Federal Inspector, for the preconstruction and the construction phases of the transportation system project. The successful applicant shall define its relationship with the execution contractors, and shall give consideration to various management approaches -- such as Fast Track, Stage Design, and other management

approaches -- that will facilitate the cost-effective, environmentally sound, and timely construction of the project.

2. The successful applicant may not use cost-plus type contracts with execution contractors, except where the Federal Inspector determines that special conditions warrant this type of contract. Otherwise, the applicant shall use fixed-price contracts, including the firm fixed-price, the fixed-price with escalation, and fixed-price incentive type of contract.

3. The successful applicant shall specify for approval of the Federal Inspector the insurance, bonding, and any other prequalification requirements for all consultants and execution contractors.

Construction Cost and Schedule Control Techniques

4. Prior to the initiation of construction, the successful applicant shall provide a detailed analysis and description of its proposed cost and schedule control techniques. The applicant shall give particular consideration to cost and manpower control and manpower estimating techniques.

5. Prior to the initiation of construction, the successful applicant shall develop and submit to the Federal Inspector a final design, design-cost estimate, and construction schedule. This design cost estimate and schedule must represent a construction design of at least 70 percent (or greater) of the total system, and the remainder may not represent any one contiguous or specific type of construction or geologic situation (e.g., river crossings, discontinuous permafrost, or elevated pipeline). The Federal Inspector may relax the above specified minimum percentage requirement, with the consent of the Executive Policy Board, if he finds there are extenuating circumstances that warrant such an action.

General Operating Strategies

6. The successful applicant shall develop and submit to the Federal Inspector cost-effective and feasible methods for supplying general and specialized equipment, as well as repair facilities and spare-part inventories, to the execution contractors. The applicant

shall give consideration to various techniques of equipment provision, including use of equipment pools, equipment leasing or buy-backs.

7. Prior to the initiation of construction, the successful applicant shall supply detailed information to the Federal Inspector on its labor relations procedures, and indicate the proposed means to address and resolve disputes arising under collective bargaining agreements.

8. In entering into contracts with execution contractors, the successful applicant shall seek to incorporate techniques for resolving disputes arising under such contracts without recourse to litigation.

Quality Assurance and Control Procedures

9. The successful applicant shall provide to the Federal Inspector a detailed description of quality assurance and control procedures that will be implemented prior to the start of construction. Such a description must at least include provisions for quality assurance and control procedures for environmental protection, corrosion, pipeline and compressor-station

welds, pipeline placement, equipment and other appropriate matters.

Procedures for Enforcement of Terms and Conditions

10. The successful applicant may not initiate activity on any aspect of the pipeline until authorization to proceed with construction, including site-specific terms and conditions for that aspect of the pipeline, has been issued and procedures for enforcement of terms and conditions have been established by the appropriate Federal officers.

Minority Business Enterprise Participation

11. The successful applicant shall develop and submit to the Federal Inspector for approval a plan for taking affirmative action to ensure that no person shall on the grounds of race, creed, color, national origin or sex be excluded from receiving or participating in contracts for management, engineering design or construction activity. The successful applicant shall require each of his contractors and subcontractors having contracts valued at $150,000 or more to develop similar plans providing the assurances specified in the preceding sentence.

II. Safety and Design

1. The successful applicant shall construct, operate, maintain and terminate the pipeline in accordance with Federal gas pipeline safety regulations. The applicant shall ensure that construction and operating specifications are in accordance with good engineering practice, both to maintain the safety and the integrity of the pipeline and to protect the health and safety of project personnel and the general public.

2. The successful applicant may not begin construction of any pipeline segment until the Federal Inspector has approved the design of that segment, including technical construction specifications, having had sufficient time to review the design.

3. The successful applicant shall establish a procedure for briefing the Federal Inspector, or his designated representative, on a regular basis concerning the status of the project during the design, construction, testing and start-up phases.

4. The successful applicant shall establish a procedure to ensure access to all project facilities by the Federal Inspector, or his designated representative, in the performance of official duties.

5. The successful applicant shall submit a plan or procedure for conducting its own inspections of project facilities during construction, to be approved by the Federal Inspector.

6. The successful applicant shall provide a seismic monitoring system, to be approved by the Federal Inspector, and shall ensure that there are adequate procedures for the safe shut-down of the project under severe seismic conditions.

III. Environment

1. The successful applicant shall construct, operate, maintain and terminate the pipeline with maximum concern for the protection of environmental values. A set of stipulations containing the general standards of environmental and construction performance, and the procedures for the

submission and approval of construction plans and environmental safeguards will be developed by the concerned government agencies and must be accepted by the applicant as a condition of his right to proceed over public lands. Additional "site-specific" terms and conditions will be incorporated in authorizations to proceed with construction issued by the appropriate Federal agency, into particular certificates, rights-of-way, permits and other authorizations to protect and enhance environmental values during the design, construction and operation of the pipeline. These additional "site specific" terms and conditions will be issued as appropriate to minimize disturbance from construction and operation of the pipeline to rivers and other water bodies and adjacent land and vegetation; to protect wildlife and endangered species and maintain forest, agricultural and other resource productivity; to control the risks of pipeline ruptures, leaks and hazards; to maintain air and water quality values; to make provision for control and disposal of sewage, garbage, wastes

and toxic substances; and take other measures necessary for protection of the environment during the design, construction and operation of the pipeline.

2. The successful applicant shall prepare a plan of operations which integrates environmental protection with the proposed schedule of construction and operations, the proposed supervisory and technical staffing, the proposed quality control programs, and the proposed quality assurance programs. In preparation and implementation of this plan, the successful applicant shall provide for timely integration of environmental mitigation and restoration practices with the activity which creates the need for the restoration or mitigation.

3. The successful applicant shall develop and submit to the Federal Inspector an effective plan for implementation of specific environmental safeguards through an educational program for field personnel prior to and during construction, operation, maintenance and termination of the pipeline.

4. The successful applicant shall establish an effective pipeline-performance monitoring system of inspection and instrumentation to insure performance in keeping with environmental concerns.

IV. Finance

1. The successful applicant shall provide for private financing of the project, and shall make the final arrangement for all debt and equity financing prior to the initiation of construction.

2. If the direct capital cost estimates excluding interest during construction for the overall project in 1975 constant dollars filed with the FPC immediately prior to certification, adjusted to reflect design changes to increase capacity that result from the Agreement on Principle between the United States and Canada, materially and unreasonably exceed the comparable capital cost estimates filed by Alcan with the Federal Power Commission on March 8, 1977, Section 6, page 2, the FPC may not issue a certificate for the project. If these final capital cost estimates are not excessive under the above standard, the FPC may use these final estimates for the U.S.

segments as the basis for fixing a variable rate of return on equity that will reward the applicant for project completion under budgeted cost and penalize the applicant for project completion above budgeted cost. The variable return shall be set to provide substantial incentives to construct the project without incurring overruns. These final capital cost estimates need not be the design-cost estimates based on the system design which must subsequently be submitted to the Federal Inspector. The applicant shall, however, submit to the FPC for approval on a timely basis all components of construction work in progress.

3. Neither the successful applicant nor any purchaser of Alaska gas for transportation through the system of the successful applicant shall be allowed to make use of any tariff by which or any other agreement by which the purchaser or ultimate consumer of Prudhoe Bay natural gas is compelled to pay a fee, surcharge, or other payment in relation to the Alaska

natural gas transportation system at any time prior to completion and commissioning of operation of the system.

4. The Alcan Pipeline Company, or its successor, and the Northern Border Pipeline, or its successor, shall be publicly held corporations or general or limited partnerships, open to ownership participation by all persons without discrimination, except producers of Alaskan natural gas.

V. Antitrust

1. The successful applicant shall exclude and prohibit producers of significant amounts of Alaska gas, or their subsidiaries and affiliates, from participating in the ownership of the Alaska natural gas transportation system, except that such producers may provide guarantees for project debt. The aforesaid producers of Alaska gas may not be equity members of the sponsoring consortium, have any voting power in the project, have any role in the management or operations of the project, have any continuing financial obligation in relation to debt guarantees associated

with initial project financing after the project is completed and the tariff is put into effect, or impose conditions on the guarantees of project debt permitted above which may give rise to competitive abuse, including power to veto pro-competitive policies.

2. All agreements for the sale of Alaska gas made between the aforesaid producers and purchasers who are shippers through the Alaska natural gas transportation system shall be fully disclosed to the Federal Power Commission, and all collateral agreements made between the same parties with respect to the sale of Alaska gas shall also be fully disclosed. All contracts for sale of Alaska gas, for all collateral agreements to these contracts, shall be submitted for approval by the Federal Power Commission.

VI. Certification of Facilities

1. Prior to the issuance of a certificate of public convenience and necessity to Northern Border Pipeline or to Pacific Gas Transmission Company, the Secretary of Energy shall certify to the Federal Power Commission whether there

has been any material change in the facts regarding future potential gas supplies for the East or West since the date of this Decision that would warrant certification of such facilities at a different rated capacity than authorized herein. If the Secretary certifies that there has been a material change in the facts, he shall instead certify to the Commission the capacity at which he has determined a certificate of public convenience and necessity should be issued and the reasons therefor, which capacity shall be determined in a manner that is as consistent as possible with the reasons for the initial authorization, as set forth in the Report submitted to the Congress pursuant to Section 7(b) of the Alaska Natural Gas Transportation Act, Public Law 94-586. The certificate issued by the FPC shall be consistent with the Secretary's determination.

Enforcement

To enforce the terms and conditions proposed above, and to carry out the duties of the office assigned and set forth by section 7(a)(5)(A)-(E) of ANGTA, an appropriate and qualified individual shall be appointed by the President

to serve as the Federal Inspector, with the advice and consent of the Senate. Upon approval of the Presidential designation of an Alaska natural gas transportation system, the Federal Inspector shall:

(A) establish a joint surveillance and monitoring agreement, approved by the President, with the State of Alaska similar to that in effect during construction of the trans-Alaska oil pipeline to monitor the construction of the approved transportation system within the State of Alaska;

(B) monitor compliance with applicable laws and the terms and conditions of any applicable certificate, rights-of-way, permit, lease, or other authorization issued or granted;

(C) monitor actions taken to assure timely completion of construction schedules and the achievement of quality of construction, cost control, safety, and environmental protection objectives and the results obtained therefrom;

(D) have the power to compel, by subpoena if necessary, submission of such information as he deems necessary to carry out his responsibilities; and

(E) keep the President and the Congress currently informed on any significant departures from compliance and issue quarterly reports to the President and the Congress concerning existing or potential failures to meet construction schedules or other factors which may delay the construction and initial operation of the system and the extent to which quality of construction, cost control, safety and environmental protection objectives have been achieved.

In addition to these duties and responsibilities, the President will submit to Congress, upon approval of the Presidential decision, a limited executive reorganization plan to transfer to the Federal Inspector field-level

supervisory authority over enforcement of terms and conditions from those Federal agencies having statutory responsibilities over various aspects of an Alaska natural gas transportation system. The respective Federal agencies would retain their existing statutory authority pursuant to section 9(a) of ANGTA, to issue on an expedited basis the necessary certificates, permits, rights-of-way and other authorizations, and to prescribe any appropriate terms and conditions that are permissible under present law. The Agency Authorized Officers would directly represent the statutory authority of the respective Federal agencies in the field on all matters pertaining to construction of the pipeline. However, the Federal Inspector would have the necessary field-level supervisory authority to overrule the enforcement action of an Agency Authorized Officer, whenever the Federal Inspector determined that such a decision was warranted.

The President's supervision of the Federal Inspector will be carried out by an Executive Policy Board. The Board would be made up of the Secretaries of the Interior, Energy, Transportation, the Administrator of the Environmental Protection Agency, and the Chief of the Army Corps of Engineers, or their Deputies (or senior officers who have

been delegated authority over gas pipeline matters), as well as the Federal Inspector, who is the non-voting Chairman of the Board. The Board will provide policy guidance to the Federal Inspector, and act as an appellate body to resolve differences among the agencies and the Federal Inspector, including differences that may arise when the Federal Inspector overrules an enforcement action of an Agency Authorized Officer. The Board shall expeditiously resolve any such appeal with a limited period of time that shall be prescribed. The President will authorize by Executive Order the creation of the Executive Policy Board pursuant to his power under Section 301 of Title 3, and will delegate the necessary authority to the Board to carry out its functions. The Board shall be paramount for policy-making purposes on all matters pertaining to construction of an Alaskan natural gas transportation system; the Federal Inspector shall shall be the agent or conduit of the Board in such matters, and shall also have the necessary supervisory power over field level decisions.

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SECTION 6 - PRICING OF ALASKA GAS

Final financing for an Alaska natural gas transportation project cannot be arranged until the producer-owners of the Prudhoe Bay gas execute sales contracts. Without such contracts, no gas can be transported, and financing consequently would be unobtainable. Producers cannot be expected to negotiate sales contracts until a price has been established with a reasonable degree of certainty. If this project is to proceed expeditiously, the field price of the gas should be established as soon as possible.

Because no contracts for gas sales in interstate commerce have been concluded and submitted to the FPC for approval, the FPC has not, to date, attempted to determine the costs of providing the gas in order to establish what might be a just and reasonable (cost-based) wellhead price. The FPC, in fact, has excluded the Alaska gas from its national rate proceedings; Alaska costs and related reserve data have been excluded from all statistics underlying FPC rate determinations.

Alaska gas is produced in association with oil; therefore, it is impossible to determine precisely the costs of finding, developing and producing only the gas. Cost allocation and, therefore, cost-based pricing is

somewhat arbitrary. Because of the difficult and arbitrary nature of the allocation problem, the FPC in recent years has priced gas on the basis of the cost of only non-associated gas in each producing area, and then allowed the same price to be paid for associated gas produced in that area as well. Were the FPC to initiate a price proceeding under the Natural Gas Act, it is expected that its procedures and subsequent litigation over cost allocation and other matters would likely exceed a period of 18 months.

The Administration's proposed National Energy Act is before the Congress. That Act provides a basis for moving from cost-based pricing to commodity-value pricing. That transition is essential to restoring the balance between natural gas supply and demand. Under the gas pricing provisions in the National Energy Plan, Alaska gas would be classified as "old gas under a new contract" subject to a $1.45 per mcf ceiling price.

If, on the other hand, proposals to deregulate natural gas prevail, serious uncertainties and delays concerning the development of any Alaskan natural gas transportation

project could result. If producers are inclined to insist on prices of $2.00 per mcf or higher, questions concerning the saleability of the gas and the financeability of the project will arise. Such price levels could result in an additional $20 billion in consumer charges, as well as the added costs of any delays in project construction.

This decision, therefore, calls for enactment of a gas pricing approach similar to that contained in the National Energy Plan. That approach also provides a mechanism for allocating the cost of more expensive supplies to lower-priority users, rather than the residential and commercial users who have less capacity to convert to other fuels. The gas pricing policies which are part of the National Energy Plan are fair and equitable, and should apply to both the production and sale of Alaska gas.

SECTION 7 - AGREEMENT BETWEEN THE UNITED STATES OF AMERICA AND CANADA ON PRINCIPLES APPLICABLE TO A NORTHERN NATURAL GAS PIPELINE

The Government of the United States of America and the Government of Canada,

Desiring to advance the national economic and energy interests and to maximize related industrial benefits of each country, through the construction and operation of a pipeline system to provide for the transportation of natural gas from Alaska and from Northern Canada,

Hereby agree to the following principles for the construction and operation of such a system:

1. Pipeline Route

The construction and operation of a pipeline for the transmission of Alaska natural gas will be along the route set forth in Annex I, such pipeline being hereinafter referred to as "the Pipeline". All necessary action will be taken to authorize the construction and operation of the Pipeline in accordance with the principles set out in this Agreement.

2. Expeditious Construction; Timetable

a) Both Governments will take measures to ensure the prompt issuance of all necessary permits, licenses, certificates, rights-of-way, leases and other authorizations

required for the expeditious construction and commencement of operation of the Pipeline, with a view to commencing construction according to the following timetable:

- Alaska - January 1, 1980
- Yukon - main line pipe laying January 1, 1981
- Other construction in Canada to provide for timely completion of the Pipeline to enable initial operation by January 1, 1983.

b) All charges for such permits, licenses, certificates, rights-of-way, leases and other authorizations will be just and reasonable and apply to the Pipeline in the same non-discriminatory manner as to any other similar pipeline.

c) Both Governments will take measures necessary to facilitate the expeditious and efficient construction of the Pipeline, consistent with the respective regulatory requirements of each country.

3. Capacity of Pipeline and Availability of Gas

a) The initial capacity of the Pipeline will be sufficient to meet, when required, the contractual requirements of United States shippers and of Canadian shippers. It is contemplated that this capacity will be 2.4 billion cubic feet per day (bcfd) for Alaska gas and 1.2 bcfd for northern Canadian gas. At such time as a lateral pipeline

transmitting Northern Canadian gas, hereinafter referred to as "the Dempster Line", is to be connected to the Pipeline or at any time additional pipeline capacity is needed to meet the contractual requirements of United States or Canadian shippers, the required authorizations will be provided, subject to regulatory requirements, to expand the capacity of the Pipeline in an efficient manner to meet those contractual requirements.

b) The shippers on the Pipeline will, upon demonstration that an amount of Canadian gas equal on a British Thermal Unit (BTU) replacement value basis will be made available for contemporaneous export to the United States, make available from Alaska gas transmitted through the Pipeline, gas to meet the needs of remote users in the Yukon and in the provinces through which the Pipeline passes. Such replacement gas will be treated as hydrocarbons in transit for purposes of the Agreement between the Government of Canada and the Government of the United States of America concerning Transit Pipelines, hereinafter referred to as "the Transit Pipeline Treaty". The shippers on the Pipeline will not incur any cost for provision of such Alaska gas except those capital costs arising from the following provisions:

i) the owner of the Pipeline in the Yukon will make arrangements to provide gas to the communities of Beaver Creek, Burwash Landing, Destruction Bay, Haines Junction, Whitehorse, Teslin, Upper Liard and Watson Lake at a total cost to the owner of the Pipeline not to exceed Canadian $2.5 million;

ii) the owner of the Pipeline in the Yukon will make arrangements to provide gas to such other remote communities in the Yukon as may request such gas within a period of two years following commencement of operation of the Pipeline at a cost to the owner not to exceed the product of Canadian $2500 and the number of customers in the communities, to a maximum total cost of Canadian $2.5 million.

4. Financing

a) It is understood that the construction of the Pipeline will be privately financed. Both Governments recognize that the companies owning the Pipeline in each country will have to demonstrate to the satisfaction of the United States or the Canadian Government, as applicable, that protections against risks of non-completion and interruption are on a basis acceptable to that Government before proof of financing is established and construction allowed to begin.

b) The two Governments recognize the importance of constructing the Pipeline in a timely way and under effective cost controls. Therefore, the return on the equity investment in the Pipeline will be based on a variable rate of return for each company owning a segment of the Pipeline, designed to provide incentives to avoid cost overruns and to minimize costs consistent with sound pipeline management. The base for the incentive program used for establishing the appropriate rate of return will be the capital costs used in measuring cost overruns as set forth in Annex III.

c) It is understood that debt instruments issued in connection with the financing of the Pipeline in Canada will not contain any provision, apart from normal trust indenture restrictions generally applicable in the pipeline industry, which would prohibit, limit or inhibit the financing of the construction of the Dempster Line; nor will the variable rate of return provisions referred to in subparagraph (b) be continued to the detriment of financing the Dempster Line.

5. Taxation and Provincial Undertakings

a) Both Governments reiterate their commitments as set forth in the Transit Pipeline Treaty with respect to

non-discriminatory taxation, and take note of the statements issued by Governments of the Provinces of British Columbia, Alberta and Saskatchewan, attached hereto as Annex V, in which those Governments undertake to ensure adherence to the provisions of the Transit Pipeline Treaty with respect to non-interference with throughput and to non-discriminatory treatment with respect to taxes, fees or other monetary charges on either the Pipeline or throughput.

b) With respect to the Yukon Property Tax imposed on or for the use of the Pipeline the following principles apply:

i) The maximum level of the property tax, and other direct taxes having an incidence exclusively, or virtually exclusively, on the Pipeline, including taxes on gas used as compressor fuel, imposed by the Government of the Yukon Territory or any public authority therein on or for the use of the Pipeline, herein referred to as "the Yukon Property Tax", will not exceed $30 million Canadian per year adjusted annually from 1983 by the Canadian Gross National Product price deflator as determined by Statistics Canada, hereinafter referred to as the GNP price deflator.

ii) For the period beginning January 1, 1980, and ending on December 31 of the year in which leave to open the Pipeline is granted by the appropriate regulatory authority, the Yukon Property Tax will not exceed the following:

1980--$5 million Canadian

1981--$10 million Canadian

1982--$20 million Canadian

Any subsequent year to which this provision applies--$25 million Canadian.

iii) The Yukon Property Tax formula described in subparagraph (b)(i) will apply from January 1 after the year in which leave to open the Pipeline is granted by the appropriate regulatory authority until the date that is the earlier of the following, hereinafter called the tax termination date:

A) December 31, 2008, or

B) December 31 of the year in which leave to open the Dempster Line is granted by the appropriate regulatory authority.

iv) Subject to subparagraph (b) (iii), if for the year ending on December 31, 1987, the percentage increase of the aggregate per capita revenue derived from all

property tax levied by any public authority in the Yukon Territory (excluding the Yukon Property Tax) and grants to municipalities and Local Improvement Districts from the Government of the Yukon Territory as compared to aggregate per capita revenue derived from such sources for 1983 is greater than the percentage increase for 1987 of the Yukon Property Tax as compared to the Yukon Property Tax for 1983, the maximum level of the Yukon Property Tax for 1987 may be increased to equal the amount it would have reached had it increased over the period at the same rate as the aggregate per capita revenue.

v) If for any year in the period commencing January 1, 1988, and ending on the tax termination date, the annual percentage increase of the aggregate per capita revenue derived from all property tax levied by any public authority in the Yukon Territory (excluding the Yukon Property Tax) and grants to municipalities and Local Improvement Districts from the Government of the Yukon Territory as compared to the aggregate per capita revenue derived from such sources for the immediately preceding year exceeds the percentage increase for that year of the Yukon Property

Tax as compared to the Yukon Property Tax for the immediately preceding year, the maximum level of the Yukon Property Tax for that year may be adjusted by the percentage increase of the aggregate per capita revenue in place of the percentage increase that otherwise might apply.

vi) The provisions of subparagraph (b)(i) will apply to the value of the Pipeline for the capacities contemplated in this Agreement. The Yukon Property Tax will increase for the additional facilities beyond the aforesaid contemplated capacity in direct proportion to the increase in the gross asset value of the Pipeline.

vii) In the event that between the date of this Agreement and January 1, 1983, the rate of the Alaska property tax on pipelines, taking into account the mill rate and the method of valuation, increases by a percentage greater than the cumulative percentage increase in the Canadian GNP deflator over the same period, there may be an adjustment on January 1, 1983, to the amount of $30 million Canadian described in subparagraph (b) (i) of the Yukon Property Tax to reflect this difference. In defining the Alaska

property tax for purposes of this Agreement, the definition of the Yukon Property Tax will apply mutatis mutandis.

viii) In the event that, for any year during the period described in subparagraph (iii), the annual rate of the Alaska property tax on or for the use of the Pipeline in Alaska increases by a percentage over that imposed for the immediate preceding year that is greater than the increase in percentage of the Yukon Property Tax for the year, as adjusted, from that applied to the immediately preceding year, the Yukon Property Tax may be increased to reflect the percentage increase of the Alaska property tax.

ix) It is understood that indirect socioeconomic costs in the Yukon Territory will not be reflected in the cost-of-service to the United States shippers other than through the Yukon Property Tax. It is further understood that no public authority will require creation of a special fund or funds in connection with construction of the Pipeline in the Yukon, financed in a manner which is reflected in the cost of service to U.S. shippers, other than through the Yukon Property Tax. However, should public authorities

in the State of Alaska require creation of a special fund or funds, financed by contributions not fully reimbursable, in connection with construction of the Pipeline in Alaska, the Governments of Canada or the Yukon Territory will have the right to take similar action.

c) The Government of Canada will use its best endeavors to ensure that the level of any property tax imposed by the Government of the Northwest Territories on or for the use of that part of the Dempster Line that is within the Northwest Territories is reasonably comparable to the level of the property tax imposed by the Government of the Yukon Territory on or for the use of that part of the Dempster Line that is in the Yukon.

6. Tariffs and Cost Allocation

It is agreed that the following principles will apply for purposes of cost allocation used in determining the cost of service applicable to each shipper on the Pipeline in Canada:

a) The Pipeline in Canada and the Dempster Line will be divided into zones as set forth in Annex II. Except for fuel and except for Zone 11 (the Dawson-Whitehorse portion of the Dempster Line), the cost of service to each

shipper in each zone will be determined on the basis of volumes as set forth in transportation contracts. The volumes used to assign these costs will reflect the original BTU content of Alaskan gas for U.S. shippers and Northern Canadian gas for Canadian shippers, and will make allowance for the change in heat content as the result of commingling. Each shipper will provide volumes for line losses and line pack in proportion to the contracted volumes transported in the zone. Each shipper will provide fuel requirements in relation to the volume of his gas being carried and to the content of the gas as it affects fuel consumption.

b) It is understood that, to avoid increased construction and operating costs for the transportation of Alaskan gas, the Pipeline will follow a southern route through the Yukon along the Alaska Highway rather than a northern route through Dawson City and along the Klondike Highway. In order to provide alternative benefits for the transportation of Canadian gas to replace those benefits that would have been provided by the northern route through Dawson City, U.S. shippers will participate in the cost of service in Zone 11. It is agreed that if cost overruns on construction of the Pipeline in Canada do not exceed filed costs set forth in Part D of Annex III by more than 35

percent, U.S. shippers will pay the full cost of service in Zone 11. U.S. shipper participation will decline if overruns on the Pipeline in Canada exceed 35 percent; however, at the minimum the U.S. shippers' share will be the greater of either two-thirds of the cost of service or the proportion of contracted Alaska gas in relation to all contracted gas carried in the Pipeline. The proportion of the cost of service borne by U.S. shippers in Zone 11 will be reduced should overruns on the cost of construction in that Zone exceed 35 percent after allowance for the benefits to U.S. shippers derived from Pipeline construction cost savings in other Zones. Notwithstanding the foregoing, at the minimum, the U.S. shippers' share will be the greater of either two-thirds of the cost of service or the proportion of contracted Alaska gas in relation to all contracted gas carried in the Pipeline. Details of this allocation of cost-of-service are set out in Annex III.

c) Notwithstanding the principles in subparagraphs (a) and (b), in the event that the total volume of gas offered for shipment exceeds the efficient capacity of the Pipeline, the method of cost allocation for the cost of service for shipments of Alaskan gas (minimum entitlement 2.4 bcfd) or Northern Canadian gas (minimum entitlement 1.2 bcfd) in

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excess of the efficient capacity of the Pipeline will be subject to review and subsequent agreement by both Governments; provided however that shippers of either country may transport additional volumes without such review and agreement, but subject to appropriate regulatory approval, if such transportation does not lead to a higher cost of service or share of Pipeline fuel requirements attributable to shippers of the other country.

d) It is agreed that Zone 11 costs of service allocated to U.S. shippers will not include costs additional to those attributable to a pipe size of 42 inches. It is understood that in Zones 10 and 11 the Dempster Line will be of the same gauge and diameter and similar in other respects, subject to differences in terrain. Zone 11 costs will include only facilities installed at the date of issuance of the leave to open order, or that are added within three years thereafter.

7. Supply of Goods and Services

a) Having regard to the objectives of this Agreement, each Government will endeavor to ensure that the supply of goods and services to the Pipeline project will be on generally competitive terms. Elements to be taken into account in weighing competitiveness will include price, reliability, servicing capacity and delivery schedules.

b) It is understood that through the coordination procedures in Paragraph 8 below, either Government may institute consultations with the other in particular cases where it may appear that the objectives of subparagraph (a) are not being met. Remedies to be considered would include the renegotiation of contracts or the reopening of bids.

8. Coordination and Consultation

Each Government will designate a senior official for the purpose of carrying on periodic consultations on the implementation of these principles relating to the construction and operation of the Pipeline. The designated senior officials may, in turn, designate additional representatives to carry out such consultations, which representatives, individually or as a group, may make recommendations with respect to particular disputes or other matters, and may take such other action as may be mutually agreed, for the purpose of facilitating the construction and operation of the Pipeline.

9. Regulatory Authorities: Consultation

The respective regulatory authorities of the two Governments will consult from time to time on relevant

matters arising under this Agreement, particularly on the matters referred to in paragraphs 4, 5 and 6, relating to tariffs for the transportation of gas through the Pipeline.

10. Technical Study Group on Pipe

a) The Governments will establish a technical study group for the purpose of testing and evaluating 54-inch 1120 pounds per square inch (psi), 48-inch 1260 psi, and 48-inch 1680 psi pipe or any other combination of pressure and diameter which would achieve safety, reliability and economic efficiency for operation of the Pipeline. It is understood that the decision relating to pipeline specifications remains the responsibility of the appropriate regulatory authorities.

b) It is agreed that the efficient pipe for the volumes contemplated (including reasonable provision for expansion), subject to appropriate regulatory authorization, will be installed from the point of interconnection of the Pipeline with the Dempster Line near Whitehorse to the point near Caroline, Alberta, where the Pipeline bifurcates into a western and an eastern leg.

11. Direct Charges by Public Authorities

a) Consultation will take place at the request of either Government to consider direct charges by public

authorities imposed on the Pipeline where there is an element of doubt as to whether such charges should be included in the cost of service.

b) It is understood that the direct charges imposed by public authorities requiring approval by the appropriate regulatory authority for inclusion in the cost of service will be subject to all of the tests required by the appropriate legislation and will include only

i) those charges that are considered by the regulatory authority to be just and reasonable on the basis of accepted regulatory practice, and

ii) those charges of a nature that would normally be paid by a natural gas pipeline in Canada. Examples of such charges are listed in Annex IV.

12. Other Costs

It is understood that there will be no charges on the Pipeline having an effect on the cost of service other than those:

i) imposed by a public authority as contemplated in this Agreement or in accordance with the Transit Pipeline Treaty, or

ii) caused by Acts of God, other unforeseen circumstances, or

iii) normally paid by natural gas pipelines in Canada in accordance with accepted regulatory practice.

13. Compliance with Terms and Conditions

The principles applicable directly to the construction, operation and expansion of the Pipeline will be implemented through the imposition by the two Governments of appropriate terms and conditions in the granting of required authorizations. In the event of subsequent non-fulfillment of such a term or condition by an owner of the Pipeline, or by any other private person, the two Governments will not have responsibility therefor, but will take such appropriate action as is required to cause the owner to remedy or mitigate the consequences of such non-fulfillment.

14. Legislation

The two Governments recognize that legislation will be required to implement the provisions of this Agreement. In this regard, they will expeditiously seek all required legislative authority so as to facilitate the timely and efficient construction of the Pipeline and to remove any delays or impediments thereto.

15. Entry Into Force

This Agreement will become effective upon signature and shall remain in force for a period of 35 years and thereafter until terminated upon 12 months' notice given in writing by one Government to the other, provided that those provisions of the Agreement requiring legislative action will become effective upon exchange of notification that such legislative action has been completed.

IN WITNESS WHEREOF the undersigned representatives, duly authorized by their respective Governments, have signed this Agreement.

DONE in duplicate at Ottawa in the English and French languages, both versions being equally authentic, this _____ day of _____, 1977.

For the Government
of the United States:

_____

For the Government
of Canada:

_____

The Pipeline Route

In Alaska:

The Pipeline constructed in Alaska by Alcan will commence at the discharge side of the Prudhoe Bay Field gas plant facilities. It will parallel the Alyeska oil pipeline southward on the North Slope of Alaska, cross the Brooks Range through the Atigun Pass, and continue on to Delta Junction.

At Delta Junction, the Pipeline will diverge from the Alyeska oil pipeline and follow the Alaska Highway and Haines oil products pipeline passing near the towns of Tanacross, Tok, and Northway Junction in Alaska. The Alcan facilities will connect with the proposed new facilities of Foothills Pipe Lines (South Yukon) Ltd. at the Alaska-Yukon border.

In Canada:

In Canada the Pipeline will commence at the Boundary of the State of Alaska, and the Yukon Territory in the vicinity of the towns of Border City, Alaska and Boundary, Yukon. The following describes the general routing of the Pipeline in Canada:

From the Alaska-Yukon border, the Foothills Pipe Lines (South Yukon) Ltd. portion of the Pipeline will proceed in a southerly direction generally along the Alaska Highway to

a point near Whitehorse, Yukon, and thence to a point on the Yukon-British Columbia border near Watson Lake, Yukon, where it will join with the Foothills Pipe Lines (North B.C.) Ltd. portion of the Pipeline.

The Foothills Pipe Lines (North B.C.) Ltd. portion of the Pipeline will extend from Watson Lake in a southeasterly direction across the north eastern part of the Province of British Columbia to a point on the boundary between the Provinces of British Columbia and Alberta near Boundary Lake where it will interconnect with the Foothills Pipe Lines (Alta.) Ltd. portion of the Pipeline.

The Foothills Pipe Lines (Alta.) Ltd. portion of the Pipeline will extend from a point on the British Columbia-Alberta boundary near Boundary Lake in a southeasterly direction to Gold Creek and thence parallel to the existing right-of-way of the Alberta Gas Trunk Line Company Limited to James River near Caroline.

From James River a "western leg" will proceed in a southerly direction, generally following the existing right-of-way of the Alberta Gas Trunk Line Company Limited to a point on the Alberta-British Columbia boundary near Coleman in the Crow's Nest Pass area. At or near Coleman the Foothills Pipe Lines (Alta.) Ltd. portion of the Pipeline will interconnect with the Foothills Pipe Lines (South B.C.) Ltd. portion of the Pipeline.

ANNEX I

The Foothills Pipe Lines (South B.C.) Ltd. portion of the Pipeline will extend from a point on the Alberta-British Columbia boundary near Coleman in a southwesterly direction across British Columbia generally parallel to the existing pipeline facilities of Alberta Natural Gas Company Ltd. to a point on the International Boundary Line between Canada and the United States of America at or near Kingsgate in the Province of British Columbia where it will interconnect with the facilities of Pacific Gas Transmission Company.

Also, from James River, an "eastern leg" will proceed in a southeasterly direction to a point on the Alberta-Saskatchewan boundary near Empress Alberta where it will interconnect with the Foothills Pipe Lines (Sask.) Ltd. portion of the Pipeline. The Foothills Pipe Lines (Sask.) Ltd. portion of the Pipeline will extend in a southeasterly direction across Saskatchewan to a point on the International Boundary Line between Canada and the United States of America at or near Monchy, Saskatchewan where it will interconnect with the facilities of Northern Border Pipeline Company.

ANNEX II

Zones for the Pipeline and the Dempster Line in Canada

Zone 1 Foothills Pipe Lines (South Yukon) Ltd.
Alaska Boundary to point of interconnection with the Dempster Line at or near Whitehorse.

Zone 2 Foothills Pipe Lines (South Yukon) Ltd.
Whitehorse to Watson Lake.

Zone 3 Foothills Pipe Lines (North B.C.) Ltd.
Watson Lake to point of interconnection with Westcoast's main pipeline near Fort Nelson.

Zone 4 Foothills Pipe Lines (North B.C.) Ltd.
Point of interconnection with Westcoast's main pipeline near Fort Nelson to the Alberta-B.C. border.

Zone 5 Foothills Pipe Lines (Alta.) Ltd.
Alberta-B.C. border to point of bifurcation near Caroline, Alberta.

Zone 6 Foothills Pipe Lines (Alta.) Ltd.
Caroline, Alta. to Alberta-Saskatchewan border near Empress.

ANNEX II

Zone 7 Foothills Pipe Lines (Alta.) Ltd.
Caroline to Alberta-B.C. border near Coleman.

Zone 8 Foothills Pipe Lines (South B.C.) Ltd.
Alberta-B.C. border near Coleman to B.C.-U.S. border near Kingsgate.

Zone 9 Foothills Pipe Lines (Sask.) Ltd.
Alberta-Saskatchewan border near Empress to Saskatchewan-U.S. border near Monchy.

Zone 10 Foothills Pipe Lines (North Yukon) Ltd.
Mackenzie Delta Gas fields in the Mackenzie Delta, N.W.T., to a point near the junction of the Klondike and Dempster highways just west of Dawson, Yukon Territory.

Zone 11 Foothills Pipe Lines (South Yukon) Ltd.
A point near the junction of the Klondike and Dempster highways near Dawson to the connecting point with the Pipeline at or near Whitehorse.

ANNEX III

Cost Allocation in Zone 11

The cost of service in Zone 11 shall be allocated to United States shippers on the following basis:

i) There will be calculated, in accordance with (iii) below, a percentage for Zones 1 - 9 in total by dividing the actual capital costs by the filed capital costs and multiplying by 100. If actual capital costs are equal to or less than 135% of filed capital costs, then United States shippers will pay 100% of the cost of service in Zone 11. If actual capital costs in Zones 1 - 9 are between 135% and 145% of filed capital costs, then the percentage paid by United States shippers will be adjusted between 100% and 66 2/3% on a straight-line basis, except that in no case will the portion of cost of service paid by United States shippers be less than the proportion of the contracted volumes of Alaskan gas at the Alaska-Yukon border to the same volume of Alaskan gas plus the contracted volume of Northern Canadian gas. If the actual capital

costs are equal to or exceed 145% of filed capital costs, the portion of the cost of service paid by United States shippers will be not less than 66 2/3% or the proportion as calculated above, whichever is the greater.

ii) There will be calculated a percentage for the cost-overrun on the Dawson to Whitehorse lateral (Zone 11). After determining the dollar value of the overrun, there will be deducted from it:

(a) the dollar amount by which actual capital costs in zones 1,7,8 and 9 (carrying U.S. gas only) are less than 135% of filed capital costs referred to in (iii) below;

(b) in each of Zones 2, 3, 4, 5 and 6 the dollar amount by which actual capital costs are less than 135% of filed capital costs referred to in (iii) below, multiplied by the proportion that the U.S. contracted volume bears to the total contracted volume in that zone.

ANNEX III

If the actual capital costs in Zone 11, after making this adjustment, are equal to or less than 135% of filed capital costs, then no adjustment is required to the percentage of the cost of service paid by United States shippers as calculated in (i) above. If, however, after making this adjustment, the actual capital cost in Zone 11 is greater than 135% of the filed capital cost, then the proportion of the cost of service paid by United States shippers will be a fraction (not exceeding 1) of the percentage of the cost of service calculated in (i) above, where the numerator of the fraction is 135% of the filed capital cost and the denominator of the fraction is actual capital cost less the adjustments from (a) and (b) above. Notwithstanding the adjustments outlined above, in no case will the percentage of the actual cost of service borne by United States

ANNEX III

shippers be less than the greater of 66 2/3% or the proportion of the contracted volumes of Alaskan gas at the Alaska-Yukon border to the same volume of Alaskan gas plus the contracted volume of Northern Canadian gas.

iii) The "filed capital cost" to be applied to determine cost overruns for the purpose of cost allocation in (i) and (ii) above will be:

The Pipeline in Canada (Zones 1 - 9)[1/]	"Filed Capital Cost" Estimates for the Pipeline in Canada (millions of Canadian dollars)
48" - 1260 lb. pressure pipeline -	3,873
or 48" - 1680 lb. pressure pipeline -	4,418
or 54" - 1120 lb. pressure pipeline -	4,234

1/ These filed capital costs include and are based upon (a) a 1260 psi, 48-inch line from the Alaska-Yukon border to the point of possible interconnection near Whitehorse; (b) a 1260 psi, 48-inch; or 1680 psi, 48-inch; or 1120 psi 54-inch line from the point of possible interconnection near Whitehorse to Caroline Junction; (c) a 42-inch line from Caroline Junction to the Canada-U.S. border near Monchy, Saskatchewan; and (d) a 36-inch line from Caroline Junction to the Canada-U.S. border near Kingsgate, British Columbia. These costs are escalated for a date of commencement of operations of January 1, 1983.

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ANNEX III

	"Filed Capital Cost" Estimates for the Pipeline in Canada (millions of Canadian dollars)
Zone 11 of the Dempster Line[2/]	
30" - Section of Dempster line from Whitehorse to Dawson	549
or 36" - Section of Dempster line from Whitehorse to Dawson	585
or 42" - Section of Dempster line from Whitehorse to Dawson	705

Details for Zones 1 - 9 are shown in the following table:

2/ The costs are escalated for a date of commencement of operations of January 1, 1985.

ANNEX III

Filed Capital Costs for the Pipeline in Canada

Zone	48" 1260 psi $ million (Canadian)	48" 1680 psi $ million (Canadian)	54" 1120 psi $ million (Canadian)
1	707	707	707
2	721	864	805
3	738	850	803
4	380	488	456
5	677	859	813
6	236	236	236
7	126	126	126
8	83	83	83
* 9	205	205	205
Total Zones 1-9	3,873	4,418	4,234

*The last compression station in Zone 9 includes facilities to provide compression up to 1440 psi.

ANNEX III

It is recognized that the above are estimates of capital costs. They do not include working capital, property taxes or the provision for road maintenance in the Yukon Territory (not to exceed $30 million Canadian).

If at the time construction is authorized, both Governments have agreed to a starting date for the operation of the Pipeline different from January 1, 1983, then the capital cost estimates shall be adjusted for the difference in time using the GNP price deflator from January 1, 1983. Similarly at the time construction is authorized for the Dempster Line, if the starting date for the operation agreed to by the Canadian Government is different from January 1, 1985, then the capital cost estimate shall be adjusted for the difference in timing using the GNP price deflator from January 1, 1985. The diameter of the pipeline in Zone 11, for purposes of cost allocation, may be 30", 36" or 42", so long as the same diameter pipe is used from the Delta to Dawson (Zone 10).

The actual capital cost, for purposes of this Annex will be the booked cost as of the date "leave to open" is granted plus amounts still outstanding to be accrued on a basis to be approved by the National Energy Board. Actual

capital costs will exclude working capital, property taxes, and direct charges for road maintenance of up to $30 millio Canadian in the Yukon Territory as specifically provided herein.

For purposes of this Annex above, actual capital costs will exclude the effect of increases in cost or delays caused by actions attributable to the U.S. shippers, related U.S. pipeline companies, Alaskan producers, the Prudhoe Bay deliverability or gas conditioning plant construction and the United States or State Governments. If the appropriate regulatory bodies of the two countries are unable to agree upon the amount of such costs to be excluded, the determination shall be made in accordance with the procedures set forth in Article IX of the Transit Pipeline Treaty.

The filed capital costs of facilities in Zones 7 and 8 will be included in calculations pursuant to this Annex only to the extent that such Facilities are constructed to meet the requirements of U.S. shippers.

ANNEX IV

Direct Charges by Public Authorities

*1. Crossing damages (roads, railroad crossings, etc.; this item is usually covered in the crossing permit).

*2. Road damages caused by exceeding design load limits.

*3. Required bridge reinforcements caused by exceeding design load limits.

4. Airfield and airstrip repairs.

5. Drainage maintenance.

6. Erosion control.

7. Borrow pit reclamation.

8. Powerline damage.

9. Legal liabilityfor fire damage.

10. Utility system repair (water, sewer, etc.)

11. Camp waste disposal.

12. Camp site reclamation.

13. Other items specified in enviromental stipulations.

14. Costs of surveillance and related studies as required by regulatory bodies or applicable laws.

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* In the case of these items and all other road related charges by public authorities, total charges in the Yukon Territory shall not exceed Canadian $30 million.

ANNEX V

British Columbia Statement

The Government of the Province of British Columbia agrees in principle to the provisions contained in the Canada-United States Pipeline Treaty of January 28, 1977, and furthermore British Columbia is prepared to cooperate with the Federal Government to ensure that the provisions of the Canada-United States Treaty, with respect to non-interference of throughput and non-discriminatory treatment with respect to taxes, fees or other monetary charges on either the pipeline or throughput, are adhered to. Specific details of this undertaking will be the subject of a Federal-Provincial Agreement to be negotiated at as early a date as possible. Such Agreements should guarantee that British Columbia's position expressed in its telegram of August 31 is protected.

ANNEX V

Alberta Statement

The Government of the Province of Alberta agrees in principle to the provisions contained in the Canada-United States Pipeline Treaty of January 28, 1977, and furthermore, Alberta is prepared to cooperate with the Federal Government to ensure that the provisions of the Canada-United States Treaty, with respect to non-interference of throughput and non-discriminatory treatment with respect to taxes, fees, or other monetary charges on either the Pipeline or thoughput, are adhered to. Specific details of this undertaking will be the subject of a Federal-Provincial Agreement to be negotiated when the Canada-United States protocol or understanding has been finalized.

ANNEX V

Saskatchewan Statement

The Government of Saskatchewan is willing to cooperate with the Government of Canada to facilitate construction of the Alcan Pipeline through southwestern Saskatchewan and, to that end, the Government of Saskatchewan expresses its concurrence with the principles elaborated in the Transit Pipeline Agreement signed between Canada and the United States on January 28, 1977. In so doing, it intends not to take any discriminatory action towards such pipelines in respect of throughput, reporting requirements, and environmental protection, pipeline safety, taxes, fees or monetary charges that it would not take against any similar pipeline passing through its jurisdiction. Further details relating to Canada-Saskatchewan relations regarding the Alcan Pipeline will be the subject of Federal-Provincial agreements to be negotiated after a Canada-United States understanding has been finalized.

FPC LETTER TO THE PRESIDENT

FEDERAL POWER COMMISSION,
Washington, D.C., May 2, 1977.

The President,
The White House,
Washington, D.C.

DEAR MR. PRESIDENT: Enclosed is the recommendation of the Federal Power Commission pursuant to Section 5 of the Alaska Natural Gas Transportation Act of 1976. We have come to the following basic conclusions:

1. It is in the best interests of the citizens of the United States that a system be built in the near future to transport natural gas from the North Slope of Alaska to the contiguous United States.

2. Three competing groups have applied for a certificate of public convenience and necessity to construct and operate such a system. They are the Alaskan Arctic Gas Pipeline Company, El Paso Alaska Company, and Alcan Pipeline Company. The first and third applicants propose overland systems, while the second is a pipeline and tanker route.

3. We recommend that an overland system through Canada be selected, if such a route is made available by the Government of Canada on acceptable terms and conditions. If appropriate, discussion could be undertaken after the completion of proceedings before their National Energy Board. Until the Canadian Government has made a decision whether a land route is available, it would be premature for this Commission to recommend a route, unconditionally.

4. In making a decision between the two overland routes, it will become obvious to the reader of this recommendation that additional information is needed as well as an understanding of the intentions of the Government of Canada. Based on today's circumstances, reasonable men can disagree on the right course of action. Under present circumstances and expectations, Chairman Dunham recommends Alcan, Commissioner Watt Alcan, Commissioner Holloman Arctic, Commissioner Smith Arctic.

Commissioners Holloman and Smith recommend that an overland system through Canada be selected. Section 5(d) of the Alaska Natural Gas Transportation Act precludes the Commission from basing its recommendation upon the fact that Canadian authorities have not at this time rendered a decision authorizing a pipeline system to transport Alaskan natural gas through Canada. They, therefore, recommend approval of the Arctic proposal, conditioned upon timely affirmative decisions by the Government of Canada to make the route available and, after development, to allow simultaneous transportation of Canadian natural gas reserves from the Mackenzie Delta. In the absence of a Canadian determination that development and transportation of Mackenzie reserves should be permitted, the Alcan project should be approved, subject to the Government of Canada's making the route available on acceptable terms and conditions. In the absence of

timely and acceptable agreements with the Canadian Government to make a route available for an overland system, a United States pipeline and tanker system can be built and can deliver gas to the contiguous United States at an economical price, and the El Paso project should be selected.

5. In the absence of agreement with the Canadian Government, a United States pipeline can be built in Alaska and a tanker system can deliver the gas to the contiguous United States at an economical price.

6. Any of the proposed systems can be financed without extraordinary risk-bearing by consumers or taxpayers, if investors are allowed the opportunity to earn an adequate return commensurate with the unusual size and degree of risk in this project. Alternatively, consumers and taxpayers could assume the risks of noncompletion of the system or interruption of service in return for a lower delivered cost of gas.

In reaching these conclusions, we have exhaustively considered the massive record compiled here and material outside the record, as directed by the Alaska Natural Gas Transportation Act. Our full recommendation covers hundreds of points. In the last analysis, we find the following items to be the most important and we recommend that you and the Congress direct your attention primarily to the confirmation or modification of these conclusions.

A. At least 20 trillion cubic feet of producible natural gas exist at Prudhoe Bay in Alaska, enough to provide about five percent of our natural gas consumption for the next 25 years. These volumes are adequate to support an economical transportation system.

B. This gas must be produced and delivered to markets both for its own value as energy and because its extraction is necessary to avoid a long-term reduction in oil production from Prudhoe Bay.

C. This gas can be delivered to the contiguous United States and successfully marketed by any one of the three competing applicant groups: Arctic, Alcan and El Paso.

D. Each system will have some adverse environmental impacts. We believe all of these impacts to be acceptable, given proper precautionary measures. Arctic would involve crossing the Arctic National Wildlife Range, and other lands now little used by man. The other projects would generally follow existing utility corridors—a distinct environmental advantage.

E. An overland route can deliver each unit of gas more cheaply than a land and water route using liquefied natural gas technology. If Canadian gas is also developed, the sharing of facilities will lower Arctic's cost of service to Americans slightly below that of Alcan.

F. Calculations of Net National Economic Benefit produce the same relative results for the three systems. El Paso has an advantage in this analysis, because all of its tax payment go to the United States, and virtually all of its wage and material payments go to Americans.

G. Using our best estimate of the likely ultimate construction cost (not the applicants' figures), El Paso's system would require the least capital, with Alcan and Arctic costing somewhat more.

H. Arctic has the greatest risk of major cost overruns beyond our estimate, primarily because of its difficult winter construction schedule. El Paso is least vulnerable to such overruns.

I. Each of the systems can be constructed basically in the manner proposed, with the qualifications and conditions contained in our report.

J. Each of the systems should operate reliably once service begins. El Paso has a slightly higher likelihood of service interruption due to its complex nature and greater seismic risk.

K. El Paso would be the easiest system to finance because of its slightly lower initial cost and because of Federal guarantees of bonds for its tankers under Title XI of the Merchant Marine Act.

L. All of the above cost conclusions assume the simultaneous development and transportation of Canadian reserves in the Mackenzie Delta. Arctic's proposed route has the advantage of passing directly through this area. Should the Canadian Government decide not to proceed with the development of those reserves at this time, the overall balance of cost advantages shifts to Alcan.

M. Should additional gas be found in the vicinity of the transportation system, expansion capability could become important. Arctic can expand to deliver up to 3.5 billion cubic feet per day (Bcfd) from Prudhoe Bay, at a small cost. Any such expansion would lower the unit cost of gas delivered. Alcan is designed to start at 2.4 Bcfd, but can expand to 3.2 Bcfd at a small additional cost. El Paso can also expand its pipeline deliveries to 3.2 Bcfd at low cost, but its costs for ships, terminal facilities, and operating expenses will rise more rapidly proportionate to increased deliveries.

N. The North Slope gas should be distributed as widely as possible throughout the United States. Wide distribution will encourage broad-based financing for the chosen project, an important consideration in an undertaking of this size. Furthermore, because there is always some threat of service interruption, no area of the country should be allowed to become too heavily dependent on the Alaskan gas.

O. A choice must be made as to who shall bear the ultimate risks of project failure, service interruption, or massive cost overruns. If investors are to bear them, they will expect a commensurate return. If they do not receive such a return, the project cannot be privately financed. If consumers or taxpayers bear the risks, their charges, in the event of success, should be lowered in return for the service they have rendered. Our recommendation outlines the dimensions of each plan and contains specific suggestions for implementing either approach.

The 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.

FPC NEWS RELEASE NO. 23113

FEDERAL POWER COMMISSION,
Washington, D.C., May 2, 1977.

FPC RECOMMENDS OVERLAND ROUTE FOR TRANSPORTATION OF ALASKAN NATURAL GAS

The Federal Power Commission today recommended an overland pipeline route to bring Alaskan natural gas to contiguous U.S. markets, but split on which of the two proposed overland routes to specifically recommend.

Chairman Richard L. Dunham and Commissioner James G. Watt recommend the Alcan proposal, and Commissioners Don S. Smith and John H. Holloman III recommended the Arctic Gas proposal. All three proposals are described in the accompanying fact sheet (News Release No. 23112).

The Commission found that all three proposals are technically and economically feasible and that a system should be built to bring the natural gas to the lower 48 market. It said the benefits of Alaskan gas would help meet the energy needs of our society and fully justify the costs and risks involved.

However, it found an overland route preferable because of its greater reliability, easier expansibility, greater efficiency in terms of gas consumed in route, and lesser environmental impact.

The Canadian portions of the proposed overland routes are still subject to approval of the Canadian Government. The Commission said that in deciding between the two overland routes, additional information is needed as well as an understanding of the intentions of the Government of Canada. "Based on today's circumstances, reasonable men can disagree on the right course of action," the Commission said.

Commissioners Holloman and Smith pointed out that the Alaska Natural Gas Transportation Act precludes the Commission from basing its recommendation on the fact that Canadian authorities have not at this time rendered a decision authorizing a pipeline system through Canada. They therefore recommend approval of the Arctic Gas proposal, conditioned on favorable decisions by the Canadian government to make the route available and permit Canadian natural gas reserves from the Mackenzie Delta to be transported by the same system. Absent a favorable decision concerning the Mackenzie Delta reserves, they would recommend approval of the Alcan project. If Canada disallows an overland pipeline route, they would approve the El Paso project.

Today's approximately 500-page recommendation follows over three years of hearings and consideration by the FPC, and compilation of a 45,000-page record. FPC Administrative Law Judge Nahum Litt last February 1 recommended approval of the Arctic Gas pro-

posal. The Commission heard oral argument in the proceeding the first week of April.

The Alaskan Natural Gas Transportation Act of 1976 required the FPC to make a recommendation to the President by May 1, which fell on a Sunday. The President is to make a recommendation to Congress by September 1, but may postpone his decision until up to December 1, at his discretion.

The Commission said in making today's recommendation it is acting in an advisory capacity to the President, setting forth the strengths and weaknesses of the various options.

The three competing applications are by Alaskan Arctic Gas Pipeline Company, known as the Arctic Gas Study Group, a consortium of U.S. and Canadian companies; by El Paso Alaska Company; and by Alcan Pipeline Company.

The Pruhoe Bay Field contains the largest unit of reserves yet discovered on the North American continent—virtually every estimate exceeds 20 trillion cubic feet of proven producible reserves, enough to provide about 5 percent of our gas consumption for the next 25 years. The gas can be produced for sale in four or five years.

The Commission found the system approved should be designed to carry initially 2 to 2.5 billion cubic feet daily, with expansibility in the 1 to 1.5 range. Under the three proposals, the earliest the gas could reach the lower 48 states is 1981 (under Alcan's proposal).

The cost of the three projects were estimated by the applicants in the $6.5 to $6.7 billion range, in 1975 dollars. By the time the project is built the impact of inflation undoubtedly would drive the cost in nominal dollars to $10 billion or more. There are risks of cost overruns and delays in completion, it said, but in each instance the risk is well within an acceptable range. There is virtually no chance that any system would become so costly as to be uneconomic, it stated.

The Commission recommended rolled-in pricing be used, meaning the price of the Alaskan gas would be averaged in with all other gas in the purchaser's system. This would assist in obtaining the critical financing, the FPC noted. Federal financial assistance was not recommended by the Commission. However, it said if this is to be avoided, innovative approaches will be needed to meet the greatest financing challenge ever considered by the FPC. A choice must be made, the FPC said, as to who shall bear the ultimate risk of project failure, severe interruption, or massive cost overruns—private investors or consumers. Should the former be chosen, the rate of return would have to be an adequate incentive to invest—in the 11 to 18 percent range. Should consumers and taxpayers bear the risk, their charges should be lower.

It is imperative that the price of Prudhoe Bay gas be established as soon as possible, the FPC declared, and proposed to establish in the near future a proceeding to determine that price. It will also examine pricing mechanisms other than setting a fixed price, it added, such as formula pricing. However, it said that since its authority to approve such a pricing procedure could be challenged, it urged the President to submit legislation to authorize it to determine field or wellhead rates for Prudhoe Bay gas on the basis of market factors and alternative fuel prices.

Adverse environmental impacts of all three projects can be substantially avoided or mitigated, the FPC found. All three applicants demonstrated their technical ability and determination to reduce to acceptable levels the environmental impacts.

Of the three proposed systems the Commission concluded that Alcan promises the least environmental impact, if proper mitigative actions are taken. However, it rejected Alcan's contention that alignment in an existing utility corridor is a compelling reason to choose one transportation system over another. While some construction and operation impacts would be smaller, the FPC said, the overall decrease is not substantial. Each system must be judged on its own total impact, the Commission stated.

Substantial evidence in the record supports the feasibility of winter construction, the FPC said, which Arctic Gas would use wholly and the other two would use in part. Machines can be prepared and men equipped to enable construction to proceed in all except the most severe conditions, it said. Winter construction poses greater economic risks than summer construction, the FPC stated, but it is clear that in Arctic regions winter construction is environmentally sounder.

The Commission said it intends to implement the requirements for a western leg to deliver gas directly to the U.S. west coast, but at this time does not believe it necessary to make a final decision as to what new facilities would be needed. That decision can be deferred until about two years before delivery is to begin, it said. However, the Commission found the Oxnard, Calif., site should be the first choice for a west coast ship terminal and regasification facilities should El Paso be granted a certificate.

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FPC NEWS RELEASE NO. 23112

[No. 23112 (accompanies FPC Release No. 23113)]

FEDERAL POWER COMMISSION,
Washington, D.C., May 2, 1977.

ALASKAN NATURAL GAS FACT SHEET

This Federal Power Commission proceeding involves three competing projects proposing significantly different approaches to delivering natural gas from the Prudhoe Bay Area of Alaska's North Slope to markets in the lower 48 states. The 200-square mile Prudhoe Bay Field is estimated to contain 22.5 trillion cubic feet in proven reserves of natural gas.

Under the Alaska Natural Gas Transportation Act of 1976 (Public Law No. 94–586), passed by Congress October 1, 1976, and signed into law by the President October 22, the FPC has made its recommendations to the President today on the selection of a transportation route for the gas.

The different proposals considered by the Commission are:

Alaskan Arctic Gas Pipeline Company (CP74–239, et al.).—This project involves the construction of about 3,600 miles of new pipeline and about 900 miles of looped (connected and parallel to existing lines) pipeline. The pipeline, ranging in diameter from 30 to 48 inches, would pick up United States reserves in Prudhoe Bay, Alaska, and Canadian reserves in the Mackenzie Delta, Northwest Territories, and proceed to Caroline Junction, Alberta, where the system would divide, with one leg extending into the Pacific Northwest down to California, and the other crossing the U.S. border into Montana and southeast into Illinois. Gas would move to eastern markets by displacement. This project includes transmission facilities proposed by several other Canadian and American companies—Canadian Arctic Gas Pipeline Limited, Alberta Natural Gas Company Limited, Pacific Gas Transmission Company, Pacific Gas and Electric Company, and Northern Border Pipeline Company.

The project facilities are designed to deliver at least 2.2 billion cubic feet of gas daily to U.S. markets and will cost an estimated $6.73 billion (U.S. share of total cost expressed in 1975 dollars).

El Paso Alaska Company (CP75–96).—This company would build an 809-mile 42-inch pipeline from Prudhoe Bay along the Alyeska oil pipeline corridor to a liquefaction facility at Point Gravina on the south coast of Alaska. The liquefied natural gas would be transported across water by a fleet of 8 cryogenic tankers 1,900 nautical miles to Point Conception, California, where it would be regasified. Gas would flow to midwest and east markets by displacement. The project is estimated to cost $6.57 billion (expressed in 1975 dollars) and would be capable of delivering an estimated 2.1 billion cubic feet of gas per day.

Alcan Pipeline Company (Alcan II proposal) and Northwest Pipeline Corporation, along with several Canadian companies (Foothills Pipe Lines Ltd., Westcoast Transmission Company Limited, Alberta Gas Trunk Line Limited), propose construction of about 3,900 miles of new pipeline and 900 miles of looped pipeline. A 48-inch pipeline would pick up Prudhoe Bay reserves and follow the Alyeska oil route as far as Delta Junction, Alaska, and from there would run parallel to the Alcan Highway partway to the James River Junction in Alberta. From James River, gas destined for eastern U.S. markets would be transported through a 42-inch pipeline to Monchy, Saskatchewan, and gas destined for the western United States would be transported through a 36-inch pipeline to Kingsgate, British Columbia. Alcan plans to use the same lower U.S. facilities as those proposed by Arctic Gas. The project would cost an estimated $6.76 billion (in 1975 dollars) and would deliver at least 2.2 billion cubic feet per day.

In its original application, *Alcan Pipeline Company*, Northwest Pipeline Corporation, and the Canadian companies involved proposed construction of about 3,000 miles of new pipeline and 1,600 miles of looped pipeline. The pipeline, ranging in diameter from 30 to 48 inches, would pick up Prudhoe Bay reserves and follow the Alyeska oil pipeline route as far as Delta Junction, Alaska, and from there would parallel the Alcan Highway to a connection with Canadian pipelines in British Columbia and Alberta, where the system would split the gas between western U.S. and midwest U.S. shippers. Gas would also flow to the east by displacement. This system would deliver approximately 2.0 billion cubic feet per day and would deliver gas both into the Pacific Northwest and across a route similar to the Artic Gas project extending from northeastern Montana into Illinois. The proposed project will cost an estimated $6.28 billion (as filed).

In connection with both the original and revised Alcan proposals, an associated, although independent project, Maple Leaf, is proposed to deliver Canadian reserves from the Mackenzie Delta to Southern Canadian markets.

CHRONOLOGY

March 21, 1974—Alaskan Arctic Gas Pipeline Company application filed.

September 24, 1974—El Paso Alaska Company application filed.

January 23, 1975—FPC order consolidating both applications (in Docket No. CP75-96, et al.).

April 7, 1975—Hearings began before FPC Administrative Law Judge Nahum Litt.

November 21, 1975—FPC staff Draft Environmental Impact Statement issued.

April 7, 1976—Final Environmental Impact Statement issued.

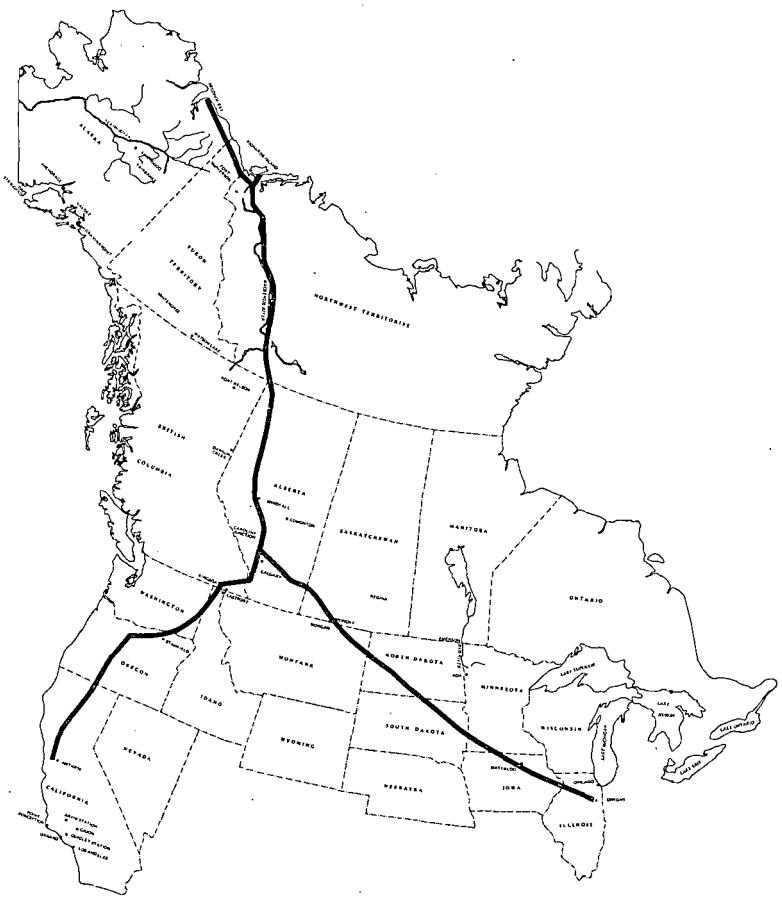
July 9, 1976—Alcan Pipeline Company and Northwest Corporation application filed.

September 1976—Supplemental Final Environmental Impact Statement issued.

November 12, 1976—Hearings concluded. (There were a total of 253 days of hearings resulting in 44,458 pages of transcript together with numerous exhibits.)

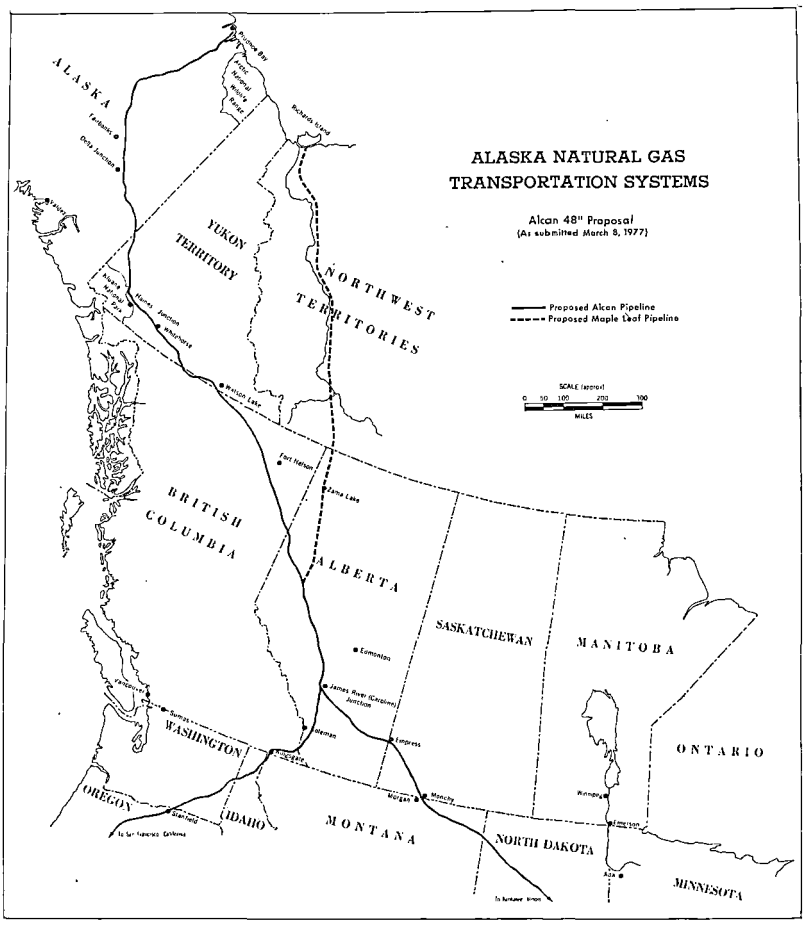
December 7, 1976—Final Position Brief of the Commission Staff issued.
December 14, 1976—FPC issued Order No. 558 prescribing procedures pursuant to the Alaska Natural Gas Transportation Act of 1976.
February 1, 1977—Initial decision issued by Judge Litt, recommending approval of Alaskan Arctic Gas Pipeline Company project.
March 1, 1977—Briefs on exceptions to the Judge's decision filed by FPC staff and parties in the proceeding.
March 8, 1977—Alcan Pipeline Company filed amended application.
March 22, 1977—Supplemental information filed by parties to the proceeding.
April 4–8, 1977—Oral argument held before Federal Power Commission.
April 8, 1977—FPC staff report on Alcan revised proposal and other supplemental information filed.
May 2, 1977—The Federal Power Commission made its recommendation to the President.
September 1, 1977—The President to make his recommendation to Congress. He may postpone his decision until up to December 1, at his discretion.
Sixty days after the President's recommendation, Congress may enact a joint resolution. The Alaskan Natural Gas Transportation Act of 1976 (in section 8) provides dates for further executive and legislative review, if necessary.

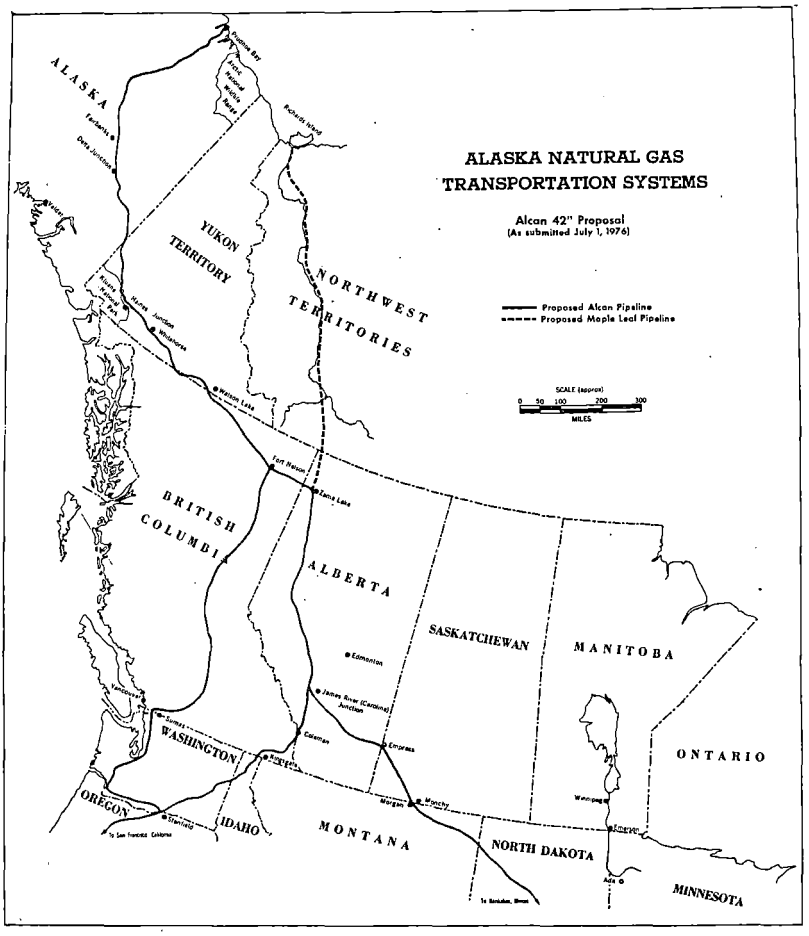
Maps of the proposed Alaskan natural gas transportation systems accompany this fact sheet.



ARCTIC GAS PROJECT

EL PASO ALASKA PROJECT


ALASKA NATURAL GAS
TRANSPORTATION SYSTEMS
Alcan 48" Proposal
(As submitted March 8, 1977)
Proposed Alcan Pipeline
Proposed Maple Leaf Pipeline
SCALE (approx)
0 50 100 200 300
MILES
ALASKA
YUKON TERRITORY
NORTHWEST TERRITORIES
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
MINNESOTA
Prudhoe Bay
Fairbanks
Delta Junction
Whitehorse
Watson Lake
Fort Nelson
Zama Lake
Edmonton
Vancouver
Sumas
Kingman
James River (Gretna) Junction
Empress
Regina
Winnipeg
Morgan
Monchy
Ada


ALASKA NATURAL GAS
TRANSPORTATION SYSTEMS
Alcan 42" Proposal
(As submitted July 1, 1976)
Proposed Alcan Pipeline
Proposed Maple Leaf Pipeline
SCALE (approx)
0 50 100 200 300
MILES
ALASKA
YUKON TERRITORY
NORTHWEST TERRITORIES
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
MINNESOTA
Prudhoe Bay
Fairbanks
Dawson
Whitehorse
Watson Lake
Fort Nelson
Dawson Creek
Edmonton
Vancouver
Seattle
Spokane
Calgary
Coleman
Regina
Winnipeg
Sterling
Minot

REPORT OF THE ATTORNEY GENERAL TO THE PRESIDENT

JULY 1977.

This Report is submitted to the President pursuant to Section 6 of the Alaska Natural Gas Transportation Act of 1976. Section 6 of the Act directs that any Federal officer or agency may submit written comments to the President with respect to the recommendation and report of the Federal Power Commission and alternative methods for transportation of Alaska natural gas for delivery to the contiguous states.[1] This Report is principally concerned with item (6)—the impact upon competition of the respective proposed transportation systems.

The Department of Justice has done an extensive analysis of this subject in the Report of the Attorney General submitted to the Congress pursuant to Section 19 of the Act. Rather than repeat what already has been said therein, we are appending a copy of our Report to Congress. We believe that the contents of that Report fully set forth the antitrust implications of the various proposed projects.

The remainder of this Report will summarize briefly the areas of agreement or disagreement with the Federal Power Commission's competitive analysis in its Recommendation to the President. Also, in accordance with Section 6(c) we discuss the question of waiver of law.

I. IMPACT ON COMPETITION: SUMMARY OF RECOMMENDATIONS OF THE FEDERAL POWER COMMISSION AND THE DEPARTMENT OF JUSTICE

The Federal Power Commission concludes generally that the certification of any one of the proposed systems will not have a significant impact upon competition among pipelines. The Department has reached the same overall conclusion.

The Commission has encouraged the participation of producers of substantial amounts of gas in the pipeline joint venture in order to contribute their significant financial resources to aid in the financing of the pipeline. The Department disagrees. We have recommended in the Report to Congress that an ownership interest, or participation in any form in the transportation system, by producers of significant amounts of natural gas, or their subsidiaries or affiliates, should be prohibited. The license to be issued to the selected system should contain a condition which prevents participation in any manner by such gas producers.

The Federal Power Commission has stated that it is strongly in favor of widespread distribution of Alaskan natural gas in order to limit reliance on Alaskan gas, to create incentives for participation in displacement arrangements and to provide easier private financing. The Department has stated that if, because of continued wellhead price

[1] Attorney General Bell did not participate in the preparation of this Report due to conflict of interest considerations. Responsibility for this Report was delegated by Mr. Bell to Deputy Attorney General Flaherty.

regulation, market forces are not permitted to operate to allocate gas in the most efficient manner, then the possibility of a regulatory allocation mechanism should be examined if widespread distribution of Alaskan natural gas is believed to be in the national interest.

The Commission is of the view that Section 13(a) imposes common carrier obligations upon the selected transportation system. The Commission indicates that this is a procompetitive result but may impact adversely upon the ability of the system to secure private financing. The Department disagrees. Section 13(a) of the Act provides for equal access to the gas transportation system based upon ownership or lack thereof. But it is unclear whether this provision was intended to create common carrier status for the transportation system. It is our view that common carrier status for all facilities constructed or utilized as an integral part of the system carrying gas to the lower 48 states is desirable and Section 13(a) should be clarified to unambiguously create such status. Additionally, we do not view Section 13(a) to be an impediment to private financing. Moreover, to ensure the equal access provided for by Section 13(a), Congress should consider legislation to grant the Commission, or its successor agency, the authority to order prorationing of pipeline capacity among shippers when gas is available in excess of pipeline capacity.

The Federal Power Commission approves of displacement arrangements as the most efficient mechanism for distribution of the Alaskan gas. The Commission, however, is fearful that such arrangements could create the potential for collusive market conduct. Thus the Commission would permit only those practices which are indispensable to the successful operation of the displacement procedure. The Department agrees that the efforts to work out displacement schemes may produce collusive behavior. We have recommended that if a system requiring displacement of gas is authorized, Government agencies should monitor any meetings of the transmission companies concerning reallocation. The plans for the meetings and the displacement programs resulting from the meetings should be subject to scrutiny and approval by Government agencies.

The Commission indicates that as a result of the implementation of an all-events, cost-of-service tariff, the producers may be able to exercise market power over the shippers if the producers know whatever price they charge will be passed on to the consumer. The Department, on the other hand, is concerned that the proposed pipeline capacities be evaluated carefully since the potential for adoption of an all-events cost-of-service tariff has diminished the incentives of the proponents to properly determine and propose the most efficient pipeline size.

The Commission indicates that the contracting process for the purchase of Alaskan gas has not been competitive. Among the elements the Commission points to as indicative of the noncompetitive nature of this process is the existence of side arrangements. The Commission has concluded that in the absence of full-fledged price competition, the producers have used side arrangements as a means of favoring companies which can provide other benefits. The use of a widespread distribution scheme may reduce the likelihood of such restrictive side arrangements. The Department's view is somewhat different. To minimize the distortion of Commission regulation from side arrangements for

various forms of compensation collateral to sales contracts for Alaskan gas, such arrangements should be disclosed and subjected to Commission scrutiny. As long as there is wellhead price regulation, the Commission, or its successor agency, should examine carefully each Alaskan gas purchase contract and disapprove or condition each such contract that it finds not in the public interest. In addition to the recommendations in the Report to Congress, we note further that the Commission should assess the impact of such arrangements in various producing fields because of the widespread existence of "favored-nation" clauses. Price increases which at first may appear innocuous, may have a greater impact throughout the field due to price increases in other contracts with such clauses.

In summary, while the Department agrees with the Commission's overall conclusion that certification of any of the proposed transportation systems will not have any significant impact upon competition, we have indicated our differences with other conclusions. We urge the President to consider each of these matters carefully and to append to any license the conditions we have suggested in our Congressional Report and which have been reiterated in this Report.

II. Waivers of Law

Section 6(c) of the Act directs each Federal officer or agency to report to the President actions to be taken by such officer or agency necessary or related to the construction and initial operation of the approved transportation system and to include recommendations with respect to any provision of law to be waived upon recommendation by the President to the Congress. It is the Department's view that no action must be taken by the Attorney General under section 9(a) of the Act—action which is necessary or related to the construction and initial operation of the approved transportation system. Furthermore, it is the Department's view that none of the antitrust laws should be waived by the President.

Section 14 of the Act states:

> Nothing in the Act, and no action taken hereunder, shall imply or effect an amendment to, or exemption from any provision of the antitrust laws.

It is plain from this provision that Congress did not mean for the antitrust laws to be waived in any manner and intended that they remain in full force and effect.

Many of the competitive effects indicated in the accompanying Report are prospective in nature. Thus, their full impact may not be known until the transportation system is built and operating. In light of this situation, it is the Department's view that none of the antitrust laws should be waived. The transportation system and its owners ought to be subjected to the full panoply of the antitrust laws and their possible enforcement should any violations of these laws appear in the future.

III. Conclusion

I conclude that antitrust considerations do not militate against selection of any of the three proposed projects as the transportation system for moving Alaskan natural gas to the lower 48 states; nor do

competitive considerations point to selection of one of the three projects in preference of the other two. The problems we have identified in this Report and our Report to Congress may impact on any selected project and, therefore, do not make one project seem more desirable than the others.

We have proposed several conditions which ought to be appended to a license issued to any of the proposed transportation systems. These recommendations are in the Report to Congress appended to this Report and are summarized in the Conclusion of the appended Report.

Respectfully submitted.

PETER F. FLAHERTY,
Deputy Attorney General.

REPORT OF THE ATTORNEY GENERAL TO CONGRESS

(JULY 1977)

EXECUTIVE SUMMARY

This report is submitted to Congress in compliance with Section 19 of the Alaska Natural Gas Transportation Act of 1976. That provision requires the Attorney General to conduct a thorough study of the antitrust issues and problems relating to the production and transportation of Alaskan natural gas.

Based on our analysis of all information currently available, we find that antitrust considerations do not militate against selection of any of the three proposed projects as the transportation system for moving Alaskan natural gas to the lower 48 states; nor do competitive considerations point to selection of one of the three projects in preference to the other two. Although we have identified several potential antitrust problem areas associated with the projects, these problems may impact on any project that is selected and thus do not make one project seem more desirable than the others.

This report has identified several potential competitive problem areas, which can be addressed through: (1) the imposition of conditions upon the license issued to whichever project is chosen; (2) the enactment of legislation; and (3) collateral action by the Federal Power Commission, or its successor agency. Since some of the identified problems are not directly associated with the transportation of natural gas but are associated with the sale of natural gas, these problems would have to be addressed in the context of the required examination of the gas purchase contracts.

The report first provides a general introduction to the three proposed projects, the methods of transportation and routes proposed and the participants in each proposed project. There are two overland pipeline projects proposed by Alcan and Arctic Gas, and a combination pipeline and liquified natural gas tanker system proposed by El Paso.

(1) The Alcan route follows the Alaska oil pipeline route to Fairbanks and then follows the Alcan Highway through Canada. Alcan has proposed two different sized pipelines. Originally Alcan proposed a 42-inch pipeline but more recently has proposed a 48-inch pipeline similar to that of Arctic Gas.

(2) The Arctic Gas route proceeds east from the North Slope to the Mackenzie Delta of Canada, where it is expected additional gas reserves will be developed. The route then proceeds south through Canada to the United States border.

(3) The El Paso project calls for a pipeline to follow the Alaska oil pipeline to Point Gravina on Prince William Sound. There the gas would be converted to liquid natural gas and shipped by tanker to the coast of California.

(a) *Arctic Gas.*—
Alaska Arctic Gas Pipeline Company
Canadian Arctic Gas Pipeline Company, Ltd.
Alberta Natural Gas Company, Ltd.
Northern Border Pipeline Company
Pacific Gas Transmission Company
Pacific Gas and Electric Company

The first two above are shell companies, formed to construct and operate the pipeline in Alaska and Canada. Owners of the two companies are:

American Members:
Columbia Gas Transmission Corporation
Michigan Wisconsin Pipe Line Company
Natural Gas Pipe Line Company of America
Northern Natural Gas Company
Pacific Gas & Electric Company
Pacific Lighting of California
Panhandle Eastern Pipe Line Company
Texas Eastern Transmission Corporation

Canadian Members:
Alberta Natural Gas Company, Ltd.
The Consumers' Gas Company
Canada Development Corporation
Gulf of Canada, Ltd.
Imperial Oil, Ltd. (a 70 percent owned subsidiary of Exxon)
Northern and Central Gas Company, Ltd.
Shell Canada, Ltd.
TransCanada PipeLines, Ltd.
Union Gas, Ltd.

(b) *Alcan.*—
Alcan Pipeline Company (a wholly-owned subsidiary of Northwest Pipeline Company)
Alberta Gas Trunk Line Company, Ltd.
Alberta Gas Trunk Line (Canada), Ltd.
Westcoast Transmission Company, Ltd.
Foothills Pipeline (Yukon), Ltd.

(c) *El Paso.*—The El Paso project is proposed by El Paso Alaska Company, a wholly owned subsidiary of El Paso Natural Gas Company.

The gas transportation and distribution industries are not highly concentrated on a national basis at this time. Although standard industry concentration measures are less meaningful in the natural gas industry because it is pervasively regulated and because pipelines are to a great extent natural monopolies; these ratios and individual company shares do give an indication of the relative industry positions of the prospective Alaskan natural gas participants.

The proponents of the El Paso project control 8.2 percent of gas supplies from all sources (as of 1974), the Alcan American proponent controls 4.3 percent and the Arctic Gas American proponents control 36 percent of gas supplies from all sources. Although there is some danger that the sponsors of the Arctic Gas project, if they were the only purchasers of Alaskan gas, could use their control of Alaskan gas in combination with their control of other gas supplies to manipulate

displacement plans to their own advantage or to affect regional competition among pipelines, regulation by the Federal Power Commission minimizes this danger.

Present Federal Power Commission regulation of city gate prices also appears to preclude an opportunity for competitive abuse by the gas producers or transmission companies provided the price ceilings set by Federal Power Commission regulation are effective. However, if the regulation of the wellhead price of gas were relaxed and the Alaskan gas producing areas were workably competitive, producer ownership or control of the transportation system could circumvent Federal Power Commission regulation of the pipeline and monopoly profits could be taken by the integrated company by transferring some or all of the profits stemming from the transportation monopoly to unregulated upstream production operations through denial of access to non-owners and restricting downstream supply. If the regulation of the wellhead price of gas were relaxed and the Alaskan gas producing areas were not workably competitive, but were instead characterized by producer market dominance, gas supplies could be restricted at the production stage without any need to derive market power from the pipeline. However, such market power is not necessarily permanent and could be reduced by discovery and development of new fields by other producers, creating a situation where an integrated producer/pipeline owner would seek to restrict access and throughput to take monopoly profits. Therefore, we recommend that an ownership interest, or participation in any form in the transportation system, by one or more gas producers of significant amounts of gas be prohibited. The license to be issued to the selected system should contain a condition that prevents participation in any manner by such gas producers.

Ownership of a transportation system by the buyers of gas will not result in any potential anticompetitive conduct as long as Federal Power Commission regulation of city gate prices continues in the present mode, which it appears likely to do. If the regulatory scheme changes, potential monopsony problems can be cured by appropriate regulatory action. Therefore, we do not oppose ownership of the transportation systems by the buyers of the gas.

During the period from 1971 to 1975 the major North Slope producers, Exxon, ARCO and BP/Sohio entered into agreements to negotiate for the sale of their natural gas with various transmission companies, all members of the Arctic Gas consortium. These agreements called for advance payments from the transmission companies to help the producers develop the North Slope fields. In December, 1975, the Federal Power Commission struck down all advance payment contracts entered into after December 28, 1973, as not in the national interest. Thus, there is currently no plan for distribution of Alaskan gas.

Collateral to these advance payment agreements, the transmission companies entered into a variety of side arrangements with the producers. The side arrangements provided for renegotiation of existing gas sale contracts in the lower 48 states to raise prices or to permit revenue sharing between producer and pipeline with respect to existing production. These side arrangements are clear evidence of evasions of wellhead price regulation and demonstrate the extreme

difficulty of holding down the price of a scarce resource. Some pipeline companies would be disadvantaged in seeking to gain access to North Slope gas if these arrangements were to continue, since not all pipeline companies have existing relationships that can be altered or other goods or services to barter in addition to paying the wellhead price. The competitive effects of this disadvantage, if any, are uncertain. It may well be that the Federal Power Commission should require disclosure of all collateral considerations in our gas purchase agreement. The Commission could then carefully examine each Alaskan gas purchase contract and disapprove or condition any such agreement that it finds not to be in the public interest.

With current Federal Power Commission regulation of wellhead gas prices, competitive forces cannot operate to distribute gas in the most efficient manner. If a wide distribution of Alaskan natural gas is deemed important, it may be necessary to create a regulatory allocation mechanism.

Competition among pipelines for existing customers and new customers may exist in regional markets. Regional competition can be an important complement to regulation and its importance has been recognized by Congress, the courts and the natural gas industry. The potential for this competition should be preserved to the greatest extent practicable. Several problems associated with the operation of an Alaskan natural gas transportation system arise because of potential effects on this regional competition.

Equal access to the transportation system, as well as other competition rules, would be required if producers are permitted to participate in the Alaskan natural gas transportation system. Moreover, even where producers are not owners, equal access to a transportation system retains some importance as a means to preserve regional competition among pipeline companies by preventing owners of the transportation systems from denying or restricting access to other pipelines that might compete in regional markets.

Section 13(a) of the Alaska Natural Gas Transportation Act provides for equal access to a proposed transportation system. Although the Federal Power Commission interprets this provision to mean that an Alaskan natural gas transportation system must be operated as a common carrier, it is not clear this was the intention of Congress. Read literally, the statute merely provides that access cannot be denied based on ownership or the lack thereof. We believe that those facilities (pipelines, LNG facilities, etc.) constructed or utilized as an integral part of the system carrying gas to the lower 48 states should be operated as common carriers, with equal access thereto available to all purchasers and shippers of Alaskan natural gas. Congress ought to clarify the ambiguous language of existing Section 13(a) to clearly state that the Alaskan natural gas transportation system be operated as a common carrier.

Section 13(a) does not require the transportation system to implement a prorationing scheme in the event the system achieves full capacity, nor does it permit or require any government agency to order such prorationing. Such prorationing during the period of construction of additional capacity is necessary to insure no shipper may be competitively disadvantaged. To insure the equal access provided for under Section 13(a), we recommend that Congress consider granting

the Federal Power Commission authority, where gas is available in excess of pipeline capacity, to order prorationing of pipeline capacity among shippers.

It has been argued that retaining Section 13(a) may prove to be an impediment to financing. We find that Section 13(a) will not be such an impediment, since pipeline companies will be willing to invest in order to insure the construction of such a system. In addition, the possibility of receiving the substantial cash flows from the system which would result from ownership is another incentive to invest in the system.

It is likely that much of the Alaskan gas will be delivered throughout the lower 48 states by displacement rather than by direct delivery. Displacement is a process that would allow Alaska gas to be supplied to conveniently located customers of other pipeline systems that, in turn, could use their "displaced" gas to serve customers of other pipelines. Such a displacement scheme provides considerable savings and ease of delivery but also creates two potential problems. First, a transmission company could thwart the displacement plan by refusing to cooperate and displace gas in its system. To remedy this problem we recommend that legislation be enacted to give the Federal Power Commission, or its successor agency, authority to order participation in displacement programs for Alaskan natural gas.

Displacement also presents potential for anticompetitive activity because implementation of a displacement program requires pipeline companies to meet to agree upon supply reallocation. Obviously, the potential for anticompetitive agreements in the implementation of such a process exists, and almost regardless of the actual risks of such agreements being made, the public perception that such possibilities exist requires some antitrust protection.

This is not an insuperable problem. If the companies do no more than is reasonably necessary to effect the displacements, no antitrust issues should be presented. A method of insuring that no anticompetitive discussions or acts take place is to have interested government agencies monitor such meetings and to have proposed allocation plans subject to government review and approval.

An all-events cost-of-service tariff has been proposed that would guarantee to the owners full reimbursement of all costs associated with the operation of the transportation system. These costs would be passed on to the consumer. These guarantees extend to all unit transportation costs, even if underutilization of the pipeline makes the unit cost excessively high. Guaranteeing these costs would eliminate incentives for the transportation system owners to prudently determine pipeline size and propose the most efficient pipeline based upon expectations of deliverability.

The deliverability of the Prudhoe Bay reserves is unsettled and highly disputed. The forecasts vary substantially; however, 2.0 Bcf/d appears to be the most likely rate of deliverability. The producers have stated their opposition to any form of deliverability guarantee and, since gas and oil production are related, may in the future restrict or eliminate gas production in order to increase the production of higher-priced oil. With the best deliverability estimate being 2.0 Bcf/d and the possibility of less gas production, there is potential for under-

utilization of the transportation system. Underutilization will mean higher unit costs of transportation and under the proposed tariff, this higher transportation cost will be borne by the consumer. Deliverability should be carefully evaluated before a system is selected, and the high cost of constructing a system is undertaken. Further, the sizing of the proposed pipelines should be carefully evaluated, since the proposed tariff guarantees may have diminished incentives on the part of the proponents to determine and propose the most efficient pipeline size.

INTERAGENCY TASK FORCE ON ENVIRONMENTAL ISSUES

(JULY 1, 1977)

EXECUTIVE SUMMARY

ENVIRONMENTAL ISSUES

The Arctic Gas route would cross the Arctic National Wildlife Range (ANWR), which was established for the purpose of preserving its specific unique wildlife, wilderness, and recreational values. Its possible inclusion into protected wilderness status is still pending. The proposed pipeline construction activity would eliminate the impacted portion of the ANWR from wilderness status consideration.

Arctic Gas has not adequately demonstrated that they would be able to construct a pipeline from Prudhoe Bay through the Mackenzie Delta area within the proposed time frames; that their proposed mitigative measures would work as effectively as predicted; or that impacts to animal species and natural ecosystems would be short term or minimal. They have not demonstrated that their unconventional technology would work adequately in minimizing impact, or that if damage should occur, mitigative measures would be capable of restoring impacted habitat or animal populations. If the integrity of the ANWR were to be violated by the Arctic Gas pipeline, there could be a diminished degree of incentive in the future to restrict additional exploration or development in the impacted areas.

There is a continuing international cooperative effort to establish an international wildlife/wilderness reserve which would encompass the ANWR and the adjacent sensitive habitat in Canada.

The El Paso route includes both overland pipeline and ocean tanker transportation systems. A liquefied natural gas (LNG) facility in Alaska and one for regasification in California present serious potential for environmental degradation.

The proposed LNG plant at Gravina Point, Alaska would lie within a zone of very high seismicity in the Chugach National Forest. It is located on the shore of Prince William Sound where abundant commercial fisheries and other marine resources are found. An acceptable solution to the heated water discharge has not yet been proposed. El Paso has not presented baseline oceanographic studies necessary to determine if the proposed sea water cooling system is environmentally acceptable. Impacts from the proposed once-through cooling system include: (1) mortality of all living organisms trapped within the cooling system; (2) thermal shock; (3) changes in migration and feeding behavior of affected marine biota; and (4) the effect of toxic substances released in the effluent. The Environmental Task Force concludes that the proposed once-through cooling system would result in

severe damage to the marine biota, but the Maritime Administration advises that alternatives exist which could permit the LNG facility to become environmentally compatible with Prince William Sound.

The final segment of the pipeline route to Prince William Sound would cross about 33 miles of potential wilderness area in the Chugach National Forest. Although this area is recognized as a defacto wilderness, it is not considered as fragile or unique as the ANWR. The Gravina Point LNG facility would destroy at least one bald eagle nest and disrupt approximately 15 other nest sites and some winter feeding ground for the Sitka black-tailed deer.

Cape Starichkof, located on Cook Inlet, has been proposed as an alternative LNG terminal site. This alternative would avoid the defacto wilderness area within the Chugach National Forest. The route to Cook Inlet would parallel the southeastern boundary of Mount McKinley National Park and cross the Kenai National Moose Range. Seismic conditions are similar to those found at Gravina Point. The Environmental Task Force believes that further investigations of the Starichkof route and site are needed before a final choice is made between the Gravina and Starichkof options.

The proposed regasification sites would be located in southern California, an area of high seismicity. El Paso's proposed site is at Point Conception, which is a rural, grazing area; while the Oxnard alternative site is in an area already zoned for industrial development.

A unique mixture of northern and southern marine species exists off Point Conception. As proposed, the cooled water discharge from the plant would cause ecological changes in the outfall area, particularly critical to this unusual marine environment. The Oxnard alternative site does not have this unique marine community.

In addition, the Oxnard plant's chilled water discharge could be used at the Ormond Beach Generating Station to bring the combined effluent to approximately ambient seawater temperature.

The pipeline needed to connect the Point Conception regasification plant to existing transportation systems would traverse approximately 250 miles, crossing unstable soils within the Los Padres National Forest. By contrast, the connecting route from Oxnard would be approximately 50 miles long, with about 95 percent of the route following existing corridors.

The task force concludes that the Oxnard alternative site is environmentally preferable. However, pending California legislation would require a remote site for safety considerations. Only Point Conception would satisfy this requirement.

Although the Alcan route does not cross such critical environmental areas, as the ANWR and Chugach National Forest, each a de facto wilderness, there are other significant environmental concerns. Alcan's summer construction could cause unnecessary permafrost degradation. The task force believes that summer construction could be accomplished in an environmentally acceptable manner if scheduled during the spring and fall months when temperatures are near or below freezing. Such scheduling is feasible since only two to five percent of Alcan's Alaska route involves critical permafrost areas.

In northern Alaska, the Alcan and El Paso routes utilize the existing trans-Alaska oil pipeline (TAPS) corridor. They would further impact the migration route of the Central Arctic Caribou Herd and

Dall sheep near Atigun Pass, which is a critical salt lick and lambing area.

In Canada, the Alcan route would parallel the Alaska Highway through the Kluane National Park at the base of Sheep Mountain (Dall sheep area) and pass near the proposed Pickhandle Lake International Biological Program Ecological Reserve (sensitive waterfowl and moose area). The route also passes through grizzly bear denning and elk overwintering areas. Construction scheduling could avoid sensitive time periods for most of these species. The data base associated with Alcan's route is generally considered to be inadequate. Additional research and data collection are needed to define site-specific problems and appropriate mitigating measures.

All routes have the potential for impacting threatened, endangered, and protected species, including the polar bear which is a special protected species under International Treaty. Impact to these species and their habitat, after specific critical locations are identified, should be minimal along any of the proposed routes with approved mitigative scheduling and routing measures. Extra consideration should be given to protected species.

Trenching activities along Alcan's and Arctic Gas' proposed North Border route across the prairie pothole area in northern U.S. and Canada may cause drainage of potholes, and thus affect waterfowl habitat. Effectiveness of proposed mitigative measures to prevent drainage and other disturbances is uncertain.

In Public Law 93–153 (amending 1920 Mineral Leasing Act), Congress found utilization of existing corridors to be in the public interest by minimizing adverse environmental impacts due to the proliferation of separate rights-of-way. The utilization of rights-of-way in common should therefore be required to the extent practical. However, the task force believes that the environmental benefits attributable to requiring the use of common corridors must be evaluated individually.

The task force concludes that the Alcan route would make the best use of existing corridors. The El Paso route would utilize the Alyeska corridor but would establish a new right-of-way through the Chugach National Forest in Alaska and along most of the route in California. Except for the portion from Prudhoe Bay through the Mackenzie Delta, including the ANWR, the Arctic Gas route generally follows existing corridors or rights-of-way.

Each route crosses areas which are designated or proposed for designation under the Wild and Scenic Rivers Act, National Trails System Act, Land and Water Conservation Fund Act, and d–2 proposals (lands proposed for Federal designation). The task force suggests site-specific alignments be reviewed and measures taken to avoid such areas or minimize impacts. Either pipeline route through Canada would impact National or Provincial designated areas and proposed International Biological Program (IBP) reserves. The Canadian government will make the decision to authorize or reject these crossings.

Water will be required by all proposals for a variety of purposes. The availability of water on the North Slope during the winter season is extremely limited. Arctic Gas and El Paso propose to work from snow roads and work pads. For this purpose alone, the task force believes that a reasonable margin of water is available. When water demands for hydrostatic testing and camp use are added, winter water

supply may be insufficient. The three applicants propose different methods for testing pipeline integrity. Arctic Gas proposes a methanol-water testing plan, Alcan proposes water testing, and El Paso proposes air testing. Among these, the potential spills of the methanol-water test medium present the greater potential for environmental threat. The task force believes that air testing would be the most preferable environmentally and should be required for all applicants where feasible.

Compressor stations, LNG and regasification facilities, and tankers will all emit air pollutants. These emissions generally appear to fall within the allowable Federal air quality standards. They will also be required to comply with State air quality degradation laws.

Numerous archaeological and historic sites may be encountered along any of the routes; therefore, a comprehensive survey/salvage program is necessary for their protection. The Arctic Gas route has the greater potential for impacting cultural resources than either the El Paso or Alcan route.

Any of the three pipelines would accelerate a perhaps inevitable change in Alaskan native lifestyles. The Alaska Native Claims Settlement Act and construction of the Alyeska pipeline have already promoted the trend toward a mixed cash and subsistence economy. The El Paso and Alcan routes would affect a greater number of native villages than the Arctic Gas route, but these are along the Alyeska corridors where native life styles have already been impacted. Although the Arctic Gas route passes near the native village of Kaktovik in an undeveloped portion of northern Alaska, the native lifestyles have already been affected by the nearby DEW line (Defense Early Warning) sites. Native lifestyles would continue to change even in the absence of any of these projects; however, construction activities would accelerate the rate of change in native villages along the route.

We concur with the conclusions reached by the FPC in their "Recommendations to the President" and with the FPC Staff that each of the three pending proposals will have some adverse environmental impacts. If the Alaska gas is distributed on an equitable basis to the 48 States, the task force does not believe that the decreased air pollution in the lower 48 States as a result of Alaska natural gas being available will offset the environmental degradation resulting from the construction of a natural gas transportation system. The task force therefore concludes that a "no action" alternative would be environmentally superior.

However, if the Alaska gas were allocated to maximize air quality benefits the construction of a gas transportation system could be environmentally preferable from the standpoint of public health. It could displace 1 quadrillion Btu's/year of coal and could concentrate air quality benefits in select air quality control regions. It should be noted that the feasibility of this allocation scheme has not been demonstrated. An analysis of the pricing and distribution aspects of this scheme would have to be conducted.

The task force also concurs with the FPC Commissioners and the FPC Staff that, of the three proposed routes, Alcan's appears to promise the least environmental impact if proper mitigative actions are taken. This conclusion is based on the Alcan route's avoidance of: (1) the undeveloped area from Prudhoe Bay through the Mackenzie

Delta, including the Arctic National Wildlife Range and (2) the Chugach National Forest, both of which are de facto wilderness areas; and (3) thermal and chemical pollution from the LNG sites in Alaska and California. In addition, Alcan makes the best use of existing transportation corridors.

The task force finds the environmental impacts which would result from the Arctic Gas and El Paso routes to be different in nature, but comparable in magnitude. It is therefore difficult to rank the two systems strictly in terms of environmental impacts. However, it is our conclusion that the El Paso route would impact the environment less, on balance, than the Arctic Gas route. This conclusion is based on: (1) El Paso's avoidance of the Arctic National Wildlife Range and the Mackenzie Delta area (although it still does cross the Chugach National Forest); (2) the assumption that thermal and chemical pollution of the marine environment at the LNG sites in Alaska and California can be properly controlled through design modifications; and (3) the utilization of existing corridors, except for the approximately 40 miles in Alaska and most of the route of California.

The task force believes that the Arctic Gas route has the greatest potential for causing adverse environmental impacts. This conclusion is based on: (1) the crossing of the Arctic National Wildlife Range and the Mackenzie Delta area (although the route does not cross the Chugach National Forest and does not have the LNG siting problems); (2) the lack of permanent access along the North Slope for making summer repairs, should they be necessary; and (3) greater risks due to the distance to be traversed in the fragile Arctic. Finally, the creation of a new transportation system or corridor through this relatively undeveloped portion of Alaska and Canada would create environmental impacts which cannot be totally mitigated. The rest of the route generally follows existing corridors and rights-of-way.

TERMS AND CONDITIONS AND FEDERAL ORGANIZATION

The Federal Power Commission's "Recommendation to the President" found that formulation of specific terms and conditions was premature until a route has been selected and more detailed resource information is available. The FPC Recommendation made some tentative suggestions on the organization to administer terms and conditions and included a number of illustrative terms and conditions.

The FPC Recommendation did not adequately address the process by which all environmental concerns and resources may be considered government-wide (Federal-State-local) during the preparation and subsequent administration of terms and conditions.

The task force proposes continuation of the previously established Federal interagency group to work on terms and conditions. It also proposes environmental guidelines and a schedule which the group (supplemented by State agencies) could use in preparation of terms and conditions and development of the organization(s) to administer them.

REPORT ON CONSTRUCTION DELAY AND COST OVERRUNS

Executive Summary

Objective

The object of this report is to review the analysis and findings of the Federal Power Commission (FPC) in their Recommendation to the President: Alaska Natural Gas Transportation Systems with respect to the potential for schedule delay and cost overrun. The Commission's Findings are not fully specified, but a reasonable interpretation is presented on the following page and contrasted with the Lead Agency Findings.

Findings

This Lead Agency Report prepared by the Department of the Interior and the Department of Transportation generally agrees with the Commission's relative ranking among the projects with regard to the possibility of cost overrun and construction delay but differs sharply with respect to the magnitude of the overruns. The Federal Power Commission examined a number of sources of overrun and delay but they seemed to consider these in isolation; they did not fully evaluate the contribution of these sources collectively and interactively to their overall cost and time requirements for completing a long-term, complex construction project.

	Arctic Gas [2]	Alcan	El Paso
FPC findings: [1]			
Direct cost [3]	[4] 6,783	5,781	5,588
Total cost (Includes financing) [3]	[5] 8,147	6,761	6,571
Full gas flow realized	([6])	([7])	([8])
Potential cost overrun (percent) [9]	5	5–10	7–10
Potential delay (months) [9]	12	9	0
Net national economic benefit [3] [10]	−7,122	7,652	5,798
Cost of service (dollars per mcf) [11]	1.72	1.79	2.09
Lead agency findings: [1]			
Expected direct cost overruns [3] [12]	[4] 2,506	1,864	1,736
Percent	37	32	31
Expected direct costs [3] [13]	9,289	7,645	7,324
Expected total cost overruns [3]	[5] 4,317	3,159	2,775
Percent	53	47	42
Expected total costs (includes financing) [3]	12,464	9,920	9,328
Expected schedule delay (months)	20	17	15
Expected full flow date [14]	([15])	([16])	([17])
Expected net national economic benefits [3] [10]	3,311	4,825	3,908
Expected cost of service (dollars per mcf) [11]	2.15	2.09	2.26

[1] All values in 1975 prices; assumed January 1978 go-ahead.
[2] Arctic Gas costs include Canadian share.
[3] Millions of dollars.
[4] U.S. share of Arctic direct costs is $5,621,000,000; U.S. share of Arctic direct cost overruns is approximately $2,000,000,000.
[5] U.S. share of Arctic total costs is $6,729,000,000; U.S. share of Arctic total cost overruns is approximately $3,432,000,000.
[6] June 1983.
[7] January 1983.
[8] November 1983.
[9] No NNEB or cost of service calculations are available based on these values.
[10] Present value discounted at 10 percent.
[11] Includes $1 per mcf wellhead price of gas, 20 yr average.
[12] The expected value is the mean or "average" of the estimated probability distribution.
[13] An upper bound, or "worst" case, may be estimated by adding 3 standard deviations to the expected value: Arctic Gas—$14,300,000,000, Alcan—$11,200,000,000 and El Paso—$9,300,000,000. The FPC estimate may be considered a reasonable lower bound.
[14] Both El Paso and Alcan have partial, but substantial, gas flows occurring 6 to 10 mo earlier.
[15] March 1985.
[16] July 1984.
[17] February 1985.

The FPC estimates range from 5 to 10 percent cost overruns for the proposals; this Report estimates direct cost overruns for the various proposals ranging from about 30 percent to about 40 percent; moreover, this Report finds that overruns on total costs including financing (allowance for funds used during construction) may range from 40 to 55 percent. The Commissioners have estimated potential delays ranging from 0 to 12 months; this Lead Agency Report anticipates delays ranging from 15 to 17 months.

This Report indicates the Arctic Gas proposal to contain the greatest uncertainty, while the Alcan and El Paso proposals contain less. Taking expected cost overruns and construction delays into account, the report finds that the Alcan proposal has the earliest expected delivery date and the least total cost, El Paso the next earliest delivery date and higher total cost, and Arctic Gas the latest delivery date and highest total expected cost.

Procedure

These estimates were arrived at on the basis of joint estimates of expected cost overruns and schedule delays by independent analysts familiar with each of the three proposed transportation systems and the Trans-Alaska Pipeline System. The FPC estimates are plausible but optimistic engineering estimates, while those presented here recognize that few major construction projects achieve the planned performance, cost and schedule goals. These estimates should be considered "expected value" estimates. It should be noted, that the results presented here do not indicate that a natural gas transportation system is uneconomic.

Other independent analyses, including the FENCO, Inc. risk analysis of Arctic Gas and Alcan for the Canadian Ministry of Energy, Mines, and Resources, the Resource Planning Associates, Inc., risk analysis of all three proposals for the Environmental Protection Agency, and the Department of Interior Report to Congress under Public Law 93–153 have concluded that all the applicants, but particularly Arctic Gas, are quite optimistic in their proposals. The major uncertainties that the FPC failed to assess realistically are highlighted below.

Construction and Productivity

The Commission concluded that Arctic Gas and El Paso have proposed "reasonable" construction programs while questioning the Alcan estimates of productivity. This report finds that Arctic Gas has seriously underestimated the economic costs of construction during the arctic winter. El Paso has also overestimated winter pipeline construction productivity and underestimated potential problems on the complex liquefaction plant. Alcan has overestimated the productivity of its rapid summer construction program, particularly because of the difficulty in supplying the skilled manpower necessary.

Snow Roads and Work Pads

The Commission has concluded that the proposed use of snow roads and snow work pads is a "feasible" arctic construction technique. This report finds that the economic feasibility of these techniques is extremely uncertain. The FPC hearing record indicates substantial controversy over even the technical feasibility. The record further indicates less than complete agreement on the availability of adequate snow and

water, particularly on the North Slope. The economic costs of a construction program relying on snow roads and snow work pads at the scale proposed by Arctic Gas—and to a lesser extent by El Paso—are very uncertain. There is no equivalent experience available; the concept has never been tested on a comparable scale. Alcan's construction plan avoids this risk since it relies on summer and conventional winter construction.

Construction Logistics and Transportation Corridors

The Commission found no substantial logistical problems for any of the applicants, nor did it emphasize any substantial advantage for a particular system because of its corridor. This report finds, to the contrary, that logistical problems beyond those anticipated by the applicants are highly probable.

Alyeska experience indicates that it is virtualy impossible to fully predict all requirements in advance and that supporting large scale construction efforts in remote regions of the arctic is extremely difficult. It is clear that alternatives and flexibility are essential for cost and schedule control—two elements limited in the Arctic Gas logistic plan. Arctic Gas must rely on a logistics system that is very seasonally oriented—use of snow roads in the winter and shipping on the Mackenzie River in the summer. Both El Paso and Alcan propose routes having access to virtually all weather transportation systems and other existing infrastructure.

Seismic Design

The Commission found that El Paso has an incomplete seismic design but that adequate time had been provided in the pre-construction schedule to complete the design at "some increases" in cost. The conclusion of this report is that the incomplete design work for the liquefaction plant at Point Gravina leaves substantial uncertainty in both cost and schedule. The record indicates substantial controversy regarding what design factors are acceptable, and there is little experience in designing large scale LNG facilities for a high degree of seismic protection. El Paso is judged to have underestimated the complexity of meeting stringent seismic standards, while neither Arctic or Alcan have a significant seismic problem.

Frost Heave/Thaw Settlement

The Commission concluded that there is ". . . no doubt that an adequate solution can be found . . ." although with ". . . sufficient expenditure of design, time and capital". This report concludes that the applicants may well have substantially underestimated the required design, time and capital.

The exact nature of the technical solution to frost heave/thaw settlement is still an unknown; some experts believe that portions of a gas line may have to be elevated. The economics of an as yet unproven solution are extremely difficult to estimate, particularly if it involves a relatively complex technology (e.g., electrical heating or buried supports).

Project Management and Scheduling

The Federal Power Commission did not address itself specifically to the question of management and scheduling although it did conclude that Arctic Gas and El Paso had presented reasonable programs for

executing feasible projects. This report finds project management and scheduling to be a crucial element in completing any of these large, complex, and remote projects in a timely and economic manner. The Alyeska experience is replete with situations where a problem in one area spilled over into other areas. All of the proposals contain large numbers of interactive elements for which a difficulty with one activity will adversely affect progress on another—resulting in possible delays. All of the projects contain a number of techniques which are relatively unproven in regular commercial application. The projects, through sheer magnitude, will draw on both labor and vendors having limited previous experience in this work.

Institutional Uncertainties

The FPC generally concluded that the applicants had alloted sufficient time during their pre-construction and construction phases to allow for resolution of a number of institutional issues. This report finds that several institutional issues pose major problems for the applicants, with substantial probability for schedule delay and cost overrun. Joint U.S.-Canadian decisions for Arctic Gas and Alcan have the potential for causing delays. Site selection and approval for El Paso's regasification terminal in California may cause some delay. Final right-of-way determination for all applicants is currently on an uncertain schedule. Governmental stipulations, regulations, and permits during construction by any applicant could cause construction delays. Finally, resolution of Canadian Native Claims is likely to cause significant delay for Arctic Gas and, to a lesser extent, Alcan.

Other Large Scale Construction Project Experience

Studies by Professor Mead and others indicate that the ability to accurately forecast the cost of large complex construction projects is very limited. Examples of such evidence are numerous and include Trans-Alaska Oil Pipeline (TAPS), North Sea Oil production, Trans-Peru Pipeline, METRO and Canadian Olympic facilities. These studies indicate that for construction projects involving long construction periods, new technology applications, extensive geotechnical work, and activity in remote areas, costs and schedules substantially beyond those estimated have almost always occurred and are likely to occur in the future.

Probably the most comparable projects is the TAPS project. An early, reliable cost estimate is considered to be the May 1974 estimate of $4.088 billion. In June 1975, a final, detailed estimate was made at $6.375 billion and now, only two years later, the final cost is expected to be at least $7.815 billion—a 23 percent overrun, excluding financing. In comparison, this Report estimates 30 to 40 percent cost overruns, excluding financing, for projects 4 to 7 years away from completion.

Operating Risks

This Lead Agency Report finds uncertainties and their economic impact to be less significant during the operating phase than during the pre-construction and construction phase. The risks of flow interruption and cost overruns during operations is greatest for El Paso because of its complex nature and seismic risk (a major earthquake in the vicinity of the liquefaction site could cause interruption of weeks to more than a year) while both Alcan and Arctic Gas are considered low risk.

REPORT ON SAFETY AND DESIGN

I. Summary

A. Introduction

The safety and design issues in the Alaska natural gas transportation system relate primarily to how a recommended system should be designed, constructed, and operated, and to a lesser degree, where such a system should be located. This report discusses the relative safety and design merits of the three alternatives considered in the Federal Power Commission (FPC) Recommendation to the President, May 1, 1977.

Each of the three systems proposed for transportation of natural gas from Alaska presents new challenges in design, construction, and planned operation. Information in the record detailing the applicants' approaches to meeting these challenges is exhaustive and much of it has been tested for accuracy by examination, rebuttal, and argument before the FPC and by its staff. In this report, the interagency participants who analyzed the FPC Recommendation and other relevant material discuss the principal concerns which remain to be decided relative to the safety and design of an Alaska gas transportation system and make their own recommendations on these matters.

The Department of Transportation (DOT) was lead agency in preparation of this issue report. Personnel from Departments of the Interior, Commerce, Federal Energy Administration, Energy Research and Development Administration, and the Environmental Protection Agency participated in review and analysis of the safety and design issues.

B. Conclusions

The safety and design issue interagency task group concludes, as did the FPC, that each of the systems, assuming proper design and construction, can operate safely and reliably. Although there are special technical problems peculiar to each of the systems which cannot be resolved at this time, it is incumbent on those Federal officers or agencies who are responsible for assuring pipeline safety to do all that is necessary to ensure, before initial operation, that the selected gas transportation system is designed and constructed in a manner consistent with Federal safety standards. Additional attention will need to be devoted especially to potential problems which may arise from the operation of the pipelines at high pressures and transporting chilled gas in discontinuous permafrost as well as the specific technical innovations present in liquefied natural gas (LNG) processing and storage in an active seismic area.

C. Safety

1. The principal element relative to safety for each of the three proposed pipeline systems is the type and design characteristics of the

pipe used in that system. Arctic Gas and Alcan plan to use high strength X–70 grade pipe for which a reference specification is not presently incorporated in the Federal gas pipeline safety standards. El Paso's proposed X–65 grade pipe is included in the standards. Planned operating pressures for Arctic Gas (1680 psig) and El Paso (1670 psig) are high by current industry practice; Alcan plans to operate at a more conventional 1260 psig; and each pipeline would be buried in permafrost areas and carrying prechilled gas. These design proposals present the problem areas which FPC has identified, i.e., frost heave, pipe metallurgy toughness, crack arrestor installation, pressure testing, and valve design—and for which the interagency group has developed solution approaches.

2. El Paso's proposal for pipeline transmission of gas across Alaska and marine shipment to California by tanker as LNG calls for decisions to be made about location of the LNG processing and storage facilities which will assure their safety in active seismic areas. Much discussion still surrounds the specific locations of El Paso's LNG facilities in southern Alaska (Gravina Point or Cape Starichkof) and in California (Point Conception or Oxnard). There are advantages and disadvantages in each proposed site and also a recognized need for further study and refinement of design on a site specific basis. California and Alaska State officials, too, have a major role in the LNG plant siting decision. The interagency group believes that those doubts do not preclude consideration of the pipeline LNG tanker proposal, but much work remains to be done both at the Federal and State levels to facilitate LNG plant site construction.

3. There are significant differences in the approaches each of the applicants would use in solving the problem of frost heave that pipelines can experience when buried in areas of discontinuous permafrost. Each will have to be adapted for the particular conditions encountered on a site-specific basis. Given the time to finalize route survey, field testing to determine soil conditions, and engineering design capability, each of the applicants should be able to solve the problem, although costs for doing so may vary.

4. Federal pipeline safety standards require that pipeline systems be pressure tested before tested before initial operation. The three applicants propose to meet this requirement in different ways. Arctic Gas and Alcan plan to use a hydrostatic test; Arctic Gas would prevent freezing of the test water in permafrost areas by addition of methanol, and Alcan would preheat the test water for this purpose. El Paso would use air as a test medium and thus keep water out of the line. Each proposal has its advantages and disadvantages. Hydrostatic tests permit higher pressure test levels than air testing under the U.S. standards and similarly would permit higher operating pressure under the Canadian standards. Also, the higher hydrostatic test pressure increases the probability of locating pipe defects prior to placing the pipeline in service. The Arctic Gas plan to use a water-methanol mixture presents environmental concerns relating to proper disposal and the effects of spills in the event of test failures. Alcan's plan to use heated water requires precise control to prevent freezing of water in the pipe. Also, heated water could cause degradation of frozen soil surrounding the pipe. Air has environmental advantages, but has limits in providing the highest degree of safety while testing the pipeline.

5. Each of the transportation systems can be adequately maintained, although permafrost soils and remote Arctic areas will require thorough advance planning and specialized equipment. This will be particularly true for the northern-most portions in the continuous permafrost tundra areas. Seismic factors may affect the repairability of a system, but proper design for seismic effects would be the primary means of assuring the safety and reliability of the LNG facilities or a pipeline crossing active faults. Further site specific designs, based upon geotechnic survey and test data, need to be refined to complete the design of the LNG plant and sections of either the El Paso or Alcan line which cross active faults. Testing to confirm presence of bedrock at the Gravina Point site selected by El Paso would be necessary should that proposed system be recommended.

6. In the design of the all-pipeline systems, there will be a need to coordinate specific U.S. and Canadian standards to achieve compatability in construction, inspection, maintenance, and operation, and thus assure dependability of service.

D. Efficiency

We concur, in general, with the FPC view that natural gas could be delivered and successfully marketed in the U.S. by any of the three proposals. However, there is a significant difference in the efficiency of each system based upon the quantity of gas needed to operate that system. The need to convert the gas to LNG and revaporize it gives a significant efficiency advantage to an all-pipeline system.

E. Potential Service Disruption

The FPC concluded that it is highly probable that each of the three systems can be operated with a reliability acceptable to the gas consumers of the United States. There is some concern about the possibility of a major Alaska seismic event disrupting delivery through the El Paso system. While this cannot be ruled out, we believe that the risk potential for such a disruption is very low. With regard to pipelines, their continuity of service is by far the best of any mode of transportation in the United States, and we believe the Canadian experience is comparable.

F. Expansion of Systems and Design Flexibility

Given the Arctic conditions and terrain, design flexibility and capability of expansion for the proposed systems can be provided best at the initial design stage of the pipeline. This may be done by increasing the diameter of the pipe to permit greater flow capacities and/or increasing the wall thickness or strength of the steel to allow higher operating pressures. Cost of increasing capacity by looping, (placing new pipe parallel to an existing one), a standard procedure in the lower 48, would be virtually prohibitive in the Arctic.

The Arctic Gas and Alcan are all-pipeline systems, and additional capacity may be provided at lower unit capital cost than for the initial capacity. However, for the El Paso combination pipeline and LNG tanker system, cost for additional capacity would increase roughly in proportion to the original unit cost. Arctic Gas and Alcan, utilizing the large diameter pipe with excess capacity, could expand by the addition of compressor horsepower alone. However, El Paso's additional capacity would require process plant additions and additional tankers for the marine leg.

G. Capability of Transporting Other Gas Reserves

In addition to known Prudhoe Bay gas reserves, each of the systems could have future access to reserves developed in the Beaufort Sea, the National Petroleum Reserve in Alaska, or from the Arctic National Wildlife Range. Only the Arctic Gas system would have the capability to transport gas from the Mackenzie Delta or offshore in northern Canada. The El Paso and Alcan systems, with short connecting lines, could transport gas from either the central Alaskan basins, or from the Gulf of Alaska. While the central basins are not considered to have a large gas reserve potential, the Gulf of Alaska could contain considerable gas reserves.

H. FPC Summaries of Evidence and FPC Conclusions on Safety and Design

We have no disagreement with the way FPC summarized evidence and positions of interested parties as they were presented in the FPC Recommendation to the President with regard to safety, design, efficiency, and flexibility. Nor do we have significant differences or criticisms with the way the FPC developed its conclusions.

I. Other Factors for Possible Presidential Consideration

While we do not have additional details with regard to their impact, there is a possibility that reductions in existing gas pipeline system load factors could place detrimental financial effects on some existing gas pipeline systems as a result of the new Alaska natural gas transportation. This would deserve study of cost and economic elements in other issue reports to determine the possible effects upon safety and maintenance of systems already in place. Additional attention also needs to be given to effective monitoring of a gas transportation system as extensive as any of the three proposals.

J. Terms and Conditions

There are a number of significant problems identified in the Terms and Conditions as presented in the FPC Recommendation to the President which will require further definition and clarification. These include, for example, (1) applicability of Terms and Conditions to that portion of the pipeline system in the lower 48 States; (2) Federal Inspector's role in enforcing compliance with the Terms and Conditions; and (3) conflicts of jurisdiction between Federal agencies.

II. Pipeline and Marine Safety

A. Introduction

The design, construction, operation, and maintenance of any Alaska natural gas pipeline and LNG terminal facilities must meet the Federal gas pipeline safety standards contained in 49 CFR Part 192; the reporting requirements of Part 191; and with respect to the LNG facility, possibly Part 193, a new part for which an Advance Notice of Proposed Rulemaking was recently issued by the Department of Transportation.

All three applicants plant to utilize advanced technology in the design, construction, and operation of the gas transportation systems proposed, and doubts have been raised as to their ability to comply

with applicable Federal gas pipeline safety standards. In potential noncompliance situations, the operator of the proposed system must change design plans, petition DOT for rulemaking action to modify the regulations, or request a waiver from those regulations providing data to support such a waiver and assure pipeline safety. While we concur with the FPC Recommendation conclusion that "each of the systems can be constructed basically in the manner proposed with the qualifications and conditions contained in our report" . . . "and each of the systems should operate reliably once service begins" (page 4, paragraphs i and j), we have several concerns regarding system safety and design.

REPORT ON NATIONAL ECONOMIC BENEFITS

The FPC "Recommendation to the President" compared the three alternative systems against two criteria:

Net national economic benefits—a measure of the discounted benefits and costs of the projects.

Cost of service—a measure of the cost of delivering natural gas to consumers (including an assumed wellhead price of $1.00 per MCF).

All systems had substantial net benefits (from $5.8 billion to $8.2 billion) and a cost of service that was judged competitive with alternate fuels (a high of $2.26 per MCF).

Alcan and Arctic had the highest net benefits and a lower cost of service than El Paso.

This Task Force report examines the sensitivity of the FPC findings to different discount rates, cost overruns, and schedule delays and calculates new employment impacts.

The new findings using the expected values for overruns and delays indicate that all of the systems still have positive net benefits ($3.3 billion to $4.8 billion) although reduced from the FPC levels and have increased costs of service (a high of $2.50 per MCF) which are still competitive with alternative fuels.

Alcan has the highest benefits with El Paso second. The rank changes because El Paso was judged to have a lower likelihood of substantial overruns. El Paso remains with the highest cost of service.

A sensitivity analysis shows that net benefits will be reduced to zero if either of the following occurs (assuming a discount rate of 10 percent and constant real gas prices):

a construction delay greater than four years;

construction cost increases of more than 100 percent; and

a reduction in throughput from 2.4 BCFD to less than 1.2 BCFD.

El Paso has claimed large relative employment impacts for the El Paso system (730,000 person years versus 235,000 person years for Alcan). This report finds that the relative differences between systems are considerably smaller (271,000 person years for El Paso versus 240,000 person years for Alcan).

TABLE A.—EFFECT ON NNEB OF EXPECTED PROJECT COST OVERRUN AND SCHEDULE DELAY[1]

[In millions of 1975 dollars]

	Arctic			El Paso			Alcan		
	13 percent	10 percent	6 percent	13 percent	10 percent	6 percent	13 percent	10 percent	6 percent
Value of gas[2]	7,297	11,056	20,557	7,076	10,551	19,167	7,856	11,649	21,013
Less:									
Field gathering and conditioning	858	961	1,124	858	961	1,124	969	1,057	1,192
Field O. & M.	22	34	64	25	37	67	24	37	67
Transportation facilities	4,762	5,503	6,733	3,780	4,361	5,318	4,113	4,701	5,666
Working capital	13	15	19	28	34	43	23	28	36
System O. & M.	166	251	469	538	802	1,458	169	253	463
U.S. other taxes	110	154	250	325	449	716	172	235	368
Canadian income taxes	503	775	1,440	0	0	0	228	352	657
Canadian other taxes	13	53	92	0	0	0	107	162	299
NNEB	827	3,311	10,366	1,522	3,908	10,441	2,051	4,825	12,265
Base case[3]	4,125	7,298	15,379	3,056	5,800	12,859	3,968	7,113	14,974

[1] Derived from computations detailed in the report of the cost overrun task force.
[2] Assume no growth in unit value of natural gas.
[3] Working group base case as shown in table IV–1.

TABLE B.—ESTIMATES OF DELIVERED COST, NATIONAL AVERAGE

[Per million Btu in 1975 dollars including an illustrative price of $1 at Prudhoe Bay and for gas fuel]

	20-yr simple average[1]	Leveled average[1]
Arctic Gas:[2]		
Applicant costs[3]	1.72	1.87
Expected value case	2.09	2.32
Worst case	3.11	3.61
Alcan:[4]		
Applicant costs[3]	1.79	1.95
Expected value case	2.09	2.33
Worst case	2.96	3.39
El Paso:[5]		
Applicant costs[3]	2.09	2.26
Expected value case	2.26	2.50
Worst case	2.78	3.14

[1] Average calculated over 1st 20 yr of flow including years of partial flow except for "applicant cost" case. Here 1st 20 yr of full flow was used.
[2] Flows: Prudhoe Bay, 2.4 B ft³/d: Mackenzie Delta, 1 Bft³/d.
[3] Taken from submittals to the Federal Power Commission.
[4] Flow: Prudhoe Bay, 2.4 B ft³/d.
[5] Flow: Prudhoe Bay, 2.36 B ft³/d.

TABLE C.—TOTAL JOBS GENERATED BY DIRECT AND INDIRECT EXPENDITURES

	El Paso	Alcan	Arctic
1977–78	1,850	1,700	0
1979	7,150	17,450	21,350
1980	80,600	65,500	31,250
1981	100,950	92,250	62,850
1982	64,550	59,000	67,200
1983	15,550	150	22,150
1984–93	0	4,400	5,950
Total	270,650	240,450	210,750

REPORT ON SUPPLY DEMAND AND ENERGY POLICY

Executive Summary

This report combines two working group reports: one on supply of, demand for and cost of Alaska gas,[1] and a second on the relationship of an Alaska gas transportation system project to the President's proposed National Energy Plan (NEP). The first chapter presents a detailed supply-demand analysis of an Alaska gas project by itself, and is an extension of a comment on the findings of the Federal Power Commission (FPC).[2] Chapter II considers an Alaska gas project in the context of the NEP. The third chapter discusses alternative uses of the Alaska gas resource in the event that none of the proposed transportation systems is determined to be in the national interest.

The FPC found that the Prudhoe Bay Oil Pool contains 22.2 to 23.7 tcf of recoverable gas reserves (40 tcf in-place), enough to support sales of at least 2.0 bcfd.[3] They also found some possibility of increased delivery from the North Slope, and recommended that any certificated transportation system be designed to initially carry 2.0 to 2.5 bcfd, and be capable of expansion for an additional 1.0–1.5 bcfd. They also found that gas resources in Canada's Mackenzie Delta are only adequate to support deliverability of 1.0 bcfd.

In this report, the United States Geological Survey of the Department of the Interior concurs with and elaborates on the FPC findings on gas production potential for Alaska's North Slope, but concludes that a lower figure, 0.6–0.7 bcfd, is more appropriate for Mackenzie Delta deliverability. Because of the lack of field production experience, assessments of reservoir behavior involve some uncertainty. The unit production plan submitted to the State of Alaska by the Prudhoe Bay producers requests authorization for the sale of a minimum 2.0 bcfd of gas to a pipeline, on the grounds that such sales can be made without a significant reduction in oil recovery over the life of the field. The producer's plan is based on the results of the reservoir engineering studies which indicate that gas production, accompanied by water injection, will actually increase oil recovery slightly. There is a small risk that gas deliveries from the Prudhoe Bay oil pool would have to be reduced after production has begun, but that risk is considered negligible, particularly as other reserves are available to make up any possible shortfall from the main pool.

In a comparison of the effects of the three proposed transportation systems on consumption, shortages and prices, there is no overwhelming evidence that any one of the three proposed systems should be

[1] Throughout this report, the term "Alaska gas" is used to refer to natural gas from the area north of Alaska's Brooks Range, when gas production from south of the Brooks Range was intended to be included, it is specifically identified.

[2] "Recommendation to the President: Alaska Natural Gas Transportation Systems," Federal Power Commission, May 1, 1977, hereinafter referred to as "the FPC recommendation."

[3] bcfd: billion cubic feet per calendar day.

either chosen or eliminated from consideration. There are differences, but they are so small when compared to the uncertainties in the specification of gas distribution and transportation costs as to prevent the selection of a particular system on this basis.

As Alaska gas will amount to approximately 5 percent of total natural gas consumption at the time it becomes available, the principal impact of Alaska gas on natural gas supply and demand will be a small increase in natural gas consumption and a relatively large reduction in natural gas shortages which are expected in the absence of any other action. By reducing the potential shortage, and thus the demand for substitute fuels, the delivery of Alaska gas will cause oil imports to be less than if no delivery system were constructed.

The delivered price of Alaska gas could be higher than the FPC's estimate of the market value price if: (1) the FPC established a field price that was greater than about $1.50 in 1985 or about $2.00 in 1990 (both in 1975 dollars); (2) project cost overruns were such that a fixed field price plus the escalated transportation costs exceeded market value; or (3) cost overruns were such that, under a formula pricing approach, the transportation cost plus the minimum field price exceeded market value. With continued price regulation and rolled-in (average cost) pricing, delivered prices in excess of market value would probably not change the basic conclusion that when significant shortages exist, Alaska gas would be accepted and would increase total consumption by satisfying the demand of industrial customers.

Under rolled-in pricing, the effect of Alaska gas on the average interstate city gate (wholesale) price can be analyzed to determine the marketability of Alaska gas. If we assume that large scale industrial fuel switching may take place only when the average price of gas reaches the price of substitute fuels, such as distillate fuel oil, Alaska gas (as a relatively small portion of total supply) could reach extremely high prices before encountering marketing problems. An analysis of the weighted average city gate price for the Nation and for FEA Region V (6 Midwestern States), which receives a large portion of the Alaska gas, suggests that the Alaska gas delivered price would have to be in excess of $10/mcf before either the national or regional average price reached parity with distillate.

Under an incremental pricing scheme, which would allocate higher priced gas to lower priority users (the industrial sector), the factor determining the maximum price of Alaska gas will be the nature of the industrial sector demand for gas. Under this pricing scheme, Alaska gas would most likely be competing with other incremental gas, such as imported LNG, in order to serve higher priority industrial customers, rather than with other fuels, such as distillate. The price of incremental LNG in 1985 has been estimated at $3.70/mcf and in 1990, $4.50/mcf. These figures probably represent the lower end of a range of prices at which Alaska gas can be marketed, with the upper bound determined by the characteristics of the industrial sector demand.

The FPC recommendation concludes that any decision as to the need for additional new facilities for delivering Alaska gas to the Western States (a Western leg) be deferred for one to two years. This deferral will not delay delivery of gas to the Western States, since the lead

time for construction of the entire pipeline is two to three years greater than that for a Western leg. Moreover, sufficient information is still not available to make an informed judgement as to the extent of idle capacity that may occur in the future on existing gas importation systems as a result of changes in the level of gas exports from Canada. This task force finds no reason to differ with the FPC recommendation on the issue of construction of a Western leg.

A method of distributing Alaska gas within the lower-48 States, known as displacement, has been proposed. By this method, natural gas from existing lower-48 deposits would be rerouted using system which are, to a large extent, already in place, thus reducing both the time required to effect delivery and the funds required to build a transportation system. Available pipeline capacities in the lower-48 appear to be sufficient to deliver Alaska gas by displacement. Actual physical capacity is not the problem, even if proposed Mexican imports are included in estimates of supply. The real issue in displacement is cost-sharing; as gas shipments change as a result of displacement, the average cost of service to customers will change depending on the magnitude of the change in shipments and other factors. The differential cost changes to customers of different pipelines create a problem of cost distribution directly related to the displacement scheme. All three proposed Alaska gas systems depend on deliveries by displacement to some degree. This report concludes that these problems are manageable; last winter's experience with emergency gas deliveries by displacement confirmed that these problems can be resolved, although not without some difficulties. Special legislative authorities, similar to those granted under the Emergency Natural Gas Act passed last winter, might be helpful to resolve cost-sharing problems during non-emergency circumstances.

The NEP does not contain proposals which directly relate to delivery of Alaska gas. It does, however, propose several actions which could affect the need for this gas or the timing of its delivery by stimulating additional domestic natural gas production and by reducing industrial and utility demand. The proposed plan would stimulate additional production by allowing higher well-head prices for new production. The plan would lower industrial and utility sector demand for natural gas by extending the current mandatory program for conversion to alternative fuels, by imposing fuel use taxes on industrial and utility consumers, and by offering rebates on these gas taxes as consumers install equipment to consume coal.

We project that, in 1985, with the implementation of the NEP, there will be a temporary alleviation of the natural gas shortage. By 1990, substantial shortages reappear. Alaska gas, to the extent that it is available in 1985, will trade off against and thus reduce the level of foreign imports. It could, therefore, serve to reduce our dependence on potentially interruptible foreign sources, regardless of its impact on the gas supply and demand balances. The elimination of a gas shortage is dependent on the achievement of the NEP's objectives in the areas of coal conversion, demand reduction through conservation, and expansion of energy supplies in the lower-48 States. Alaska gas in the mid-1980's would serve as a hedge or cushion to insure that natural gas shortages do not occur even after NEP implementation.

There are additional potential gas resources that have been considered as possible hedges against shortages in the mid 1980's. These include accelerated OCS leasing schedules, coal gasification, increased imports from Mexico, unconventional sources such as Devonian shale, Western tight sands, methane from coal seams and geopressured brines, and other technological advances in resource recovery. Implementation of all of the alternatives which are price-competitive with Alaska gas, and an Alaska gas project itself, are required to close the supply gap projected for 1990.

After 1990, gas from unconventional sources should become available in substantial quantities on the assumption that depletion of conventional gas supplies will have forced prices up to levels where unconventional sources can be competitive. Large-scale coal gasification is the source which is expected to limit the price at which competing sources can be sold. Current estimates place gas from at $4 to $5.50 per mcf wholesale (1975 dollars), including 30 cents to $1.00 per mcf to transport the gas to the city gate.

In 1990 and after, the market position of Alaska gas seems assured. Due to declining deliverability of lower-48 conventional gas reserves, an Alaska gas project would go from a position of one of the more expensive sources of gas in 1985 to one of the less expensive sources in 1990. The timing and nature of this transition presents a possible option to the President of delaying for a few years implementation of one of the competing gas transportation projects. The President, in reaching his decision, should carefully consider the benefits versus the possible consequences of delay.

In the event that implementation of one of the competing gas transportation system proposals is determined not to be in the national interest, there are alternative uses for the Alaska gas resource. Although conversion to methanol results in a substantial loss of the energy value of the gas, there is a large and growing market for that product in the lower 48 states, particularly in the industrial sector. Methanol delivered from the North Slope is not currently competitive with alternative sources, but it may well be before the end of this century.

Another possible use is conversion to ammonia and urea products. North Slope production costs are naturally quite high. However, the growth in ammonia and urea production itself could absorb all North Slope annual gas production at around the year 2000.

Other gas transportation alternatives considered include icebreaking LNG tankers. There has been recent Canadian interest in using such tankers in bringing out gas from the Arctic Islands. The cost of liquefaction on the North Slope would be higher than in South Alaska; but it is conceivable that gas might be delivered to the East Coast in this manner at a cost comparable to that for East Coast delivery under any of the 3 proposed transportation system projects considered here.

REPORT ON SOCIOECONOMIC IMPACTS

PREFACE

This report is one of several written by agencies of the Federal Government on various issues pertinent to the President's decision on the alternative Alaska natural gas systems. Section 6(a) of the Alaska Natural Gas Transportation Act of 1976 specifies that the Federal agencies must submit by July 1, 1977 any information useful to the President supplementing that contained in the Federal Power Commission Recommendation of May 2, 1977.

This report contains comments on the socioeconomic impact analyses submitted to the Federal Power Commission during its proceedings, and on the Commission Recommendation itself. The purpose of the analyses in the report is to present and discuss some important factors which appear to be significant enough for consideration in the President's overall decision. Given this specific purpose and the massive amount of evidence which has accumulated in the past three years, this report is not intended to be a comprehensive review or an analysis independent of previous work. Detailed questions must be referred to documents such as the Socioeconomic Briefs filed with the FPC, the Interior Department Final Environmental Impact Statement, the Berger Inquiry Report, Judge Litt's Decision, or the Commission Recommendation.

This report was prepared by Ernest S. Ting, Office of Coastal Zone Management, National Oceanic and Atmospheric Administration at the request of Dr. Edward Miller, Acting Deputy Assistant Secretary for Energy and Strategic Resource Policy.

THE COMMISSION RECOMMENDATION, MAY 2, 1977

The Federal Power Commission's overall conclusion was that the socioeconomic impacts of the pipeline proposals "offer little guidance for the final choice among the competing applicants."[1]

In the Commission's view the socioeconomic benefits from any of the three proposals are "overwhelming" and are largely independent of the exact route. The primary benefits which were identified by Judge Litt and quoted by the Commission are the large sums received by the State of Alaska in the form of royalty gas payments and severence taxes. Also among the benefits cited were revenues from property taxes, and personal and corporate income taxes. The Commission notes that these benefits will be accompanied by increased public expenditures, but claims that such expenditures will stimulate economic activity and improve the "general economic well-being of Alaska."[2] Nevertheless, the Commission warns that "substantial social and economic disloca-

[1] Federal Power Commission, "Recommendation to the President," May 1, 1977, p. VI–27.
[2] "Recommendation to the President," p. I–31.

tions" should be expected in the State of Alaska during the construction phase.[3]

The Commission concentrates its concern in Alaska, noting that the primary socioeconomic impacts "which are definable," especially for the United States, are in that relatively undeveloped state. For the lower 48 states and Canada increases in public revenues are cited as the principal impacts; other effects are considered minor except for the influence on the traditional lifestyle of native communities in the Yukon and Northwest Territories.

In considering the preferred route among the three systems, the Commission detailed several concerns in Alaska: population growth, employment and unemployment, cost of public services and facilities, effects on income and spending, demand for housing, public safety and recreation, and intrastate use of royalty gas. The report summary asserts that the El Paso system would create the largest impacts with "more jobs, more personal income, more property subject to tax, and more indirect economic activity . . . but would also require more social services and would probably be associated with the highest unemployment."[4] Impacts associated with the Arctic system would be "much smaller" and the Commission states that Alcan impacts would fall somewhere in between. The FPC decision also notes the possibility that lower transportation costs associated with Arctic may produce greater royalty income to Alaska, but in its final assessment the Commission finds no compelling reason to choose one system over the others on the basis of socioeconomic impacts.

Issues Discussed

Issues which have been identified by the Commission and interested parties include:

1. What will be the increase in population associated with each proposal? What will be the availability of housing in the affected communities for the additional population?
2. What are the public fiscal impacts of the various proposals, i.e., what are the effects on State and local revenues, and expenditures for public services and infrastructure? Will there be a strain on available public services and facilities?
3. How much additional employment will be provided by each proposal? What will be the effect on unemployment? Who will obtain any additional jobs: native residents, non-native Alaskans, or inmigrating job-seekers? What are the "long-term" employment possibilities associated with each proposal, as opposed to temporary construction employment?
4. What will be the effect of each proposal on personal and corporate income, on the price of goods and services?
5. What will be the effects of each proposal on native community life-styles? What social problems might be expected to arise with the rapid growth or change of the rural villages?
6. Is the intrastate use of royalty gas in Alaska a factor in the consideration of the various proposals? If it is, how does this factor affect the evaluation of each proposal?

[3] *Ibid.*
[4] *Ibid.*, p. IV–27.

7. In terms of the distribution of benefits and costs among regions of the United States, and particularly between Alaska and the lower 48 States, where does the public interest lie? Is it in the public interest to subsidize the economic development of Alaska at the cost to lower 48 States of a higher delivered-gas price?

Summaries of Positions and Evidence of Interested Parties

APPLICANTS

1. Alaskan Arctic Gas Pipeline Company

In its extensive brief, Arctic maintains that its proposal is the most beneficial to the State of Alaska since it will provide large benefits and cause the least socioeconomic cost.[5] This assessment is based on the assertion that the major socioeconomic benefits from any pipeline project will be from severence taxes and royalties, and that such benefits are roughly equal for all three projects.[6]

Arctic further states that since its system has only a relatively short section in Alaska, and that section is in the much less accessible northern portion of the State, the impacts of the Arctic Gas System on public facilities and services will be much less than the impacts of the El Paso and Alcan systems. The magnitude of the population effects is smaller, fewer communities in the State of Alaska are affected, and prospective immigration by out-of-state job seekers is discouraged by the inaccessibility and seasonal construction schedule of the North Slope.

Arctic responds to the contention that the other two proposals provide greater benefits to the Alaskan economy because of their greater lengths in Alaska by characterizing the severance tax and royalty revenues as primary in magnitude and as long-term benefits as opposed to short-term construction employment.[7]

Excerpts from the Arctic socioeconomic brief illustrate the contentions. "Compared to severance taxes and royalties, all other benefits to the state will be transitory and miniscule. (T)he importance of gas-related employment is . . . negligible . . .[8] Other revenues, i.e., property tax and corporate income tax revenues, are said to be small; personal income tax revenues important only for the relatively short period of construction.

The Arctic Gas System is the only proposal which would not provide the possibility of delivering royalty gas for use in Southern Alaska. Arctic discounts any benefits claimed by the State of Alaska from industrial development induced by the intrastate availability of North Slope natural gas, alleging that the State has not been able to present any solid evidence either on the basis of past experience in Cook Inlet or firm expressions of industry interest that such industrial uses will occur. In addition, Arctic notes that possibility of an exchange agreement in which Cook Inlet gas could be provided in Southern Alaska in return for North Slope royalty gas.

[5] Brief of Arctic Gas Project on Socioeconomic Issues, p. 2.
[6] Arctic points out that if the gas transportation costs are lowest with the Arctic system, as projected, and if wellhead prices are deregulated, severance tax and royalty income to Alaska may actually be largest with the Arctic system.
[7] Dr. David Kresge, Tr. 33,709–33,710.
[8] Brief of Arctic Gas Project on Socioeconomic Issues, pp. 12–13.

Arctic cites estimates that in the case of the Alyeska construction as many as 56,000 in-migrants may have entered Alaska in 1975 alone, and that 35 percent of the adult in-migrants had specific job waiting for them. These unemployed increased the public welfare burden in Alaska, and the entire growth in population caused a great increase in demand for public facilities and services. Arctic states that the large increase in demands for goods resulted in shortages and rapid price rises, and alleges that similar occurrences could be expected with the large impacts on the State of either the El Paso or Alcan route.

The following projections of peak construction—induced population increases in Alaska are mentioned by Arctic: [9]

	El Paso	Alcan	Arctic
FPC	24,100		3,000
DOI	33,300	33,400	4,800
State of Alaska	46,470		16,618
El Paso/Alaska Co	53,900		
URSA (Arctic consultant)			2,600

The large size of the El Paso and Alcan impacts is emphasized. In addition, Arctic cites an estimate that 40 percent of the Alyeska construction workers sent their paychecks out of state, a statistic which would indicate that much of the increase in per capita income during the construction phase does not remain in the State.

Arctic criticizes the impact of El Paso on small Alaskan communities by citing the El Paso projection of the pipeline—impacted population of the Cordova-McCarthy census division: [10]

1977	2,400
1979	9,100
1982	4,100

Once again Arctic emphasizes the strain on and costs of increased but transitory demand for public services and infrastructure.

Arctic claims that its extensive planning with the citizens of Kaktovik, the principal village impacted by the Arctic System, will "maximize benefits and avoid dislocation." [11] Alcan is critized for not having yet acted on plans to carry out similar activities.

Finally, in Canada Arctic plans to locate hiring halls in larger sourthern metropolitan areas, thereby discouraging migration of unemployed workers to the more fragile and rural Yukon and Northwest Territories.

2. El Paso Alaska Company

After reviewing the methodology behind the projections made by various parties before the Commission, El Paso goes on to state that its projections and those of the FPC and the State of Alaska all agree that the socio-economic impacts from the El Paso proposal would be greater than the impacts from Alcan or Arctic. The key to El Paso's argument is its assertion that the greater impacts reflect greater benefits to the State of Alaska.

[9] Arctic Brief, pp. 24–26.
[10] Arctic Brief, p. 45.
[11] Ibid.

After illustrating how its proposal would provide the greatest impact in terms of population and absolute employment, El Paso also asserts that it would provide the greatest impact on aggregate personal income and in-state spending, citing the FPC FEIS projections.[12]

In regard to per capita personal income, the projections of the FPC in its FEIS show a drop after the first several years of construction and operation of the project.[13] El Paso's consultant on socioeconomic impacts alleges that this downturn can be explained as a lowering of the average as later growth in the economy increases employment in the trades and services industries, which are lower-paying.

El Paso asserts that the "revenues accruing to the State and local governments as a result of the project will exceed increased public service costs throughout the life of the project," [14] and that the improvement in financial capacity will allow those governments to provide exanded services.

El Paso also cites benefits from the availability of gas to potential consumers along the Trans-Alaska route, and claims that the natural gas pipeline construction will provide employment for some of the Alyeska workers, thereby easing the severe unemployment following completion of the oil pipeline.

The endorsement of both the State of Alaska and the City of Cordova is claimed by the El Paso applicants. The State has expressed public support based on arguments quite similar to those used by El Paso. Among the benefits cited by the Alaska Commissioner of Revenue is his estimate of an additional $126 million in direct revenues to the State from the El Paso system as compared with the Arctic system.

El Paso cites statements by the City of Cordova, the City Manager and the president of the local Chamber of Commerce expressing support for the economic stimulus effects of the El Paso system. The statement by the City of Cordova indicates recognition of "significant and far-reaching effects on the economic, social and environmental well-being of the Cordova Community," but also expresses the belief that "the great majority" of these effects are "beneficial." [15]

The Cordova statement asserts that most elements of the community look forward to increased business from construction workers and "the stabilizing influence on the Cordova economy which the 300 permanent highly-skilled jobs at the LNG will provide, as well as the potential tax base which its siting on Gravina Peninsula will afford." The city also offers the following evaluation, "El Paso's Trans-Alaska Gas Project is precisely the type of controlled development needed by the Cordova community, the State of Alaska and the entire United States." [16]

An attorney for Chugach Natives, Inc. and the Eyak Corporation claims support for the Gravina Point terminus for its contribution to diversifying the Cordova economy.[17]

El Paso's final point is that since impacts will be concentrated in Alaska and particularly at Cordova, the views of the respective governments and citizens should be "determinative of the question of benefit." [18]

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[12] El Paso Brief, pp. 9–10.
[13] FPC, FEIS, p. I–C129.
[14] El Paso Initial Brief, p. 15.
[15] El Paso Initial Brief, pp. 17–18.
[16] *Ibid,* p. 18.
[17] *Ibid,* pp. 19–20.
[18] *Ibid.*

In its reply brief El Paso criticizes Arctic's suggestion that its lower cost of transportation may provide higher revenues to the State of Alaska, noting that such an outcome is possible only if Congress were to de-regulate the wellhead price of Alaskan gas for intrastate sale.

El Paso also responds by disagreeing with Arctic on the importance of benefits other than royalty payments and severance taxes. Population, employment and income effects are emphasized as substantial benefits to the State of Alaska.

3. Alcan Pipeline Company

Alcan describes the general economic impact of their proposed system as increasing the growth rate of the State of Alaska and directing that growth toward regions affected by the pipeline route. As concluded by other parties in similar statements before the Commission, Alcan says its system "would have a significantly greater economic impact on Alaska than the Arctic Gas proposal, but a somewhat lesser impact than the El Paso proposal." [19]

The following impacts are outlined in Alcan's socioeconomic brief: [20]

(*a*) Addition to Gross State Product (GSP) peaks during the construction phase in 1980 at $210 million. GSP impact is concentrated in the Fairbanks and Interior regions during construction (which is completed in 1983) and later increments shift to the Anchorage region. This regional distribution of impacts over time holds true for all of the economic impacts discussed in the brief.

(*b*) Additional employment peaks in 1980 at 20,278 and drops significantly immediately after completion of construction, rising gradually thereafter. Anchorage region employment is more stable than the Interior and Fairbanks region employment which depends heavily on the construction sector.

Real wages and salaries follow patterns similar to that of employment.

(*c*) Population impact also peaks in 1980, at 28,692, with regional distribution similar to that of employment impacts.

(*d*) Personal income peaks in 1980 and 1983. After 1983 the effect of the project is to lower real per capita income. The explanation for this effect is the same as for El Paso; later increments of employment are in lower-paying support services as compared with high-paying construtcion jobs.

(*e*) Impact on state revenues in 1984 and 1990,[21] ranging from $185 million to $346 million in 1984, dropping after construction and increasing thereafter to a range of $182 million to $387 million in 1990. Local revenues behave similarly, peaking in 1981, 1984, and 1990.

State revenues are largely composed of "petroleum sector taxes and charges" during construction and "direct taxes and royalties" during operations, while increased local revenues are largely from property taxes and sales taxes.[22]

[19] Alcan Initial Brief, p. 4.
[20] *Ibid.*, pp. 2–10. Quantitative results are from an application of the MAP model by the University of Alaska ISEGR to the Alcan system, construction assumed to begin in 1978, operation in 1981.
[21] 1990 is the last year of the model simulation.
[22] Alcan Initial Brief, p. 9.

Alcan asserts that, "In the case of both state and local governments, expenditure impacts will tend to follow the same pattern as revenue impacts." [23]

Regarding negative impacts of their proposal, Alcan states that "the positive benefits to the local communities and people, as well as to the state as a whole, will far exceed any negative social impacts that may occur." [24] The claim is made that the Alcan Project will ease the post-Alyeska transition, and that most of the communities to be affected by Alcan have already made some adjustments to accommodate larger-scale development through their Alyeska experience.

It is apparent from Alcan's brief, however, that there are a few native communities along the Alaska Highway portion of the route which certainly will be significantly affected, with a "lessening of cultural traditions" and the emigration of youth in search of high wages in pipeline employment. The most significantly-impacted communities are expected to be Dot Lake, Tanacross, Tetlin and Northway.[25]

Benefits predicted by Alcan for native communities include additional employment, job training and the "awarding of construction-related contracts to native claims act corporations and other native-owned firms." [26]

Finally, in Canada Alcan says benefits will be of similar nature as those in Alaska, and socioeconomic costs are minor, in part because of the use of the established Alaska Highway corridor. Regarding native claims, Alcan expresses optimism for settlement in the Yukon while expressing severe doubts about Arctic's ability to surmount native claims disputes in the Mackenzie Valley.[27]

In its Reply Brief Alcan attacks the arguments of Arctic, asserting that (1) the benefits other than severance taxes or royalties, such as employment, personal income, other government revenues and development of the economy, are undervalued by Arctic, and (2) the transportation cost of the Alcan system is *lower* than Arctic and consequently, if there is any difference, royalties would be higher with the Alcan system.

STATE OF ALASKA

Alaska expresses its strong desire and need to develop a stable, diverse economy and "social environment," in contrast with the boom-bust cycles of previous extractive industries. The State suggests that the Commission should use as a criterion for judging the natural gas systems the "lasting contribution to Alaska's healthy growth each would make." [28] The Alaskan Statehood Act is even cited as containing Congressional intent to promote the independence and growth of the State economy.

The State also emphasizes repeatedly the necessity of having royalty gas for use within Alaska to promote industrial development.

Overall the State of Alaska favors a trans-Alaska route, and in particular the El Paso proposal, believing that the greater economic impacts will expand the economy to a more viable size and provide much greater revenues for expenditure on public facilities and services.

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[23] *Ibid.*
[24] *Ibid.*, p. 11.
[25] *Ibid.*, pp. 14–15.
[26] *Ibid.*, p. 15.
[27] *Ibid.*, p. 18.
[28] State of Alaska Initial Brief, p. 3.

Other Major Relevant Reports

INTERIOR DEPARTMENT FEIS (MARCH 1976)

In Alaska the Interior Final Environmental Impact Statement predicts beneficial effects on unemployment, but that assessment was based on the assumption that preparatory construction work would begin in 1976.

The FEIS also indicates the likelihood of "major and significant adverse impacts" from the Arctic system on the wildlife on which the native subsistence lifestyle is based. As a result the loss of traditional culture is accelerated.[29]

In Canada the economic impact of Arctic would be largely limited to a few communities (Inuvik, Norman Wells and Fort Simpson), according to the FEIS. Employment of local labor would be over 2,000 at peak construction but perhaps only 200 in operation.[30]

With regard to the native claims issue, the Interior FEIS states: [31]

> One of the constraints in the Canadian Government guidelines for northern pipelines (Department of Indian Affairs and Northern Development, 1972) is that: "Any certificate issued will be strictly conditioned in respect of . . . the protection of the rights of northern residents, . . . " Furthermore, the stated government policy is that any decisions made concerning northern pipelines will be without prejudice to Indian land claims and treaty rights.
>
> The extent to which land claim settlements and other legal prerogatives of local residents may determine the granting of the proposed pipeline construction permit is not clear. The attitude of the local residents, as interpreted from limited and subjective surveys, seems to range from full acceptance to complete rejection of the proposed pipeline project. Berger Inquiry—Canada (May 9, 1977 Report).

On May 9, 1977 the Report of Justice Thomas R. Berger on the Mackenzie Valley Pipeline Inquiry was released to the public. The report is an advisory document for the Minister of Indian and Northern Affairs on the social, economic and environmental impacts of a natural gas pipeline through the northern Yukon and Mackenzie Valley.

The major recommendations of the report are that (1) no pipeline should be constructed through the northern Yukon because of environmental impacts, and (2) any Mackenzie Valley pipeline should be postponed for at least ten years to allow for settlement of native claims. In addition, Judge Berger expresses his opinion that the evidence before the Inquiry indicates that the Alcan route may be satisfactory from an environmental viewpoint.

The report discusses the testimony of one thousand witnesses at thirty-five community hearings in the Yukon and Northwest Territories. Judge Berger explains the heavy dependence of native culture on the subsistence lifestyle, on unrestricted use of land for hunting, fishing and trapping, on sharing and strong community identity.

Quoting from the report: [32]

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[29] DOI FEIS (Alaska Volume), p. 293.
[30] DOI FEIS (Canada Volume), p. 473.
[31] *Ibid.*, p. 486.
[32] Berger Inquiry Report, pp. xxiv–xxv.

Another recent report of interest is the study of effects on the national economy, "Employment Impact of the Alternative Proposals for the Alaska Natural Gas Pipeline" by the Federal Energy Administration.

The native people insist that the settlement of native claims should be a beginning rather than an end of the recognition of native rights and native aspirations. In my opinion, a period of ten years will be required in the MacKenzie Valley and Western Arctic to settle native claims and to establish the new institutions and new programs that a settlement will entail. No pipeline should be built until these things have been achieved.

It would therefore be dishonest to try to impose an immediate settlement that we know now—and that the native people will know before the ink is dry—will not achieve their goals. They will soon realize—just as the native people on the prairies realized a century ago—that the actual course of events on the ground will deny the promises that appear on paper. The advance of the industrial system would determine the course of events, no matter what Parliament, the courts, this Inquiry or anyone else may say.

Conceptual and Substantive Deficiencies In Prior Analyses

There are several general concepts or major issues which have not been adequately addressed in most prior analyses and arguments presented before the Commission. These include:

1. *Gross "Benefits" from Employment versus Net Socioeconomic Impacts.*—In the briefs of the State of Alaska and El Paso especially, the socioeconomic impact assessments fail to account for or give sufficient weight to the costs of an expanded population in terms of cost of public services, and capital and operating costs of public facilities. In addition, the question of whether Alaskan or in-migrants fill new pipeline-related jobs is crucial to the accurate measure of net benefits from increased employment.

2. *Aggregate System Impact versus Maximum Local Impacts.*—Emphasis in some of the briefs tends to be on a comparison of the total impacts of each of the three systems. It is important to give due weight to examining the impacts on individual communities, particularly native villages. In addition, the distribution problem created when the taxable property of a project is located in one community, but the public services and facilities are needed in another needs to be examined more thoroughly for each of the proposed routes.

3. One problem concerns the tendency to view the *degree* of change (in population, for example) as the sole relevant measure of socioeconomic impact on a community. Consideration of the *rate* of change might be an important factor in assessing the severity of the impacts from each of the proposals, but little attention is given to this possibility. This point is particularly relevant to the native communities. It is often said that the native economy will undergo a transformation from a subsistence basis to a wage basis regardless of whether a pipeline is constructed. It is nevertheless important to assess the rate of change as a determinant of the magnitude of impacts.

4. *Social and Cultural Problems, Native Claims.*—The briefs filed before the FPC generally focused on the narrower implications of the pipeline systems for state and local economies. The effects of any pipeline system on social and cultural concern such as alcoholism, and the tendency toward cultural breakdown in impacted native villages has not been discussed in enough detail. The entire issue of the desires of native communities and native claims has been given a cursory treatment in several socioeconomic impact discussions.

Analysis

The following discussions are intended to facilitate the evaluation of the Alaska Natural Gas Transportation Systems.

1. Each of the three proposed systems will create a large amount of additional employment during construction and a generally small amount following completion of construction. Since it is unlikely that construction on a natural gas system would start soon enough to capture a large portion of the workers laid off from the Alyeska construction, a large construction work force would tend to continue the disequilibrium characteristic of the Alaskan economy.[33] Since it has a much smaller construction workforce than the El Paso and Alcan systems, the Arctic Gas System would have less of the effect of perpetuating large unemployment than would the other two systems. El Paso has the largest long-term operation employment in Alaska with its LNG terminal, but even that number is relatively small (300 at the terminal). Many of the unemployed from Alyeska were originally immigrants who may be encouraged to extend their stay in Alaska in hopes of obtaining a construction job if either the El Paso or Alcan route is certified. In addition, more Alaskan residents and natives will be attracted into the high-wage construction market, leaving behind lower-income but more stable, longer-term livelihoods. Unemployment following the completion of either of the two longer routes is likely to be very high. The development of enough new industry in southern Alaska to absorb the unemployed is highly speculative at this time.

2. It is generally considered in the best interests of the State of Alaska to establish a stable economy, less dependent on the large and transitory disruptions of the extractive industries, particularly oil and gas development. This transformation of the economy can be attained by reducing reliance on large construction projects, diversifying the commercial and industrial base and strengthening long-term employment opportunities. The State of Alaska proposes to accomplish this transformation with a Trans-Alaska natural gas pipeline, thereby encouraging rapid development of infrastructure to support enlarged economic activity and making gas available for new industrial uses. This strategy will work if businesses indeed are willing to make major investment in southern Alaska. If successful the State will have rapid development, but in the interim will incur major socioeconomic dislocations. The El Paso proposals would probably provide the greatest stimulus to the Alaskan economy, with lesser effects attributable to Alcan and the smallest impact by the Arctic system. Combined with the massive revenues from North Slope oil production, however, any of the systems would provide Alaska with sufficient amounts of funds to greatly expand services.

The question of whether the availability of North Slope natural gas is an important ingredient in the diversification of the Alaskan economy is unsettled for at least two reasons. There is the possibility that exchange agreements could provide Southern Alaska with Cook Inlet natural gas in trade for the state's royalty gas from the North Slope,

[33] The Anchor Times of May 28, 1977 reports a rise in the state unemployment rate from 14.1 to 15.5 percent during April, attributed by State Labor Department economists to Alyeska lay-offs. Another state economist is quoted as expecting 12,000 additional lay-offs (7.5% of the total state workforce) with the completion of construction.

eliminating the need for a Trans-Alaska pipeline to provide gas for industial uses within the state. It is not clear, however, whether there are enough natural gas reserves in the Cook Inlet area to provide significant amounts of gas to the state over the next couple of decades.

Second, the potential for industrial development based on the use of natural gas is uncertain. There is only a limited amount of experience from the relatively modest petrochemical development around Cook Inlet as a guide to industry interest in Alaskan gas.

Summarizing, with regard to the royalty gas question El Paso and Alcan may have an advantage, but the magnitude of any such advantage is open to wide debate.

3. In his initial decision, FPC Administrative Law Judge Nathum Litt raised the issue of inter-regional distribution of benefits. Specifically Judge Litt addressed the question of whether it was appropriate for the Commission to consider the benefits of induced economic development for the State of Alaska in its decision on certification. Litt observed that since the transportation cost for gas delivered via the El Paso route would be substantially higher than that of alternative routes, a decision which gave positive weigh to the induced development benefits implied a policy of subsidizing Alaskan economic development by forcing the lower 48 States to pay a higher delivered price for North Slope gas. Litt concluded on the basis of legal precedent that such a consideration was an inappropriate basis for a Commission decision. The President, however, has the option of including regional economic benefits in his deliberation.

4. The net revenue benefit of each of the proposals of the State of Alaska and local communities is rarely estimated in the evidence, particularly that presented by the applicants or the state. Since Alaska is largely undeveloped, even relatively small increases in population can put a severe strain on local public services and facilities. A population increase of over 30,000 in the entire state due to the El Paso or Alcan system implies very substantial public expenditures despite the fact that much of the route for those pipelines would be identical to that of Alyeska. Based on induced population and revenue projections, it appears that the *net* revenues from the three systems over the construction period might be comparable; much larger revenues associated with a trans-Alaska route such as El Paso being offset to a substantial degree by much larger public expenditures for expanded facilities and services to support in-migrants.

Of course the longer systems would also provide larger net revenues in later years of operation, after infrastructure adjustments had been made to accommodate the expanded population.[34]

The preceding net revenue analysis is based on public revenues and expenditures for state, regional and local governments *combined.* In regard to impacts on local government fiscal conditions alone, the selective and *timely* provision of financial assistance by the State of Alaska, regional corporations or pipeline firms will be critical in avoiding the imposition of severe hardships on rural communities along any pipeline route.

[34] FPC FEIS, pp. I–C144–148. Arctic Initial Brief, pp. 24–26. Gladstone Associates report for Office of Coastal Zone Management, NOAA, U.S. Department of Commerce, "2nd Technical Memorandum: Per Capita Standardized Unit Costs, Current Cost Multipliers and Local Area Multipliers," pp. 1–7, 1–13.

Communities impacted by Alyeska may be able to absorb the impacts of a natural gas pipeline without severe difficulty. Along the El Paso and Alcan routes cities such as Fairbanks and Delta Junction would utilize their already enlarged capacity of public facilities and services.

Other less developed communities, e.g., Kaktovik along the Arctic route, Dot Lake, Tanacross, Ttelin and Northway along the Alcan route, and Cordova along the El Paos route, will face major challenges to accommodate the effects of nearby construction activity. Those communities which experience a pipeline-induced increase in population may face the following two fiscal problems: (1) the need for increased public expenditures arises immediately, but any property tax revenues do not materialize until later years, and (2) a community that bears the burden of public expenditures may not have taxing powers over the lands through which the pipeline passes. The most dramatic example of these problems would be at Cordova if the El Paso system were constructed. Major population impacts (a four-fold increase in two years, according to El Paso projections) and additional public expenditures associated with the LNG terminal construction would center on Cordova, but property tax revenues would be based at Gravina Point. The state may wish to arrange for a transfer of revenues to resolve the jurisdictional problem and a loan arrangement to resolve the timing ("front-end financing") problem.[35]

5. In a number of socioeconomic analyses it is stated that the transformation of small communities, particularly native villages, from a subsistence economy to a predominantly wage-based economy will likely occur even if a pipeline is not constructed. Construction of a pipeline will increase the rate at which this transformation takes place.

Such statements, made without further qualification, fail to note the likelihood that rapid development will encourage severe social problems such as crime, family disintegration and alcoholism. Experience with industrial development in Alaska and Northwestern Canada has shown that these tendencies are present to an especially alarming degree when native populations, strongly dependent on cultural ties for personal identity and economic curvival, are exposed to the radically different "modern" lifestyle. Native lifestyles, dependent on land which is unrestricted by ownership rights, are incompatible with the foot-loose and money-oriented lifestyles of pipeline construction workers.[36]

The most sensitive native settlements which could be affected by a natural gas pipeline are probably those in the isolated northern Yukon and Mackenzie Delta along the Arctic route. Native communities along the Alaskan Highway (which is followed by Alcan) have already been exposed to development forces, and pipeline impacts would be less traumatic. Nevertheless, the certification of any pipeline would ac-

[35] For facilities supporting energy activities which are coastal-dependent there is currently a Federal assistance program (specifically the Coastal Energy Impact Program administered by the Office of Coastal Zone Management of the National Oceanic and Atmospheric Administration, U.S. Dept. of Commerce) to provide loans and bond guarantees to aid communities with the front-end financing problem.

[36] "Northern Frontier, Northern Homeland: The Report of the Mackenzie Valley Pipeline Inquiry" by Justice Thomas Berger contains an illuminating and detailed, if not entirely objective description of social, cultural, economic, and political problems concerning native communities in Canada.

celerate the weakening of the native lifestyle and the spreading of social problems.

6. Of all the socioeconomic considerations, the most significant factor in a choice among the alternative pipeline proposals may be the Canadian native claims issue. The issue of native claims in the Mackenzie Valley and control over land uses in the region is highly charged, and settlement, viewed by many to be a prerequisite for any development, is not considered likely in the near future.

Justice Berger, in his "Report of the Mackenzie Valley Pipeline Inquiry," expresses the firm belief that:

> . . . the native people must be allowed a choice about their own future. If the pipeline is approved before a settlement of claims takes place, the future of the North—and the place of the native people of the North—will, in effect, have been decided for them.[37]

The apparently poor chances of early settlement, combined with the vehement insistence of native groups and the Berger Inquiry that any pipeline through the Mackenzie Valley be delayed until the settlement of native claims, could pose a barrier to early construction of a Trans-Canadian pipeline, especially the Arctic system.

Conclusion

The major conclusions are:

The decision of the Government of Canada, currently expected to be announced before the deadline for the final U.S. decision, could rule out either the Arctic or Alcan route because of the adverse effects on the cultural stability of native communities and the resulting social problems.

The El Paso system provides a somewhat greater opportunity for intrastate use of royalty gas than does the Alcan system because of the possibility of coastal industrial development with El Paso. Such additional development could provide beneficial employment and income effects.

In general both the economic development and dislocation impacts in Alaska would be greatest with the El Paso system, smallest with the Arctic system, and would fall in-between with the Alcan system.

Although the public revenue impacts of the three alternative systems would be greatest from El Paso, next largest from Alcan, and least from the Arctic proposal, the public expenditures required to serve the induced population growth also would be in that order. As a result, *net* revenue benefits during the construction period in particular may be much less than some previous analyses have implied.

The El Paso system would concentrate severe disruptive impacts on the City of Cordova, whereas the Alcan system would create significant but much smaller impacts on several native villages along the Alaska Highway.

Since there may be instances (e.g., Cordova) in which local government revenues of impacted rural communities may not cover public expenditures, the selective and timely provision of

[37] Berger Inquiry Report, p. xxiv.

financial assistance by the State government, regional corporations or pipeline firms may be helpful in avoiding severe hardships.

In summary, the significance of socioeconomic impacts for the overall route decision depends on the weight given to impacts disruptive of social and cultural structure as opposed to economic development considerations. If factors such as adverse effects on native communities and local lifestyles are given primary importance, the Arctic and El Paso routes would tend to suffer in a comparison with Alcan. If more importance is placed on a route which will stimulate the Alaskan economy, the El Paso route clearly has the advantage, followed by Alcan.

REPORT OF TASK FORCE ON INTERNATIONAL RELATIONS

FPC Conclusions and Recommendations

The initial decision on the transportation of Alaskan natural gas, prepared by Administrative Law Judge Litt, and issued by the FPC on February 1, 1977, contains a chapter on Canadian issues. The main points of the chapter are:

Just, reasonable and non-discriminatory provincial treatment of transit pipelines is provided for under the Canadian constitution.

The applicants agree that ratification of the United States-Canada Transit Pipeline Agreement will not end negotiations with Canada.

It is assumed that early development of known hydrocarbons reserves is as important to Canada as to the United States.

It is unlikely that native claims will significantly modify the Canadian Government's energy decisions.

Arctic Gas and Alcan argued that a joint project through Canada is not dependent upon a United States-Canada treaty. However, a treaty would regularize and simplify the procedures for obtaining joint approvals.

The treaty, which spells out reasonable practices of ordinary good business, does not add substantially to the expectation that a relationship which has been historically workable will remain workable.

It is expected that amendments to the treaty will be required and made from time to time.

If a pipeline for Alaskan gas is built across Canada, it is reasonable to assume that the Government of Canada will have an interest in promoting the pipeline's economic viability.

On May 2, 1977, the Federal Power Commissioners recommended that the President select an overland transportation system through Canada, if such a route is made available by the Government of Canada on acceptable terms and conditions. In their analysis, the commissioners confined themselves for the most part to U.S. issues. Only two issues related to United States-Canadian international relations were mentioned:

In reference to the "western leg" of the Arctic Gas Project, the FPC said that if Canadian gas exports to the United States are terminated upon expiration of present licenses, sufficient idle pipeline capacity will be available to move Alaskan gas to the West Coast without construction of the western leg.

Arctic Gas and Alcan will have similar socio-economic impacts in Canada. Total population and employment changes will not be great. The major impact will be on the traditional life-style of native communities along the pipeline right-of-way.

Positions of the Parties

The Federal Power Commission heard evidence concerning (1) United States-Canadian relations, (2) the Canadian decision process, (3) Canadian constitutional law.

The briefs submitted by the three applicants on the United States-Canadian issues involved in transporting Alaskan gas across Canada covered security, taxation, and political factors. El Paso emphasized the uncertainties and compromises inherent in dealing with a foreign government. Arctic Gas and Alcan argued that the Government of Canada would have an interest in the success of a commercial venture for the transportation of Alaskan gas which involves Canadian companies. Canada would therefore be unlikely to take action contrary to the interests of its own citizens. In addition, the United States and Canada have a long tradition of successful cooperation which can reasonably be expected to continue in the case of a transportation system for Alaskan gas.

The Federal Power Commission also heard evidence concerning the Canadian decision process on the pipeline. The argumentation focused on the settlement of native claims along the proposed pipeline rights-of-way. El Paso pointed out the problems involved in the settlement of native claims along the rights-of-way of Arctic Gas and Alcan. El Paso expressed the opinion that the Government of Canada's failure to settle the claims could delay a trans-Canadian pipeline decision for years.

Alcan argued that the claims problem is less serious along its proposed right-of-way in the southern Yukon than along the Arctic Gas route in the Mackenzie Valley.

The Commission also heard several days of testimony on Canadian constitutional law. El Paso's witnesses described the powers exercised by the Canadian provinces and implied that the provinces could delay or prevent construction of a transit pipeline, or could impose intolerable tax burdens.

Arctic Gas and Alcan witnesses argued that Canadian constitutional law confers upon the Federal Government of Canada unquestionable authority to implement a decision in favor of a transit pipeline.

Relevant Factors

Canadian Decision Process

The Government of Canada has been studying the proposals for the transportation of Alaskan natural gas across its territory since 1974. Separate studies are being conducted by the National Energy Board (NEB), the Berger Commission, the Alaska Highway Gas Pipeline Inquiry Board, and the Alaska Highway Gas Pipeline Environmental Assessment and Review Panel.

The National Energy Board is analyzing the relationship of the Canadian Arctic Gas, the Alcan, and the Mapleleaf projects to Canada's energy needs. The Board must determine whether any of the pipeline projects are and will be required by the present and future public convenience and necessity. The Board's findings will be submitted to the Government of Canada for its consideration in early July. The Canadian Cabinet may accept or reject the NEB's decision on a pipeline, but may not change it except by legislation.

The Berger Commission is looking into the social, economic and environmental impact of the Canadian Arctic Gas and Mapleleaf Pipeline projects in the Yukon and Northwest Territories. The Commission released the first part of its report on May 9, 1977. It recommended that no pipeline be built across the Northern Yukon, and that 10 years elapse before a pipeline is built in the Mackenzie River Valley. Part II of the report, recommending terms and conditions to be applied in the event that a pipeline is built, is expected later during the summer of 1977. The report is not binding on the Government of Canada and does not address all the factors which the Canadian Government will consider before reaching a final decision.

The Alaska Highway Gas Pipeline Inquiry Board will report on the social and economic aspects of the Alcan project in the southern Yukon. The report is to be submitted to the Canadian Cabinet by August 1, 1977.

The Alaska Highway Gas Pipeline Environmental Assessment and Review Panel, directed by Dr. H. M. Hill, is analyzing the environmental impact of the Alcan project in the Yukon. Dr. Hill's report is to be completed by August 1.

On April 28, 1977, Canadian Prime Minister Trudeau appointed Mr. Basil Robinson as Northern Pipeline Commissioner. Mr. Robinson will coordinate the activities of the various agencies of the Canadian Government in reaching a decision, and will be the Canadian Government's point of contact with the U.S. Government as the two decision-making processes unfold.

All inputs related to the pipeline decision required by the Government of Canada are expected to be at hand by early August 1977. The Canadian parliament is expected to debate the pipeline issue in July, before the Canadian Government makes its decision, and again in August.

Commenting upon the timing of the Canadian decision, Canadian Prime Minister Trudeau, during his visit to Washington in February, 1977, indicated that Canada would make a determined effort to accommodate to the anticipated U.S. decision timetable.

Settlement of Native Claims

It is the policy of the Federal Government of Canada to recognize the existence of a native interest in those areas of Canada in which the native interest has not been settled by treaty or superseded by law. The Government of Canada believes it is desirable to address the native claims issue expeditiously and, if at all possible, before a pipeline is built. However, the Government of Canada has never taken the position that it is necessary to reach a settlement before hand. It is expected that the Government of Canada will reach a decision on the pipeline issue within the anticipated US timetable, regardless of the status of the settlement of native claims. Moreover, if the United States and Canada agree to cooperate on a gas pipeline, that agreement would have to be based on an understanding that construction can be carried out expeditiously. Construction would not, therefore, be delayed by the settlement of native claims which could, if necessary, go forward concurrently.

Canadian Legal Environment

Two procedures exist for seeking review of an NEB decision related to the gas pipeline. First, Section 18 of the NEB Act permits parties to NEB proceedings to appeal questions of law or jurisdiction to the Federal Court of Appeals of Canada. Such appeals are discretionary for the Court; a court must grant leave to appeal. An application for appeal must be filed within one month of the NEB's action, unless the court or a judge finds that special circumstances allow some longer time. Once leave is granted, the appeal must be entered within 60 days.

We are informed by Canadian authorities that there should be no plausible challenge to the jurisdiction of the NEB or any significant question of law arising from its decisions. Section 44 of the NEB Act gives the NEB broad discretion in deciding on applications of public convenience and necessity for pipelines.

Judicial review of NEB action would more likely be sought under the Federal Courts Act. Under that Act, the NEB could be overturned if it "failed to observe a principle of natural justice", "acted beyond or refused to exercise its jurisdiction", "erred in law in making its decisions", or "based its decision or order on an erroneous finding of fact that it made in a perverse or capricious manner or without regard to the material before it".

We understand that the Canadian courts have left great discretion to the administrative board or body involved. We know of no case in which an NEB decision to issue a certificate of public convenience and necessity has been effectively challenged in the courts.

It should also be noted that Canadian law places comparatively stringent limits on standing to sue. We understand that, in general, only parties to Administrative proceedings can seek judicial review of agency action.

Under Canadian law, the scope of review of NEB decisions is narrower than comparable review of the decisions of U.S. regulatory agencies.

If the Federal Government of Canada makes a decision in favor of an overland route for Alaskan gas, no further provincial permits are required. The successful applicant will be authorized to proceed in acquiring land for the pipeline right-of-way through normal commercial contract negotiations. If necessary, the Federal Government of Canada will exercise the right of eminent domain to assure that a right-of-way can be obtained.

Implementation of a Canadian decision in favor of a trans-Canadian gas pipeline will require a permit from the Department of Indian and Northern Affairs to allow use of federally-owned land in the Yukon and Northwest Territories. However, it is expected that issuance of such a permit would be pro forma if a favorable decision is reached by the Federal Government of Canada.

The Canadian procedures for implementing a decision on the gas pipeline appear to be less complicated than procedures in the United States where state approvals are required for right-of-way acquisition, exploitation of mineral resources, and construction of port and regasification facilities. Delays related to approval by regulatory authorities are less likely to occur in Canada than in the United States.

United States-Canada Transit Pipeline Agreement

The Trans-Alaska Pipeline Authorization Act of 1973 (Public Law 93–153) authorized and requested the President to determine whether the Government of Canada would be willing to permit the construction of pipelines across Canada to carry oil and gas from Alaska's North Slope to markets in the lower 48 states and terms and conditions which might apply to such a pipeline. In response to this Congressional mandate, the Department of State began negotiations in 1974 which led to the Transit Pipeline Agreement signed on January 28, 1977. The President sent the Agreement to the Senate on March 30, 1977, for advice and consent to ratification. The Senate Foreign Relations Committee held hearings on June 7, 1977, and its report is expected to be complete in July. The agreement includes the following basic elements:

It covers all existing or future pipelines which transit the territory of each party;

It covers all forms of hydrocarbons including crude oil, petroleum products, natural gas, petrochemical feedstocks and coal slurries;

It provides for reciprocity of obligations on the part of both parties;

It does not provide for approval of any specific proposals to construct a transit pipeline across the territory of either country, but it makes provision for possible protocols on specific pipeline projects if they are deemed necessary;

It provides a guarantee of throughput, by which public authorities in both countries are prohibited, except under specified emergency circumstances, from interfering with or impeding hydrocarbons moving in transit pipelines;

It provides for non-discriminatory treatment of hydrocarbons transiting either country, which ensures that public authorities in both countries will be prevented from discriminating against transit pipelines with regard to taxes and other monetary charges;

It assures "in bond" treatment for hydrocarbons moving in transit pipelines;

It confirms the jurisdiction of normal regulatory authorities over transit pipelines and requires that their action be reasonable and non-discriminatory;

It provides for equitable sharing of pipeline capacity in the event of emergencies on a predetermined basis;

It provides for binding arbitration in the event of disputes which cannot be resolved by negotiation; and

It is of long duration—thirty five years—and may be terminated after the end of this period only if ten years prior notice is given.

The Agreement provides very strong assurances of non-interference with the flow of hydrocarbons in transit. Even in emergency situations, the Agreement spells out the terms governing the operation of pipelines carrying hydrocarbons in transit commingled with indigenously-produced hydrocarbons. Both the United States and Canada recognize that security of throughput is a fundamental requirement, and both

countries have made binding, reciprocal commitments to non-interference.

The Agreement does not bar real property taxes by either provinces or states. However, under the provisions of the British North American Act and the terms of the Agreement, the provinces would be prevented from taxing the throughput of pipelines or levying discriminatory charges on transit pipelines. The Federal Government of Canada has accepted the obligation to ensure that the exercise of the taxing power of the provinces shall be applied in a non-discriminatory manner.

In the United States, where a ratified treaty becomes the supreme law of the land, the U.S. Federal Government has the authority to prevent states from discriminating against transit pipelines and is committed to do so by the Agreement.

Whether discrimination against a transit pipeline exists is determined by comparison with similar pipelnes. The Agreement provdes that "similar" pipelines include both inter-provincial and inter-state pipelines and intra-provincial and intra-state pipelines. This definition is sufficiently broad to assure that an adequate basis for comparison can be found within the jurisdictions which would be involved if a trans-Canadian route for Alaskan gas is approved.

The hydrocarbons moving through a transit pipeline are accorded the equivalent of "in bond" treatment under the terms of the Agreement and may not be taxed by provincial, state, or Federal authorities in either country.

The non-discrimination protections contained in the Agrement prevent the imposition of taxes on transit pipelines which are not also applicable to similar, non-transit pipelines. Therefore, the Agreement assures that transit pipelines will not be taxed in a discriminatory manner to generate funds for the settlement of native claims.

The United States-Canada Transit Pipeline Agreement does not settle all issues related to a trans-Canadian pipeline for Alaskan natural gas. Rather, the Agreement provides fundamental guarantees and a framework for the terms and conditions which would be applicable. If Canada decides to offer an overland route, further discussions with the Government of Canada will be needed to answer specific questions related to financing arrangements, pipeline tariffs, expansion of the pipeline's capacity, requirements for purchasing goods and services in Canada, the possibility of construction delays, and arrangements for inspection of the pipeline.

Financing

The question of financing a trans-Canadian pipeline for Alaskan gas has not been formally discussed with the Government of Canada. If an overland route is offered by Canada, and if it is necessary for either Government to participate in financing, financial arrangements could be dealt with in a protocol to the United States-Canada Transit Pipeline Agreement.

Impact on United States-Canadian Relations

The United States and Canada have a long tradition of cooperation on mutually beneficial projects, such as the Saint Lawrence Seaway, the Alaskan Highway, the environmental clean-up of the Great Lakes, and the transpotration of Canadian hydrocarbons across the United States. A decision to construct a trans-Canadian pipeline for Alaskan

natural gas would be in keeping with this cooperative tradition which is in the interest of both countries. However, both Governments have made clear that a decision on the gas pipeline will be made on its own merits.

Regardless of the outcome of the gas pipeline decision, a community of interest will remain, tending to draw the United States and Canada together. A relationship which is basically friendly and cooperative will continue.

Canadian Transit Pipelines in the United States

Most of Canada's oil and natural gas reserves are located in the western provinces of Alberta, Saskatchewan, and British Columbia. However, energy consumption is greatest in the industrialized, eastern provinces of Ontario and Quebec.

Canadian crude oil moves from the producing provinces in the west to the consuming provinces in the east via the Interprovincial Pipeline System. The two branches of the Interprovincial system transit the United States; one north of Lake Michigan, and the other to the south of the Lake.

Canadian natural gas is carried from west to east via the Trans-Canada/Great Lakes Gas Transmission system. The system transports about 300 billion cubic feet of gas per year across the United States to markets in eastern Canada. In addition, TransCanada/Great Lakes delivers Canadian gas to U.S. markets in the Midwest.

Imported crude oil is carried via a transit pipeline from Portland, Maine to Montreal. In 1976, 300,000 barrels per day of crude oil were delivered to Montreal through the Portland pipeline.

Conclusion

It is the conclusion of the Task Force on International relations that a viable option exists for the transportation of Alaskan natural gas across Canada, provided that the Government of Canada offers an overland route across its territory. A trans-Canadian gas pipeline would benefit from the protection afforded by the United States-Canada Transit Pipeline Agreement, and from the long tradition of cooperation between the two countries.

Canadian constitutional law provides clear authority to the Federal Government of Canada to make and implement a decision concerning a transit pipeline for Alaskan gas. In addition, the Government of Canada has accepted the obligation to ensure that the exercise of the taxing power of the provinces shall be applied in a non-discriminatory manner.

The Task Force agrees with Federal Power Commission Administrative Law Judge Litt that in light of the history of successful cooperation with Canada in other areas, it is reasonable to expect the Government of Canada to act responsibly in the case of a pipeline carrying Alaskan gas.

The Task Force further concludes that regardless of the outcome of the gas pipeline decision, United States-Canadian relations will continue to be friendly and cooperative.

REPORT ON NATIONAL SECURITY IMPLICATIONS

INTRODUCTION

The Federal Power Commission "Recommendation To The President, Alaska Natural Gas Transportation Systems" did not include a statement on the national security implications of the proposed transportation systems. The Department of Defense (DOD) provided a study which addressed that subject to the Department of Interior (DOI) and the Federal Power Commission (FPC). Both agencies included the study in their evaluations of the proposed transportation systems. The following report summarizes the consideration given to national security during the review and evaluation of the three proposed Alaska Natural Gas Transportation Systems.

CONTENTS

DISCUSSION OF PRINCIPAL ELEMENTS

1. THE DOD POSITION ON NATIONAL SECURITY IMPLICATIONS

In accordance with Public Law 93–153 the Secretary of the Interior submitted a report to Congress [1] regarding the feasibility of two systems for transporting Alaskan North Slope natural gas to the contiguous 48 States. The DOI report covered the results of a study

[1] Alaskan Natural Gas Transportation Systems, a Report to Congress Pursuant to Public Law 93–153, U.S. Department of Interior, December 1975.

predicated upon an analysis of two hypothetical competitive delivery systems similar in certain respects to the proposals of the Alaskan Arctic Gas Pipeline Company, which would traverse Canada from the North Slope to the northern border of the lower 48 States; and the El Paso Alaska Company, which would traverse Alaska to its southern coast and then continue via liquefied natural gas (LNG) tanker to California.

The DOD submitted a study to the DOI for inclusion in the report which addressed the national security implications of these two hypothetical systems. The study was prepared by the Joint Staff of the Office of the Joint Chiefs of Staff. This study was the basis for the National Security Section (pages 170–172) of the DOI report. The conclusions of the DOD study, and as reflected in the DOI report, were that "analysis of military factors alone would not indicate an overriding preference for one route over the other." The DOI report further concluded that, ". . . where a foreign country is involved, it would appear that the nonwar security risks may be greater." These conclusions were reached prior to submission of the Alcan Trans-Canada route proposed by the Northwest Pipeline Company. It is the opinion of the DOD that the evaluation of the national security factors related to the hypothetical Trans-Canada route is equally applicable to a route similar to that proposed for the Alcan route.

2. SUMMARY OF DOD TESTIMONY BEFORE THE FEDERAL POWER COMMISSION

The DOD Director for Energy, Rear Admiral C. Monroe Hart in testimony before the FPC Administrative Law Judge Nahum Litt, validated for the record that the national security section of the DOI report to Congress was provided by the DOD. Admiral Hart was examined by Judge Litt; directly examined by Mr. Heisler, an FPC lawyer; and cross-examined by Mr. R. Clyde Hargrove, representing Alaskan Arctic Gas Pipeline Co., and by Mr. William Wise, representing El Paso Alaska Co. The examinations by these persons were concerned with the relative ease of protection of the two transportation systems and in that context addressed both military and civilian law enforcement, their availability and probable use in peace and war. Also, the key points of system vulnerability which would offer the greatest potential for maximum disruption to system operation were discussed; these were:

(*a*) Typical points at which concentration of pipeline or facilities would offer the greatest attraction and opportunity for greatest crippling damage such as:

(1) The Yukon River crossing in Alaska where both gas and oil lines will cross the river on a single bridge.

(2) The gas liquefaction plant on Prince William Bay.

(3) The parallel crude oil and gas pipelines through Alaska.

(4) The Prudhoe Bay producing fields and the gas and oil processing plants.

(5) The length of the gas pipeline in Northwest Canada which would be more difficult to patrol. It was noted that threats of sabotage against the Alaskan Arctic Gas pipeline have already been made.

(*b*) The relative difficulty of providing protection for key points such as the above examples was examined and the following criteria were considered.

(1) Points of concentration such as the Yukon River crossing and the processing facilities at Prudhoe Bay and Prince William Sound offer attractive targets for terrorists, saboteurs, para military groups and wartime attack, but they also offer the greatest opportunity for concentrated protection.

(2) Remote portions of a pipeline, particularly those portions through the northermost sections of Northwest Canada, offer an attraction for destruction because of the difficulties of restoration due to long distances for transportation of repair equipment plus weather and physical limitations of access. However, for similar reasons the successful completion of an act of destruction is also much more difficult to accomplish in such remote and environmentally hostile areas.

(3) With regard to the protective forces which would be available in peacetime and wartime, it is considered that in both the United States and Canada peacetime security will be provided by company surveillance and inspection and by the normal law enforcement organizations, and in wartime these organizations would continue their service with military assistance as needed.

The testimony and examination did not alter the conclusions of the DOD study on National Security that an analysis of military factors alone would not indicate an overriding preference for one route over the other.

3. DEFENSIBILITY

(*a*) Peacetime—It will be the responsibility of each nation to provide internal national security for those portions of the Alaska natural gas transportation system and facilities within its borders. It is expected that the security provided for the Alaska natural gas system will be no different than that currently provided for oil and gas pipelines now operating in both nations where the companies which own and operate those systems provide for their day-to-day security and are dependent upon local police and law enforcement officials for additional protection when necessary.

(*b*) Wartime—

(1) If both nations are involved.

The established Canadian-United States defense arrangements for the North American continent are predicated upon mutual defense through binational coordination. No specific civilian installation or locality is singled out for added protection, only the umbrella of continental military defense will normally be provided. If necessary, military assistance would be furnished in support of the normal company and local police and law enforcement organizations. For example, no unusual military precautions were taken for the United States owned and operated Haines-Fairbanks Alaskan petroleum pipeline during the Korean War, 295 miles of which traverse Canadian soil.

(2) If the United States is unilaterally involved.

Canada and the United States are bound together by tradition and treaty and have a long record of close cooperation in national security

matters. Materials are readily available to each country under normal conditions. It is considered that this long-standing cooperation would continue to exist and all materials normally available would continue to be available from Canada as a matter of mutual need, friendly cooperation and treaty obligation.

4. VULNERABILITY

National security rests heavily upon readily available energy from secure sources and the growing dependence of the nation upon imported oil from non-secure sources poses grave dangers to national security. Oil imports now amount to approximately 49 percent of the total national petroleum consumption and the addition of the Alaskan natural gas to the national energy matrix will help to minimize the current requirement for imported oil and reduce that dependence. The completion of a transportation system for delivery of Alaskan North Slope natural gas to the contiguous 48 States must be considered an *important national security objective.*

Summary of the Position of Interested Parties Before the Federal Power Commission

Representatives of the Alaskan Arctic Gas Pipeline Company, the El Paso Alaska Company and the Alcan Pipeline Company appeared before the Federal Power Commission. The positions of the first two companies regarding national security were as described in Discussion paragraph 2 above. Neither they nor the Alcan Pipeline Company disagreed with the Department of Defense position on national security as described in Discussion paragraph 1 above. The consensus was that the problems are primarily systems related and that danger due to hostile acts is of concern but is considered to be less likely to disrupt pipeline operation than system failures.

Federal Power Commission Conclusion on the Implications to National Security

The study on national security prepared by the Joint Staff of the Joint Chiefs of Staff, as it appeared in the December 1975 Department of Interior Report to Congress, was incorporated into the evaluation of the Federal Power Commission without objection.

CONCLUSIONS

The growing dependence of the nation upon imported oil presents a grave danger to the national security. The addition of the Alaskan North Slope natural gas to the energy matrix of the nation can help reduce the volume of imported oil requirements and thereby contribute to an improved national security posture. The completion of a transportation system for delivery of Alaskan North Slope natural gas to the contiguous 48 States must be considered an important national security objective. Of the three transportation systems proposed, there is no overriding preference for one route over another when analysis is based on military factors alone.

REPORT ON FINANCING AN ALASKA NATURAL GAS TRANSPORTATION SYSTEM

(July 1, 1977)

Executive Summary and Conclusions

The Alaska Natural Gas Transportation Act of 1976 ("the Act") permits Executive Branch Departments and Agencies to comment upon the Federal Power Commission's May 1, 1977, *Recommendation to the President.* One specific subject appropriate for comment under the Act is "sources of financing for capital costs."

The Act also requires the President to submit to Congress "a financial analysis for the transportation system designated for approval," along with a determination of whether he "reasonably anticipates that the system designated by him can be privately financed, constructed, and operated."

The following Report on Financing Issues is submitted in response to the above statutory provisions. The Report was written by the Department of the Treasury (the Lead Agency) with the direct contribution of other interested Federal agencies. Pursuant to the Act, the views of all interested Federal officers and agencies were solicited and have been incorporated into this Report.

The basic issue addressed in this report is *how each of the three proposed projects could be financed.* The sources of funds available are therefore identified.

The principal conclusion of this report is *that there is good reason to anticipate that an economically viable system to transport natural gas from Alaska to the lower 48 states can be privately financed*—that is, without Federal financing assistance. A private financing, however, will be difficult, if not impossible, to arrange without *prior resolution of a number of issues.* In fact, the actual likelihood that a private financing may be accomplished can be determined only *after* these issues have been resolved.

Certain of the unresolved issues directly affect the economic viability of a transportation system, and, as such, the willingness of the private sector to invest in such a project. Other unresolved issues bear upon what party or combination of parties would assume the unusual risks perceived to be associated with the construction of such a system.

The most important issues that must be resolved before any financing can be arranged include:

1. The mechanism by which the wellhead price for gas is determined;

2. The method by which gas will be priced to the ultimate consumer;

3. The authorization of a sufficient flow of gas by the State of Alaska;

4. Negotiation of sales contracts between gas producers and gas transmission companies;

5. A determination of the rate of return that the Government will allow on investment in a transportation system;

6. Formation of a final consortium of equity investors in the project;

7. Determination of the extent to which benefiting parties (including the producers of the gas, the State of Alaska, and gas consumers) will provide financing support to the project.

As stated above, there is good reason to anticipate that, once these issues are resolved, an economically viable Alaska natural gas transportation system could be financed without Federal financing assistance.

The Federal Government has the ability to resolve a number of the issues

The report discusses how the resolution of these issues would affect the overall financeability of an Alaskan gas transportation system and thereby affect the need for Federal financing assistance. The discussion on each issue is summarized below.

1. *The price gas producers will receive for the gas* (the "field price").—The Federal Power Commission is currently responsible for establishing a field price. In its *Recommendation to the President*, the Commission noted that prompt establishment of the field price of Alaskan gas was important, but to date the Commission has not made any publicly announced moves to establish the price. The Administration's selection of an acceptable methodology for determining the field price would facilitate a financing.

2. *The price gas consumers would pay for Alaskan gas.*—Two methods of pricing the gas to the ultimate consumer were suggested by the Federal Power Commission:

(*a*) *"rolled-in" pricing*, which averages the cost of Alaskan gas with that of gas from other sources, and

(*b*) *"incremental" pricing*, under which consumers pay the full marginal costs associated with producing and transporting Alaskan gas.

A third approach to pricing of gas in general is identified in the Administration's National Energy Plan, which combines aspects of both roller-in and incremental pricing. Adoption by the Administration of "rolled-in" pricing for Alaskan gas would go farthest to facilitate financing the transportation system. The approach recommended in the National Energy Plan could go equally far *if* the Administration properly structures the pricing mechanism contained in that approach. Fully "incremental" pricing would make the financing more difficult.

3. *Approval of sales contracts.*—The Federal Power Commission's authority to approve sales contracts allows it to condition approval upon formation of a large creditworthy sponsoring consortium. Specific direction for such action from the President would facilitate a private financing.

4. *Rate of return.*—Government approval of an adequate rate of return on investment in the project would facilitate a financing.

5. *Consumer participation in the financing.*—Finally, approval by the Administration of a method to allow consumer participation in

the financing would facilitate a financing. Consumers could participate by securing the project's debt through a tariff that would be paid under any circumstances.

The Federal Power Commission Recommendation to the President

In its May 1 recommendation, the Federal Power Commission found that the private benefits of a system are substantial and *did not recommend* Federal financing assistance for an Alaskan gas transportation system. It further outlined financing methods under which the Commission found the project's risks bearable without Federal financing assistance.

The Commission broadly illustrated two financing plans—the first pressing oil companies (who will produce the gas) to help sponsor the project, and the second requiring consumers to participate in the financing.

The most important aspect of the Commission's Recommendation was its apparent willingness to place substantial financial risks on gas consumers if it is ultimately found necessary—that is, if such groups as gas pipeline companies, the gas producers, and the State of Alaska together are unable to fully secure the project debt.

The discussion of financing in the Commission's *Recommendation* was general and theoretical; it lacked a detailed financial analysis of capital market capacity and an analysis of the financial capacity of the potential project sponsors.

While the Commission did not resolve any major issues in its Recommendation, it in no way restricted the President's decision in regard to the financing. The net result is that all options for financing of an Alaskan gas transportation system are open.

Financing Without Federal Financing Assistance

As noted, the report concludes that there is good reason to anticipate a private financing of an economically viable transportation system. The analysis shows that *the capital markets do have the capacity to supply the basic funds required by any of the three projects.* The analysis also shows that *the capacity exists in the private sector to finance any of the proposed projects.*

The report contains a financial analysis of the capacity of the private parties who would benefit directly from an Alaskan gas transportation system to invest directly in or otherwise assist the financing of a system. The potential direct beneficiaries are identified below:

1. *Gas transmission and distribution companies.*—The analysis concludes that a consortium composed of those companies that have shown an interest in a project have *ample* capacity to provide the equity portion of any of the proposed projects (and have sufficient capacity to provide the equity even in the event of 80% cost overruns). This conclusion even assumes there would be *no* payments made by potential consumers during the construction period.

2. *The gas producers.*—The producers (essentially three major oil companies—Exxon, Atlantic Richfield, and Standard Oil of Ohio) stand to benefit handsomely from the sale of their gas, and such sale requires a transportation system.

These companies clearly have the financial capacity to support the financing of a gas transportation system.

3. *The State of Alaska.*—Alaska will benefit from royalties on the sale of the gas, the construction activity itself, and the availability of the gas for industrial development in the State. Revenues accruing to the State from the production and sale of *oil* are being channeled into a fund dedicated to Alaska's future development. Such a fund gives the State substantial capacity with which to support a financing.

4. *Potential gas consumers.*—Consumers could provide a substantial source of financial support for a transportation system.

Financing Alternatives

The report discusses four distinct financing alternatives.

1. *Sponsor Guaranteed Financing* (illustrated in the Federal Power Commission *Recommendation to the President*).— The analysis concludes that a traditional financing guaranteed by gas pipeline companies and the State of Alaska, while preeminently desirable, would be difficult to arrange. The gas transmission and distribution companies do not have sufficient financing capacity to underwrite an entire project. *Were the gas producers to participate substantially in the financing, this alternative would be viable.*

2. *Consumer Guaranteed Financing* (also illustrated in the Federal Power Commission *Recommendation to the President*).—The analysis shows that gas consumers have the capacity to guarantee the debt and equity financing, thereby reducing the financing costs. However, this alternative presents important questions of public policy and energy financing policy which remain to be resolved.

3. *Mixed Sponsor and Consumer Alternative.*—The report concludes that participation by all the potential beneficiaries—including gas transmission and distribution companies, the gas producers, the State of Alaska, and gas consumers—would form the most equitable and practical aproach to financing a transportation system. One feasible method would be for each potential beneficiary to guarantee the debt of an identifiable segment of whichever system is designated.

4. *Federal Financing Assistance Alternative.*—A number of methods by which the U.S. Government could assist the financing are discussed in the report. None is recommended because Federal financing assistance was found unnecessary.

Canadian Issue

The two trans-Canada projects propose to raise substantial funds in Canada. The Canadian Department of Finance thus far has opposed governmental guarantees for a project. If ultimately a trans-Canada route is selected and governmental debt guarantees are found necessary, the nature and negotiation of those guarantees will present complex issues requiring close cooperation with the Government of Canada.

Federal Financing Assistance

In general, capital is allocated and utilized most efficiently when its movement is subject to the disciplines and the profit incentives of the market system. Thus, if energy or other government policy imperatives dictate that Federal financial assistance be provided, the degree of such assistance *should be the minimum necessary to achieve such policy objectives.* Also, the financial assistance should be provided in a manner that will facilitate, rather than impede, the operations of

the market system. Finally, *the interests of the taxpayers granting such assistance must be vigilantly protected* and taxpayers should be adequately compensated for their financial support.

If overriding energy policy and credit market considerations do dictate that government assistance be provided for the Alaskan gas project, care must be taken to offset the serious possible consequences of Federal assistance. One serious concern is that Federal financial assistance will create *subsidies which may cause an underpricing of gas and a misallocation of scarce energy and economic resources.* Another serious concern is that assistance by the government in this instance will set a precedent which will make it difficult to find willing parties to support other large energy projects without government assistance. Such a precedent could have long term adverse consequences for the national economy.

Even if Federal assistance were ultimately found necessary to finance the project, it should not be provided *in lieu of* risk bearing by other parties. *Direct beneficiaries of the project should remain obligated to bear the project risks to the largest extent feasible*, and any taxpayer risk should be residual and subordinate.

NATIONAL ENERGY BOARD, OTTAWA, CANADA

FACT SHEET REGARDING NATIONAL ENERGY BOARD DECISION ON THE NORTHERN GAS PIPELINE APPLICATIONS

The National Energy Board on 4 July 1977 released its decision on the Northern Gas Pipeline Applications. The following information concerning the functions and responsibilities of the Board, the Applications and the Board's Findings, Decisions and Recommendations is provided for ease of reference.

THE BOARD

The National Energy Board—NEB or Board—is an agency established by legislation by the Government of Canada enacted in 1959. The agency consists of nine full-time members and a staff of some 325 employees, among whom are engineers, environmentalists, economists, accountants, lawyers and other specialists, who act as advisers to the Board.

The Board's responsibility is to control and regulate certain aspects of the energy industry in Canada to ensure that the public interest is protected at all times. It does this by the issuance of certificates of public convenience and necessity which authorize the construction and operation of interprovincial and international pipelines and international power lines and by the issuance of licenses for the export of oil, the import and export of natural gas and the export of electricity.

No pipeline can be built or operated in Canada across provincial or international boundaries unless a certificate has been issued by the NEB. The certificate becomes effective only with the approval of the Governor in Council.

Before the Board reaches a decision on any major pipeline project, it holds a public hearing to examine the proposal and to afford an opportunity for those found to be interested persons under the NEB Act to take part in, adduce evidence, and argue their case or otherwise make submissions.

THE APPLICANTS

During 1974 and 1975, the Board received competing applications and submissions related to the planned construction of a northern gas pipeline. The first application to move northern gas to southern markets was submitted in March 1974 by Canadian Arctic Gas Pipeline Limited under Part III of the NER Act to construct and operate a new 48-inch diameter main pipeline system and interconnections with existing and proposed new facilities, for the purpose of transporting Prudhoe Bay and Beaufort Basin gas southward. The most northerly section of mainline would run 178 miles from the Alaska-Yukon border to Tununuk Junction, N.W.T.; a supply line would run 19 miles from the Taglu Field on Richards Island to Tununuk Junction to join the

main line. The main line would continue south to Parsons Lake junction where it would be joined by a 30-inch diameter supply lateral from Parsons Lake on the east. The main line would then proceed south along the Mackenzie River Valley into Alberta where, near Caroline, it would split into two delivery lines—one a 48-inch diameter line to Empress, Alberta and thence a 42-inch diameter line to Monchy, Saskatchewan; and the other a 36-inch diameter line to Coleman, Alberta, where the delivery lines would interconnect with the facilities of other pipeline companies. In June 1975, Alberta Natural Gas Company Ltd. applied to the Board for a certificate to construct additional facilities required to transport gas to be obtained through the proposed CAGPL system.

In a competing application, Foothills Pipe Lines Ltd. applied in March of 1975 for a certificate of public convenience and necessity to construct and operate a pipeline and connected works to move natural gas from the Beaufort Basin of the western Arctic to southern Canada and Northwest Territories communities. The proposed pipeline would connect with facilities of Trunk Line (Canada) and Westcoast just north of the 60th parallel. Foothills proposed to construct some 817 miles of 42-inch diameter line from Richards Island along the Mackenzie River Valley. It also proposed to construct 15 miles of 30-inch diameter line as a lateral connection from a point east of Parsons Lake, N.W.T. to a point of connection with the main transmission line some 51 miles south of the Richards Island point of commencement of the main line.

In May 1975, the Alberta Gas Trunk Line (Canada) Limited applied to construct and operate approximately 81 miles of the Foothills 42-inch diameter line from a point 6.5 miles north of the 60th parallel to existing or new Alberta Gas Trunk Line facilities at a point near Zama Lake, Alberta.

The Alberta Gas Trunk Line Company Limited owns and operates a natural gas gathering and transmission system within Alberta. It did not file an application but in a submission in May 1975 undertook to construct and operate certain facilities of Trunk Line (Canada) subject to federal jurisdiction. Originally in the hearings Westcoast Transmission Company Limited submitted an application with respect to an extension of its main line as a companion application in the Foothills project. On July 1, 1976 Westcoast proposed to extend its facilities to interconnect with those of CAGPL if that project were approved.

In August and September 1976 a third set of applications for pipeline construction by a group of associated companies generally called the Foothills (Yukon) Project Group was filed with the Board. These applicants, Foothills (Yukon), Westcoast and Alberta Gas Trunk Line (Canada), proposed to move Alaska gas through Canada to markets in the lower 48 states of the United States. This proposal included construction of a Foothills (Yukon) 42-inch diameter line from an interconnection with Alcan Pipeline Company at the Alaska-Yukon border, through the Yukon to the B.C. border where it would connect with a 42-inch diameter extension of Westcoast; a 36-inch diameter Trunk Line (Canada) line would interconnect existing facilities of Trunk Line in Alberta with another extension of Westcoast, and a Foothills (Yukon) 36-inch diameter line would be constructed from

Trunk Line's facilities at Empress, Alberta to the international border near Monchy, Saskatchewan.

In late February 1977 the Foothills (Yukon) Group filed with the Board an alternative proposal to construct a 48-inch diameter pipeline system, without using the existing Westcoast and Trunk Line facilities. It involved the construction of an "express line" through Yukon, and generally along existing routes in northern British Columbia and Alberta, plus a new Westcoast line parallel to the existing Alberta Natural Gas route in southeaster British Columbia.

On 16 March 1977 the Foothills (Yukon) Group withdrew the 42-inch diameter system applications; thus the only Foothills (Yukon) system considered by the Board in its report is the 48-inch diameter line.

FINDINGS

Based on all the evidence adduced at hearings and submitted by applicants, intervenors and interested persons, the Board has made a number of findings, upon which its decisions were based. The more significant of the findings, contained in its Reasons for Decision dated dated June 1977, are outlined below.

The Board finds that a pipeline to transport Mackenzie Delta gas to Canadian markets will be needed during the first half of the 1980's. In support of this finding the Board came to the following conclusions:

(1) There will be a need for additional gas for Canadian markets over and above that forecast to be available from conventional areas to meet the "Most Likely" forecast of Canadian demand plus existing export commitments as early as 1981 or as late as 1985 depending on certain policy options open to governments.

(2) If existing authorized exports of gas were eliminated or were phased out, the "Most Likely" Canadian requirements could be met until about 1990, but the Board does not recommend such action.

(3) The Board endorses a vigorous conservation policy and in its "Most Likely" forecast of Canadian gas demand has endeavoured to realistically assess the degree to which Canadians will be responsive to the conserver ethic; however the Board rejects the proposition urged on it by several public interest groups that a pipeline from the Mackenzie Delta should be denied so as to reinforce the limitation in the rate of growth of the demand for energy.

(4) The current established reserves of the Mackenzie Delta total 5.3 Tcf, with 5.1 of this being economic to connect to planned gas processing plants. Having in mind a pipeline to the south, these reserves would support deliverability of 700 to 800 MMcf per day.

(5) Of the several new large sources of energy available to Canada in the near future, Delta gas is about the lowest cost, in current dollar terms.

Although additional work would be required in the final design process for each of the pipelines being applied for, the Board believes that from an engineering point of view any of these could be built to the satisfaction of the Board.

The Board has specific socio-economics concerns related to a pipeline route up the Mackenzie Valley.

The Board has specific environmental concerns related to a pipeline route from the Alaska-Yukon border to Tununuk Junction.

The social and economic impact of the Foothills (Yukon) project could be held to tolerable levels. The environmental concerns associated with this project can be overcome by avoidance or mitigative measures.

A crucial question in regard to any land bridge proposal for the transmission of United States gas through Canada is whether the project has the potential for bringing Delta gas to Canadian markets and the Foothills (Yukon) project has such a potential in the form of a Dempster link.

The precise timing of the need of a Dempster link is not known today, but the planning for the Foothills (Yukon) project should be compatible in all respects with the addition of such a link, if certificated in the near future.

A necessary complement to the undertaking given by the principals of Foothills (Yukon) to undertake the construction of a Dempster link would be a rerouting of the Alaska Highway line via Dawson, Yukon. Such diversion would reduce the cost of transportation of Delta gas by some 12 cents per Mcf while increasing the cost of transmission of United States gas by six cents per Mcf or less. In certificating the Foothills (Yukon) project, the Board would require a diversion of the route through Dawson. The preliminary financing plan of CAGPL would be acceptable to the Board, with two exceptions—

(*a*) CAGPL would have to provide for majority Canadian control of the equity of its company; and

(*b*) the Board rejects the recommendation of CAGPL that the Canadian Government should provide financial backstopping to the project.

The Board shares the view of the financial advisers to the Foothills project that it could not be financed at this time on the basis of Mackenzie Delta reserves already discovered and could not be justified on economic grounds.

The Foothills (Yukon) Project Group did not request backstopping by the Canadian Government. There are matters of fundamental concern to the Board, however, in the financing and ownership of the Foothills (Yukon) project. These relate to the possible impairment of the credit capability of Trunk Line and Westcoast by their unequivocal undertakings to complete the project irrespective of cost overruns, in providing a land bridge for United States gas. The Board believes some restructuring of the corporate setup of the Foothills (Yukon) project would be necessary. Furthermore, the financial plan of the project should exclude any possible inhibition in providing a Dempster link at a later stage.

To ensure that the objectives of the companies owning and operating each segment of the Foothills (Yukon) project would be consistent with the broader purposes of an integrated interprovincial pipeline, with uniformity of design and tariffs but with decentralization of construction and operation to those companies operating pipelines in the same area, the Board would favour having the pipeline segments south of the 60th parallel owned by federally incorporated subsidiaries of Foothills (Yukon) with, say, 51 per cent ownership and the re-

mainder, say 49 per cent ownership, vested in the pipeline company operating in the area.

The Board believes that construction of the pipeline segments south of the 60th parallel should be carried out by the companies familiar with the areas concerned and would favour the proposed ANG pipeline subject to the corporate restructuring mentioned above. Similarly, while having no corresponding application, the Board would look favour on the construction and operation of the pipeline segment in Saskatchewan by TransCanada on a basis similar to that outlined for Trunk Line, Westcoast and ANG.

The Board believes that innovative tariffs would be needed to provide for maximum private sector financing of a northern pipeline. To this end, for this project, it endorses the principle of an "all events" tariff and the need for supplemental agreements with shippers covering the period before the tariff proper comes into effect.

Using the unit costs of transportation filed by the Applicants, and recognizing some limits on comparability, the Board finds that:

(1) For the transportation of Alaska gas from Prudhoe Bay to the 49th parallel, the differences in the unit costs of transportation via CAGPL and via Foothills (Yukon) are relatively small;

(2) the CAGPL project would provide significantly lower unit costs for the transportation of Delta gas to Empress than the Foothills project;

(3) providing the Dempster link to Dawson, which would involve the re-routing of the Foothills (Yukon) 48-inch diameter pipeline in the Yukon, would increase the unit costs of transporting Prudhoe Bay gas to the lower 48 states slightly while providing significantly lower transportation costs to Canadian shippers of Delta gas;

(4) With a throughput of 12 Bcf per day from the Delta and 2 Bcf per day from Alaska, the cost of transmission of Delta gas to Empress appears to be approximately the same for the CAGPL and Foothills (Yukon) projects.

As to the total estimated capital costs, due to the difficult conditions for the northern Yukon and Cross-Delta sections, the Board could visualize a cost overrun of 20 to 35 per cent occurring in the CAGPL project. In the case of Foothills (Yukon) the Board judges that the cost of construction has been under-estimated and it could visualize a cost overrun of 20 to 30 per cent occurring.

The Applicants all estimated relatively high levels of Canadian content for their proposed pipelines—in the range of 80 to 90 percent. The Board's overall assessment is that Foothills and Foothills (Yukon) projects showed overall Canadian content estimates averaging somewhat higher than those indicated by CAGPL.

The evidence of the effect of the pipeline projects on the macroeconomy of Canada was uniform in assessing that none of them would cause severe problems.

The results of cost-benefit analyses, which excluded environmental and social costs and which would differ between CAGPL and Foothills (Yukon), indicate that the net economic benefits would be somewhat greater for the CAGPL project than for the Foothills (Yukon) project.

The Board is not involved in the merits of native land claims per se, or their settlement; these are matters under direct negotiation between

the native peoples and the federal government. The Board was concerned, however, with the interrelation of the resolution of a land claims settlement with the perceptions of Northerners of whether a pipeline should be built, and if, so, where and when.

The Board's assessment of the socio-economic impact of a pipeline in the north is one of broad judgment. The north at this time may be said to be a land in transition and for the individual native northerner, the situation seems to be one of turmoil caused by fear of further white encroachment, and a striving to retain the essentials of a life close to the land from a non-viable base in a community. The added problems relating to the possible construction of a pipeline only compound an already confused situation. In the Yukon, the opening up of the Alaska Highway in 1942 and the fact that the Yukon economy and institutions are more developed, that the land claims negotiations appear to be more advanced, that a smaller number of native peoples would be affected and that the Yukon Indians do not appear to be passing through the phase of a major restructuring of their society, as the Dene appear to be, lead the Board to conclude that the socio-economic impact on the pipeline corridors would, on balance, be more favorable along the Alaska Highway than in the Mackenzie Valley.

The Board believes that identifiable indirect costs of a pipeline project north of the 60th parallel should be borne by the pipeline company. These costs, related to such things as in-migration, provision of additional municipal, social, and health services, are difficult to measure with precision, and it would recommend to the government that an agreement be entered into with a certificate holder to provide funds for such costs. The Board would further recommend that the obligation be limited to $200 million.

There would be need of a government agency to monitor socio-economic matters, and if a certificate were granted, the Board would recommend to the government that it immediately create effective machinery for this purpose.

Based on the evidence put before it, the Board has concluded that the CAGPL Prime Route, both the Northern Yukon coastal and Cross-Delta sections, would be environmentally unacceptable. The Interior Route, presented as a less desirable alternative by CAGPL, would also be environmentally unacceptable to the Board.

The Board has concluded that the environmental concerns associated with the Foothills (Yukon) route relate to impacts which can be overcome by avoidance or mitigative measures.

Environmental information on a Dempster link is sparse and an application for a certificate to construct and operate a pipeline from the Delta to connect with the 48-inch diameter pipeline would have to be supported by detailed environmental studies. Likewise, environmental studies related to a diversion of the 48-inch diameter pipeline through Dawson would require the immediate study of related environmental impacts and subsequent filing of such studies with the Board.

DECISIONS AND RECOMMENDATIONS

The Board's decisions and recommendations to the Governor in Council follow:

(1) The Foothills pipeline cannot be financed: it would not offer the lowest cost means of transporting Mackenzie Delta gas to market

and a pipeline should not be built along the Mackenzie Valley at this time. The Board therefore denies the application of Foothills Pipe Lines Ltd.

(2) For the reasons stated in (1), the Board also denies the applications of Westcoast Transmission Company Limited and Alberta Gas Trunk Line (Canada) Limited for certificates for facilities which would interconnect with those of Foothills.

(3) The CAGPL project is based on incompatible time constraints; on the one hand the urgent need to connect Alaska gas to United States markets and on the other, the need for more time to resolve socio-economic concerns before a pipeline could be built in the Mackenzie Valley.

(4) The Prime Route proposed by CAGPL from the Alaska-Yukon border to Tununuk Junction, including the Cross-Delta segment, is environmentally unacceptable to the Board, as is the alternative Interior Route.

(5) For the reasons stated in (3) and (4), the Board denies the application of CAGPL.

(6) The Foothills (Yukon) project generally offers the preferred route for transporting Alaska gas to markets in the lower 48 States. However, the Board believes certain changes to the project as applied for are desirable in the Canadian public interest.

(7) The Board is prepared to issue certificates of public convenience and necessity for the various pipeline segments of the Foothills (Yukon) project subject to conditions. The Board is recommending to the Governor in Council, however, that approval be withheld until the following have been accomplished:

(i) That appropriate amendments to existing applications have been filed with the issuance of the certificates in the names of subsidiary companies of Foothills (Yukon) for the segments of the project in northern British Columbia, Alberta and south-eastern British Columbia. Fifty-one percent of the voting shares in each of the subsidiary companies would be owned by Foothills (Yukon) and 49 percent in each by Westcoast, Alberta Gas Trunk Line and ANG (or Westcoast, if not aceptable to ANG), respectively.

(ii) That agreements have been entered into by Foothills (Yukon) with the Government of Canada whereby Foothills (Yukon) or any successor, would undertake the following:

(*a*) to conduct feasibility studies with respect to the construction of a gas pipeline of no less than 30-inch diameter from the Mackenzie Delta parallel to the Dempster Highway connecting Delta gas to the Foothills (Yukon) system near Dawson City, Yukon, and on or before 1 July 1979 make an application to the National Energy Board for a certificate of public convenience and necessity for such pipeline;

(*b*) to agree to provide capacity in the main 48-inch diameter pipeline from the point of connection of the Dempster lateral to such point or points on the 48-inch diameter system in Canada deemed necessary to effect delivery of Delta gas to southern Canadian markets, such capacity to be provided by 1 January 1984 or such later date as deemed necessary by the government; and

(*c*) to provide payment upon the request of the Government of Canada of a sum of money which would be used by the government to pay for socio-economic indirect costs of the pipeline project north of the 60th parallel incurred during a period expiring two years after leave had been granted by the Board to open the pipeline. The Board recommended that the obligation be limited to $200 million.

REPORT TO THE PRESIDENT ON ENVIRONMENTAL IMPACTS OF PROPOSED ALASKA GAS TRANSPORTATION CORRIDORS BY THE COUNCIL OF ENVIRONMENTAL QUALITY

SUMMARY

BACKGROUND

Since the discovery of large oil and natural gas reserves in the Prudhoe Bay fields in Alaska, several routes have been proposed to transport this gas to the lower 48 states.

A North Slope/MacKenzie Valley corridor, sponsored by Alaskan Arctic Gas Company, would traverse Alaska's North Slope, cross into Canada at the MacKenzie River Delta, and run south along the river and hence into the Midwest; a western leg would transport gas to the western states.

An Alaska LNG route proposed by the El Paso Alaska Company would follow the oil pipeline to a new terminal site on Prince William Sound where the gas would be liquefied and shipped by tanker to southern California.

The Fairbanks Alternative corridor sponsored by the Alcan Pipeline Company would parallel the existing oil pipeline as far as Fairbanks and then follow the Alcan Highway through Canada. Some of the gas would be routed to the West Coast via a western leg, and most would go through Alberta and Saskatchewan to U.S. markets in the Midwest and the East.

All three corridors were analyzed in the environmental impact statement process of the Department of the Interior and the Federal Power Commission.

Recognizing an urgent national need for additional natural gas supplies, the Congress enacted the Alaska Natural Gas Transportation Act of 1976 to provide the means for a sound and expeditious decision by the President and the Congress on which, if any, transportation system should be built. To avoid the delays of possible litigation, the Act precludes judicial review of the environmental impact statements required by the National Environmental Policy Act (NEPA).

Under Section 6(d) of the Alaska Gas Act, the Council on Environmental Quality is directed to present to the President its views on the legal and factual sufficiency of the impact statements and on other environmental matters that we consider relevant. CEQ is also directed to provide members of the public with an opportunity to present oral and written data, views, and arguments on the impact statements. A total of four days of public hearings were held in Anchorage and Washington, D.C., with written and oral testimony submitted by over 70 persons and organizations representing a wide spectrum of interests. These hearings were extremely informative and helpful to the Council in reaching its conclusions.

Sufficiency of the Environmental Impact Statements

Because of the magnitude of the competing proposals and the abbreviated schedule for decisionmaking under the Alaska Gas Act, the decision at hand is to select a particular gas transportation route. It is the sufficiency of the environmental impact statements *for this limited purpose* that is considered here—not their sufficiency for determining precise alignments, facility locations, and other site-specific data.

After careful review of the impact statements and testimony submitted at our hearings, we have concluded that:

Although they have shortcomings, the environmental impact statements are legally and factually sufficient under the National Environmental Policy Act for purposes of selecting the corridor and basic technology for a gas transportation system. Indeed, the NEPA process led directly to the development of the Fairbanks Alternative, the corridor that we believe to be environmentally preferable, as noted below.

Although the impact statements provide the information necessary to select a corridor and the basic technology for a gas transportation system, they lack the data required for specific decisions concerning route alignments, project designs, mitigation measures, and facility siting. NEPA requires a continuous review of environmental factors and alternatives by agencies with authority over the approved gas transportation system. Environmental assessments, EIS supplements, or new impact statements may be required, depending upon the significance of impacts and the degree to which they have already been treated. Major design, engineering, or other site-specific decisions that follow the selection of a corridor and technology must be considered in one of these types of NEPA analyses.

Environmental Impacts of Alternative Corridors

The impact statements and other public documents provide a wealth of information on the environmental impacts of each of the three corridors. Altogether, they permit a fair comparison of the significant environmental impacts that we believe are most relevant to the decision before the President and the Congress. We found that:

The North Slope/MacKenzie Valley corridor is the most environmentally destructive of the three routes being considered. Intrusion into the wilderness stretching from the Canning River in Alaska to the MacKenzie Delta in Canada would be massively disruptive. We disagree strongly with the Federal Power Commission's conclusion that this corridor is environmentally acceptable.

This corridor would pass through parts of Alaska and Canada that are now hardly affected by industrial man's influence: Of its 195 miles in Alaska, 135 miles would cross the narrow coastal plain of the 8.9-million acre Arctic National Wildlife Range Established to preserve unique wildlife, wilderness, and recreational values, the Range stands out at the last unspoiled area of its kind in the entire Northern Hemisphere.

The proposed North Slope/MacKenzie Valley pipeline would cut an east-west corridor across this unmarred landscape, requiring new port facilities, airstrips, helipads, gravel borrow areas and compressor stations as well. Although the land loss seems insubstantial when

compared to the total Range, the harm likely to occur to wildlife and wilderness values there is vastly out of proportion to acreage figures.

The litany of measures proposed to protect the Range from pipeline construction is a testimony to scientific, technological, and management ingenuity. The applicant proposes to build that portion of the pipeline entirely in one winter, using only snow roads that vanish with the spring melt. We are skeptical about whether it could be done. The risks of failure are impressive and their consequences irremedial. Experience suggests that economic pressure to complete such a pipeline on schedule would not yield to the onset of spring and the wildlife that might stand in the way.

We must also note the widespread concern that such a gas line could invite an oil line and perhaps a permanent road, so as eventually to become a permanent corridor. A gas line across the Arctic Range and Northern Yukon to the MacKenzie Delta would invite the exploration of oil and gas that may well exist within the Range or in the Beaufort Sea. The future of the Arctic Range must lie in the permanent dedication of this rich and unique area to wilderness. This is also the conclusion of the State of Alaska and every environmental organization appearing at our hearings.

The wilderness and wildlife values of the Range, along with the pipeline route, also extend into Canada, to the MacKenzie Delta. Natives there, who constitute the majority of the population in the Northern Arctic, have vigorously opposed any pipeline either across the North Slope or up the MacKenzie River, fearing its effects on their way of life and its interference with their land claims settlement. Canadian Justice Thomas Berger, who investigated the social and environmental impacts of this route for the Canadian government, recommended that to protect these people and the environment on which they depend, no pipeline be built across the North Slope.

The Fairbanks Alternative corridor would largely follow existing transportation corridors, with no large-scale intrusion into wilderness areas or destruction of wilderness values. We find, in agreement with the Federal Power Commission, that it is the most environmentally acceptable of the three corridors.

But some of its environmental risks are still unknown. The preliminary state of the design effort suggests substantial uncertainty about fundamental concepts. Measures to deal with frost heave, thaw settlement, and summer construction, for example, are only roughly sketched. Still to be developed is site-specific information, such as stream crossings and additional workpad construction mileage.

On the other hand, it appears that the gas line could be safely constructed relatively near the oil pipeline across the existing workpad. The existing haul road along the oil pipeline would also be used, as would many of the existing campsites and other facilities. Further advantages can result from the availability of information on the geology, soils, stream characteristics, and wildlife, all of which would aid in controlling impacts of the Fairbanks Alternative as far as Delta Junction, where it would depart from the oil pipeline.

Social and growth impacts of both the Fairbanks Alternative and the Alaska LNG route will obviously be greater in Alaska than those of the North Slope/MacKenzie Valley corridor. Although no accurate measures of these impacts have been made, the Alyeska experi-

ence has prepared residents for what to expect. Many government, labor, and business interests as well as some Alaskan natives desire the growth effects of another pipeline project and believe its impacts can readily be absorbed.

A Canadian Inquiry headed by Dean K.M. Lysyk is now investigating the effects of the Fairbanks Alternative on the native claims settlement issue in the Southern Yukon. The report is intended to provide Canada with the social impact information needed to make a decision on this route.

The Alaska LNG alternative presents risks to the environment, to public safety, and to system intergrity not present with the overland corridors. Its significantly greater consumption of energy should also be viewed as an environmental cost, and it would have the greatest impact on Alaskan fisheries. It is possible that the Alaska LNG corridor and technology can be environmentally acceptable. At present, however, we are faced with significant uncertainties about thermal impacts, seismic design, ultimate suitability of the LNG plant sites proposed in Alaska and southern California, and the safety risks of LNG tanker traffic. This system would be environmentally acceptable only on condition that more specific analyses of alternative LNG facility sites and mitigation measures are conducted prior to any certification.

Because the Alaska LNG pipeline corridor makes the most extensive use of the existing oil pipeline corridor, its social, economic, and environmental impacts in Alaska would be similar to those of the Fairbanks Alternative. In its last 43 miles, however, the corridor would cross the Chugach National Forest, a roadless area of great scenic beauty, to Point Gravina, where the gas would be liquefied, and from there transported by tankers to California, gasified, and sent to U.S. markets.

The most serious potential impacts of the LNG facility at Point Gravina are those associated with the seawater cooling system. According to the best evidence, the LNG plant as proposed would probably affect the marine ecology of Orca Bay substantially. Because the area is a valuable source of salmon and other commercial species, it could have profound effects on the local economy as well. But precise conclusions cannot be drawn because no substantial investigation of the Bay has been undertaken, and the water-related LNG plant systems remain undefined. Without this information it is impossible to determine whether the site at Point Gravina is environmentally acceptable or another is preferable. It seems likely, however, that an environmentally acceptable plant could be designed and constructed.

Similar problems arise with seismic design at the Gravina site. Earthquakes and resultant tsunamis present serious threats. The applicant asserts that a safe plant could be designed once Gravina conditions (e.g., the existence and depth of bedrock) are satisfactorily investigated. Although this assertion has not been successfully challenged, the necessary proof must await further site investigation and actual plant design.

From Point Gravina LNG tankers would leave for a California gasification site—Point Conception or Oxnard appear to be the current leading alternatives. Here complex land use, thermal discharge,

and safety issues must still be resolved by the state and federal governments.

LNG tanker accidents can have major consequences. Tanker collisions or rammings and groundings could lead to vapor clouds, LNG pool fires, and accidents at the LNG facility—with possibly fatal effects. The analyses of LNG public safety risks on the record are inconclusive. Although it is not now possible to establish the level of public safety risk imposed by an LNG facility, it is possible to reduce substantially the consequences of events by remote location of facilities away from people.

The Alaska LNG system is therefore unique, and it is difficult to analyze because of the inherent uncertainties posed. Mitigation of its environmental impacts and safety risks will be possible, but only at considerable, heretofore unestimated, expense.

We must note that the environmental damage inflicted by any of these transport systems will be significant. Thus we recommend that the need for Alaska gas, the parts of the country that it would benefit, and the alternative energy supplies that they might receive now or at some later date be subject to the most careful scrutiny before a final decision is reached.

We have defined our environmental impact considerations as solely a function of corridor and technology, independent of the project sponsor. Although Alcan has proposed the least environmentally risky corridor—the Fairbanks Alternative—its proposal is the least well-developed of the three. And although we find the North Slope/Mackenzie Valley corridor unacceptable on environmental grounds, we note that Arctic Gas has provided environmental analyses of a depth and quality clearly superior to those of the other applicants.

Our conclusion that the Fairbanks Alternative corridor is the least environmentally damaging route assumes the strict application of environmental criteria in a full interdisciplinary review during the engineering design, construction scheduling, and route selection process. We also assume that the federal government will establish coherent stipulations, terms, and conditions and stringently enforce the environmental and public safety conditions in the field.

It will not suffice to rely on the project sponsor's "quality control" to protect the environment or to ensure compliance with government-imposed conditions. Effective enforcement will require a central federal authority and a new organizational structure to resolve interagency conflicts over jurisdiction and policy. In any case, we believe that the public would be well served by a citizen monitoring capability, staffed and federally supported to observed and report on pipeline construction, and well coordinated with the government monitoring structure.

PUBLIC VIEWS PRESENTED TO THE COUNCIL ON ENVIRONMENTAL QUALITY

Witnesses found the environmental impact statements in compliance with the National Environmental Policy Act, but several shortcomings were noted. Critics argued that the statements were too long and cumbersome and lacked explicit comparisons of the three corridors. Some also believed that the statements had omitted specific information or analyses, such as recent design and alignment changes

in two of the proposals, long-range effects of pipeline construction, and comprehensive information on impacts in Canada.

The issues of greatest concern to witnesses included:

Impacts on the Arctic National Wildlife Range.
Social and economic impacts in Alaska.
Impacts on Canada, especially on Canadian natives.
The net national economic costs and benefits of transporting Alaskan natural gas.
Regional distribution of Alaskan gas to the lower 48 states.
Implications for future resource development in the North.
Pipeline construction monitoring.

Other prominent issues were impacts on Alaska's fisheries and effects on coal gasification development.

Environmental groups testifying and the State of Alaska were unanimous in their opposition to the North Slope/MacKenzie Valley corridor; most environmental organizations strongly preferred the Fairbanks Alternative to the other corridors. Representatives of the State of Alaska and Alaskan business, labor, and local governments testifying favored the Alaska LNG route, believing it to hold the greatest social and economic benefits for the state. Many major Midwest, East Coast, and California gas distributors and transmission companies support the North Slope/MacKenzie Valley corridor. They believe the Arctic Gas proposal to be the most reliable and one that will ensure delivery of the greatest volumes of gas directly to markets.

REPORT OF JUSTICE THOMAS R. BERGER ON THE MACKENZIE VALLEY PIPELINE INQUIRY

> "It will be for the Government of Canada, when my report and the National Energy Board's report is before it, to weigh Canada's need for frontier gas, and the impact of the construction of a pipeline on the north and on northern peoples, and then to decide if a pipeline should be built and, if it is to be build, then where and by whom it should be built. These are political decisions, to be taken by those who have been elected to make such decisions."
>
> Thomas R. Berger, *Queens Quarterly, Vol. 83, No. 1, Spring 1976.*

The Mackenzie Valley Inquiry was established on March 21, 1974 by Order-in-Council of the Government of Canada. The attached is the first of a two-volume advisory report to the Minister of Indian and Northern Affairs, prepared by the Commissioner of Inquiry, Justice Thomas R. Berger. In this first volume, Justice Berger addresses the overall social, environmental and economic impacts of proposed natural gas transportation systems on the Yukon and Northwest Territories. Specific emphasis is placed on the possible impacts of competing Mackenzie Valley pipeline projects sponsored by Canadian Arctic Gas Pipeline Ltd. and Foothills Pipelines Ltd. The second volume, scheduled for later release, will present recommended terms and conditions that might be imposed on the right of way if a pipeline is built.

The recommendations flowing from the Mackenzie Valley Pipeline Inquiry should not be construed as representing the policies of the Canadian Government or any Department thereof. It is common practice in Canada to establish Commissions of this kind to study policy options. While the Government is under no obligation to accept Justice Berger's recommendations, they will, of course, be given serious consideration.

The Berger reports, the National Energy Board findings and inputs from Government and public sources will all contribute to the review process leading toward final Government decisions.

MACKENZIE VALLEY PIPELINE INQUIRY, COMMISSIONER,
MR. JUSTICE THOMAS R. BERGER

OTTAWA,
May 9, 1977.

Berger Report: Northern Frontier, Northern Homeland.

Mr. Justice Thomas R. Berger's report of the Mackenzie Valley Pipeline Inquiry, tabled in the House of Commons today, recommends that, on environmental grounds, no pipeline should be built across the

Northern Yukon. It is, on the other hand, feasible, from an environmental point of view, to build a pipeline along the Mackenzie Valley to transport gas from the Arctic. However, construction of a pipeline along the Mackenzie Valley should be postponed for 10 years to allow sufficient time for a just settlement of native claims. The Judge indicates that on the basis of the evidence brought before the Inquiry, the alternative overland route to carry Alaskan gas to markets in the United States, along the Alaska Highway crossing the southern Yukon is environmentally preferable to the proposed crossing of the Northern Yukon.

Judge Berger's recommendations do not mean that Canadians "must renounce their northern gas and oil." The report said that if the Government of Canada accepts the recommendations contained in this report, Canadians can build "a Mackenzie Valley pipeline at the time of their own choosing, along a route of their own choice."

Judge Berger said that the decisions facing Canadians about the North

> are not . . . simply about northern pipelines. They are decisions about the protection of the northern environment and the future of the northern peoples. . . . The North is a region of conflicting goals; preferences and aspirations . . . [where] the pipeline represents the advance of the industrial system to the Arctic. . . . The impact of a pipeline will bear especially upon the native people. . . . The conflict focuses on the pipeline. For some in Northern Canada, the North is a frontier, for others, it is a homeland, Judge Berger said.

Judge Berger set out the assumptions behind his recommendations:

> I have proceeded on the assumption that, in due course, the industrial system will require the gas and oil of the Western Arctic, and that they will have to be transported along the Mackenzie Valley to markets in the South. I have also proceeded on the assumption that we intend to protect and preserve Canada's northern environment and that, above all else, we intend to honour the legitimate claims and aspirations of the native people. All of these assumptions are embedded in the federal government's expressed northern policy for the 1970s.

Two pipeline companies, Canadian Arctic Gas Pipeline Ltd. and Foothills Pipe Lines Ltd., have proposed pipelines to bring gas from the Arctic along the Mackenzie Valley to consumers in the South. Arctic Gas proposes to bring Alaskan gas from Prudhoe Bay via the Northern Yukon, hook up with gas from the Mackenzie Delta and deliver to markets in Canada and the United States. Foothills proposes to bring Canadian gas south from the Mackenzie Delta.

The mandate of the Mackenzie Valley Pipeline Inquiry was to determine the social, environmental and economic impact of the construction of a gas pipeline and the cumulative impact of an energy corridor from the Arctic, and to recommend the terms and conditions that ought to be imposed on any right-of-way if such a pipeline were to be built.

This is Volume I of the report of the Inquiry. It deals with the broad social, economic and environmental impacts of the pipeline and

corridor. It contains basic recommendations to assist the Government in determining when a pipeline should be built, where it should be built and who should build it.

Volume II of the report is in preparation and will be available this summer. It will contain terms and conditions to be imposed if a pipeline is built.

Volume I includes an opening letter to Mr. Allmand, the Minister of Indian and Northern Affairs, which is a summary of Judge Berger's recommendations.

Key recommendations are as follows:

Judge Berger said: "I recommend that no pipeline be built and no energy corridor be established across the Northern Yukon along either route." This means that the report rejected both the Coastal and Interior Routes proposed by Arctic Gas to bring gas from Alaska to the United States.

Judge Berger said that if the pipeline is built along the Coastal Route and an energy corridor is established, "I foresee that, within our lifetime, the Porcupine caribou herd [one of the last great caribou herds in North America], will be reduced to a remnant." "The preservation of the Porcupine caribou herd is incompatible with the building of a gas pipeline and the establishment of an energy corridor through its calving grounds."

The Arctic Gas pipeline and energy corridor along the Interior Route in the Northern Yukon "would have a devastating impact on the people of Old Crow," Judge Berger said. "All the people in the village told me they are opposed to the pipeline. They fear it will destroy their village, their way of life, and their land."

The report recommended that a National Wilderness Park be established in the Northern Yukon contiguous to Alaska's Arctic National Wildlife Range "to protect the wilderness, the caribou, birds and other wildlife." "Oil and gas exploration, pipeline construction and industrial activity must be prohibited within the Park and the native people must continue to have the right to hunt, fish and trap."

Regarding the alternate proposal to carry Alaskan gas along the Alaska Highway Route across the southern Yukon, Judge Berger said:

> Some of the concerns about wildlife, wilderness, and engineering and construction that led me to reject the corridor across the Northern Yukon do not appear to apply in the case of the Alaska Highway Route. It is a route with an established infrastructure. In my view, the construction of a pipeline along this route would not threaten any substantial populations of any species in the Yukon or in Alaska. But I am in no position to endorse such a route: an assessment of social and economic impact must still be made and native claims have not been settled.

Judge Berger views the Mackenzie Delta-Beaufort Sea area as a "major petroleum province in the making" and regards the pipeline as the trigger for expanded oil and gas exploration and development. He rejected the Arctic Gas proposed route across the Mackenzie Delta in order to protect the Delta's unique ecosystem, the birds and the white whales.

Judge Berger recommended a white whale sanctuary be established in west Mackenzie Bay to protect the calving grounds for the 5,000-strong white whale herd. "If the herd is driven from its calving area, it will die out," Judge Berger said. In the sanctuary, "oil and gas exploration and development would be forbidden at any time of the year."

Much of the oil and gas potential of the region is believed to lie offshore beneath the Beaufort Sea. The report recognized that it has been considered to be in the national interest to begin delineating the extent of these reserves but urged restraint in approving future exploration and development. "The greatest concern in the Beaufort Sea is the threat of oil spills." Judge Berger said: "In my opinion, the techniques presently available will not be successful in controlling or cleaning up a major spill in this remote [Arctic] area."

"Therefore, I urge the Government of Canada to ensure that improvements in technology for prevention . . . and clean-up of spills precede further advance of industry in the Beaufort Sea." In addition, Canada is "pioneering on this frontier and establishing the standards that may well guide other circumpolar countries in future Arctic drilling."

Another key recommendation is that "a period of 10 years will be required in the Mackenzie Valley and Western Arctic to settle native claims, and to establish the new institutions and new programs that a settlement will entail. No pipeline should be built until these things have been achieved." But solely from an environmental point of view, Judge Berger said, "I have concluded that it is feasible . . . to build a pipeline and to establish an energy corridor along the Mackenzie Valley, running south from the Mackenzie Delta to the Alberta border."

"The pipeline companies see the pipeline as an unqualified gain to the North," but "it is an illusion to believe that the pipeline will solve the economic problems of the North," the report said. The Arctic Gas project has been described as one of the greatest construction projects, in terms of capital expenditure, ever contemplated by private enterprise. The Arctic Gas pipeline would require 6,000 construction workers North of 60, a hugh infrastructure of wharves, warehouses and airstrips, and fleets of aircraft, tractors, earth-movers, trucks and trailers. "The pipeline contractors and unions have made it plain that native northerners are not qualified to hold down skilled positions in pipeline construction." Once the pipeline is built there will be about 250 jobs, mostly of a technical nature, that will require qualified personnel from the South.

Judge Berger said:

> I am convinced that non-renewable resources need not necessarily be the sole basis of the northern economy in the future. . . . A strengthening of renewable resource harvesting in the North—the fortification of the native economy—would enable native people to enter the industrial system without becoming completely dependent on it.
>
> An economy based on modernization of hunting, fishing and trapping, on efficient game and fisheries management, on small-scale enterprise, and on the orderly development of gas and oil resources over a period of years—this is no retreat

into the past; rather, it is a rational program for northern development based on the ideals and aspirations of northern native peoples.

The report stated: "The social costs of building a pipeline now will be enormous, and no remedial programs are likely to ameliorate them." The great majority of the 1,000 witnesses that spoke to the Inquiry in the 35 community hearings expressed their fears of what a pipeline would bring: "an influx of construction workers, more alcoholism, tearing of the social fabric, injury to the land, and the loss of their identity as a people." Judge Berger said, "I am persuaded that these fears are well founded."

The report recommended that "the native people must be allowed a choice about their own future. If the pipeline is approved before a settlement of claims takes place, the future of the North—and the place of the native people in the North—will, in effect, have been decided for them." "It would therefore be dishonest to try to impose an immediate settlement that we know now—and that the native people will know before the ink is dry—will not achieve their goals. They will soon realize—just as the native people on the prairies realized a century ago as the settlers poured in—that the actual course of events on the ground will deny the promises that appear on paper."

The report pointed out that "the pipeline companies are obviously having trouble in designing their proposal to deal with frost heave" of the buried refrigerated pipeline. Judge Berger expressed his concern about construction scheduling too: "I am not persuaded that Arctic Gas can meet its construction schedule across the Northern Yukon."

Given such uncertainties "it seems to me unreasonable that the Government of Canada should give unqualified approval to a right-of-way or provide financial guarantees to the project without a convincing resolution of these concerns."

The report also recommended that the Government develop an independent body of knowledge on the northern environment, environmental impact, and engineering design and construction under Arctic and permafrost conditions to fill critical gaps in information and to provide government with the knowledge it will need in making an intelligent disposition of northern development proposals.

In the epilogue to the report, Judge Berger referred to the statements made at the Inquiry by native people who said they would be prepared to give up their lives to stop the pipeline if it were to proceed before there had been a settlement of native claims. He said: "I have given the most anxious consideration to whether or not I should make any reference in this report" to the statements made at the Inquiry about possible "violent reaction to the pipeline if it were built without a just settlement of native claims." "I have concluded that they cannot be ignored." "No one who heard them could doubt that they were said in earnest." "I do not want anyone to think I am predicting an insurrection. But I am saying there is the real possibility of civil disobedience and civil disorder that—if they did occur—might well render orderly political evolution of the North impossible.

96-226 O—77——13

Public Law 94-586
94th Congress

An Act

To expedite a decision on the delivery of Alaska natural gas to United States markets, and for other purposes.

Oct. 22, 1976
[S. 3521]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Alaska Natural Gas Transportation Act of 1976.

SHORT TITLE

SECTION 1. This Act may be cited as the "Alaska Natural Gas Transportation Act of 1976". 15 USC 719 note.

CONGRESSIONAL FINDINGS

SEC. 2. The Congress finds and declares that— 15 USC 719.

(1) a natural gas supply shortage exists in the contiguous States of the United States;

(2) large reserves of natural gas in the State of Alaska could help significantly to alleviate this supply shortage;

(3) the expeditious construction of a viable natural gas transportation system for delivery of Alaska natural gas to United States markets is in the national interest; and

(4) the determinations whether to authorize a transportation system for delivery of Alaska natural gas to the contiguous States and, if so, which system to select, involve questions of the utmost importance respecting national energy policy, international relations, national security, and economic and environmental impact, and therefore should appropriately be addressed by the Congress and the President in addition to those Federal officers and agencies assigned functions under law pertaining to the selection, construction, and initial operation of such a system.

STATEMENT OF PURPOSE

SEC. 3. The purpose of this Act is to provide the means for making a sound decision as to the selection of a transportation system for delivery of Alaska natural gas to the contiguous States for construction and initial operation by providing for the participation of the President and the Congress in the selection process, and, if such a system is approved under this Act, to expedite its construction and initial operation by (1) limiting the jurisdiction of the courts to review the actions of Federal officers or agencies taken pursuant to the direction and authority of this Act, and (2) permitting the limitation of administrative procedures and effecting the limitation of judicial procedures related to such actions. To accomplish this purpose it is the intent of the Congress to exercise its constitutional powers to the fullest extent in the authorizations and directions herein made, and particularly with respect to the limitation of judicial review of actions of Federal officers or agencies taken pursuant thereto. 15 USC 719a.

DEFINITIONS

15 USC 719b.

SEC. 4. As used in this Act:

(1) the term "Alaska natural gas" means natural gas derived from the area of the State of Alaska generally known as the North Slope of Alaska, including the Continental Shelf thereof;

(2) the term "Commission" means the Federal Power Commission;

(3) the term "Secretary" means the Secretary of the Interior;

(4) the term "provision of law" means any provision of a Federal statute or rule, regulation, or order issued thereunder; and

(5) the term "approved transportation system" means the system for the transportation of Alaska natural gas designated by the President pursuant to section 7(a) or 8(b) and approved by joint resolution of the Congress pursuant to section 8.

FEDERAL POWER COMMISSION REVIEWS AND REPORTS

Proceedings, suspension.
15 USC 719c.
15 USC 717w.

SEC. 5. (a)(1) Notwithstanding any provision of the Natural Gas Act or any other provision of law, the Commission shall suspend all proceedings pending before the Commission on the date of enactment of this Act relating to a system for the transportation of Alaska natural gas as soon as the Commission determines to be practicable after such date, and the Commission may refuse to act on any application, amendment thereto, or other requests for action under the Natural Gas Act relating to a system for the transportation of Alaska natural gas until such time as (A) a decision of the President designating such a system for approval takes effect pursuant to section 8, (B) no such decision takes effect pursuant to section 8, or (C) the President decides not to designate such a system for approval under section 8 and so advises the Congress pursuant to section 7.

(2) In the event a decision of the President designating such a system takes effect pursuant to this Act, the Commission shall forthwith vacate proceedings suspended under paragraph (1) and, pursuant to section 9 and in accordance with the President's decision, issue a certificate of public convenience and necessity respecting such system.

(3) In the event such a decision of the President does not take effect pursuant to this Act or the President decides not to designate such a system and so advises the Congress pursuant to section 7, the suspension provided for in paragraph (1) of this subsection shall be removed.

Recommendation, submittal to President.

(b)(1) The Commission shall review all applications for the issuance of a certificate of public convenience and necessity relating to the transportation of Alaska natural gas pending on the date of enactment of this Act, and any amendments thereto which are timely made, and after consideration of any alternative transportation system which the Commission determines to be reasonable, submit to the President not later than May 1, 1977, a recommendation concerning the selection of such a transportation system. Such recommendation may be in the form of a proposed certificate of public convenience and necessity, or in such other form as the Commission determines to be appropriate, or may recommend that no decision respecting the selection of such a transportation system be made at this time or pursuant to this Act. Any recommendation that the President approve a particular transportation system shall (A) include a description of the nature and route of the system, (B) designate

a person to construct and operate the system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system, (C) if such recommendation is for an all-land pipeline transportation system, or a transportation system involving water transportation, include provision for new facilities to the extent necessary to assure direct pipeline delivery of Alaska natural gas contemporaneously to points both east and west of the Rocky Mountains in the lower continental United States.

(2) The Commission may, by rule, provide for the presentation of data, views, and arguments before the Commission or a delegate of the Commission pursuant to such procedures as the Commission determines to be appropriate to carry out its responsibilities under paragraph (1) of this subsection. Such a rule shall, to the extent determined by the Commission, apply, notwithstanding any provision of law that would otherwise have applied to the presentation of data, views, and arguments. Rule.

(3) The Commission may request such information and assistance from any Federal agency as the Commission determines to be necessary or appropriate to carry out its responsibilities under this Act. Any Federal agency requested to submit information or provide assistance shall submit such information to the Commission at the earliest practicable time after receipt of a Commission request. Cooperation.

(c) The Commission shall accompany any recommendation under subsection (b) (1) with a report, which shall be available to the public, explaining the basis for such recommendation and including for each transportation system reviewed or considered a discussion of the following: Report, public availability.

(1) for each year of the 20-year period which begins with the first year following the date of enactment of this Act, the estimated—

(A) volumes of Alaska natural gas which would be available to each region of the United States directly, or indirectly by displacement or otherwise, and

(B) transportation costs and delivered prices of any such volumes of gas by region;

(2) the effects of each of the factors described in subparagraphs (A) and (B) of paragraph (1) on the projected natural gas supply and demand for each region of the United States and on the projected supplies of alternative fuels available by region to offset shortages of natural gas occurring in such region for each such year;

(3) the impact upon competition;

(4) the extent to which the system provides a means for the transportation to United States markets of natural resources or other commodities from sources in addition to the Prudhoe Bay Reserve;

(5) environmental impacts;

(6) safety and efficiency in design and operation and potential for interruption in deliveries of Alaska natural gas;

(7) construction schedules and possibilities for delay in such schedules or for delay occurring as a result of other factors;

(8) feasibility of financing;

(9) extent of reserves, both proven and probable and their deliverability by year for each year of the 20-year period which

begins with the first year following the date of enactment of this Act;

(10) the estimate of the total delivered cost to users of the natural gas to be transported by the system by year for each year of the 20-year period which begins with the first year following the date of enactment of this Act;

(11) capability and cost of expanding the system to transport additional volumes of natural gas in excess of initial system capacity;

(12) an estimate of the capital and operating costs, including an analysis of the reliability of such estimates and the risk of cost overruns; and

(13) such other factors as the Commission determines to be appropriate.

(d) The recommendation by the Commission pursuant to this section shall not be based upon the fact that the Government of Canada or agencies thereof have not, by then rendered a decision as to authorization of a pipeline system to transport Alaska natural gas through Canada.

Transportation system, recommendation, submittal to President.

15 USC 717w.

Environmental impact statement, submittal to President.

(e) If the Commission recommends the approval of a particular transportation system, it shall submit to the President with such recommendation (1) an identification of those facilities and operations which are proposed to be encompassed within the term "construction and initial operation" in order to define the scope of directions contained in section 9 of this Act and (2) the terms and conditions permitted under the Natural Gas Act, which the Commission determines to be appropriate for inclusion in a certificate of public convenience and necessity to be issued respecting such system. The Commission shall submit to the President contemporaneously with its report an environmental impact statement prepared respecting the recommended system, if any, and each environmental impact statement which may have been prepared respecting any other system reported on under this section.

OTHER REPORTS

Comments, submittal to President.
15 USC 719d.

Public availability.

SEC. 6. (a) Not later than July 1, 1977, any Federal officer or agency may submit written comments to the President with respect to the recommendation and report of the Commission and alternative methods for transportation of Alaska natural gas for delivery to the contiguous States. Such comments shall be made available to the public by the President when submitted to him, unless expressly exempted from this requirement in whole or in part by the President, under section 552(b)(1) of title 5, United States Code. Any such written comment shall include information within the competence of such Federal officer or agency with respect to—

(1) environmental considerations, including air and water quality and noise impacts;

(2) the safety of the transportation systems;

(3) international relations, including the status and time schedule for any necessary Canadian approvals and plans;

(4) national security, particularly security of supply;

(5) sources of financing for capital costs;

(6) the impact upon competition;

(7) impact on the national economy, including regional natural gas requirements; and

(8) relationship of the proposed transportation system to other aspects of national energy policy.

(b) Not later than July 1, 1977, the Governor of any State, any municipality, State utility commission, and any other interested person may submit to the President such written comments with respect to the recommendation and report of the Commission and alternative systems for delivering Alaska natural gas to the contiguous States as they determine to be appropriate. Comments, submittal to President.

(c) Not later than July 1, 1977, each Federal officer or agency shall report to the President with respect to actions to be taken by such officer or agency under section 9(a) relative to each transportation system reported on by the Commission under section 5(c) and shall include such officer's or agency's recommendations with respect to any provision of law to be waived pursuant to section 8(g) in conjunction with any decision of the President which designates a system for approval. Report to President.

(d) Following receipt by the President of the Commission's recommendations, the Council on Environmental Quality shall afford interested persons an opportunity to present oral and written data, views, and arguments respecting the environmental impact statements submitted by the Commission under section 5(e). Not later than July 1, 1977, the Council on Environmental Quality shall submit to the President a report, which shall be contemporaneously made available by the Council to the public, summarizing any data, views, and arguments received and setting forth the Council's views concerning the legal and factual sufficiency of each such environmental impact statement and other matters related to environmental impact as the Council considers to be relevant. Report to President.

PRESIDENTIAL DECISION AND REPORT

SEC. 7. (a)(1) As soon as practicable after July 1, 1977, but not later than September 1, 1977, the President shall issue a decision as to whether a transportation system for delivery of Alaska natural gas should be approved under this Act. If he determines such a system should be so approved, his decision shall designate such a system for approval pursuant to section 8 and shall be consistent with section 5(b)(1)(C) to assure delivery of Alaska natural gas to points both east and west of the Rocky Mountains in the continental United States. The President in making his decision shall take into consideration the Commission's recommendation pursuant to section 5, the report under section 5(c), and any comments submitted under section 6; and his decision to designate a system for approval shall be based on his determination as to which system, if any, best serves the national interest. 15 USC 719e.

(2) The President, for a period of up to 90 additional calendar days after September 1, 1977, may delay the issuance of his decision and transmittal thereof to the House of Representatives and the Senate, if he determines (A) that there exists no environmental impact statement prepared relative to a system he wishes to consider or that any prepared environmental impact statement relative to a system he wishes to consider is legally or factually insufficient, or (B) that the additional time is otherwise necessary to enable him to make a sound decision on an Alaska natural gas transportation system. The President shall promptly, but in no case any later than September 1, 1977, notify the House of Representatives and the Transmittal to Congress, delay. Notice to Congress.

Senate if he so delays his decision and submit a full explanation of the basis of any such delay.

(3) If, on or before May 1, 1977, the President determines to delay issuance and transmittal of his decision to the House of Representatives and the Senate pursuant to paragraph (2) of this subsection, he may authorize a delay of not more than 90 days in the date of taking of any action specified in sections 5 and 6. The President shall promptly notify the House of Representatives and the Senate of any such authorization of delay and submit a full explanation of the basis of any such authorization.

Notice to Congress.

(4) If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he shall in such decision—

(A) describe the nature and route of the system designated for approval;

(B) designate a person to construct and operate such a system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system;

(C) identify those facilities, the construction of which, and those operations, the conduct of which, shall be encompassed within the term "construction and initial operation" for purposes of defining the scope of the directions contained in section 9 of this Act, taking into consideration any recommendation of the Commission with respect thereto; and

(D) identify those provisions of law, relating to any determination of a Federal officer or agency as to whether a certificate, permit, right-of-way, lease, or other authorization shall be issued or be granted, which provisions the President finds (i) involve determinations which are subsumed in his decision and (ii) require waiver pursuant to section 8(g) in order to permit the expeditious construction and initial operation of the transportation system.

Chairman, appointment.

(5) After a decision of the President designating an Alaska natural gas transportation system takes effect under section 8, the President shall appoint an officer of the United States, with the advice and consent of the Senate, or designate a board (consisting of such an officer, so appointed with the advice and consent of the Senate, as chairman and such other individuals as the President determines appropriate to serve on such board by reason of background, experience, or position) to serve as Federal inspector of construction of such transportation system, except that no such individual or officer may have a financial interest in the approved transportation system. Upon enactment of a joint resolution pursuant to section 8 approving such a system the Federal inspector shall—

Joint surveillance and monitoring agreement, establishment.

(A) establish a joint surveillance and monitoring agreement, approved by the President, with the State of Alaska similar to that in effect during construction of the trans-Alaska oil pipeline to monitor the construction of the approved transportation system within the State of Alaska;

(B) monitor compliance with applicable laws and the terms and conditions of any applicable certificate, rights-of-way, permit, lease, or other authorization issued or granted under section 9;

(C) monitor actions taken to assure timely completion of construction schedules and the achievement of quality of construction, cost control, safety, and environmental protection objectives and the results obtained therefrom;

(D) have the power to compel, by subpena if necessary, submission of such information as he deems necessary to carry out his responsibilities; and

(E) keep the President and the Congress currently informed on any significant departures from compliance and issue quarterly reports to the President and the Congress concerning existing or potential failures to meet construction schedules or other factors which may delay the construction and initial operation of the system and the extent to which quality of construction, cost control, safety and environmental protection objectives have been achieved.

(6) If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he may identify in such decision such terms and conditions permissible under existing law as he determines appropriate for inclusion with respect to any issuance or authorization directed to be made pursuant to section 9.

Transmittal to Congress.

(b) The decision of the President made pursuant to subsection (a) of this section shall be transmitted to both Houses of Congress and shall be considered received by such Houses for the purposes of this section on the first day on which both are in session occurring after such decision is transmitted. Such decision shall be accompanied by a report explaining in detail the basis for his decision with specific reference to the factors set forth in sections 5(c) and 6(a), and the reasons for any revision, modification of, or substitution for, the Commission recommendation.

Financial analysis.

(c) The report of the President pursuant to subsection (b) of this section shall contain a financial analysis for the transportation system designated for approval. Unless the President finds and states in his report submitted pursuant to this section that he reasonably anticipates that the system designated by him can be privately financed, constructed, and operated, his report shall also be accompanied by his recommendation concerning the use of existing Federal financing authority or the need for new Federal financing authority.

(d) In making his decision under subsection (a) the President shall inform himself, through appropriate consultation, of the views and objectives of the States, the Government of Canada, and other governments with respect to those aspects of such a decision that may involve intergovernmental and international cooperation among the Government of the United States, the States, the Government of Canada, and any other government.

(e) If the President determines to designate a transportation system for approval, the decision of the President shall take effect as provided in section 8, except that the approval of a decision of the President shall not be construed as amending or otherwise affecting the laws of the United States so as to grant any new financing authority as may have been identified by the President pursuant to subsection (c).

CONGRESSIONAL REVIEW

15 USC 719f.

SEC. 8. (a) Any decision under section 7(a) or 8(b) designating for approval a transportation system for the delivery of Alaska natural gas shall take effect upon enactment of a joint resolution within the first period of 60 calendar days of continuous session of Congress beginning on the date after the date of receipt by the Senate and House of Representatives of a decision transmitted pursuant to section 7(b) or subsection (b) of this section.

(b) If the Congress does not enact such a joint resolution within such 60-day period, the President, not later than the end of the 30th day following the expiration of the 60-day period, may propose a new decision and shall provide a detailed statement concerning the reasons for such proposal. The new decision shall be submitted in accordance with section 7(a) and transmitted to the House of Representatives and the Senate on the same day while both are in session and shall take effect pursuant to subsection (a) of this section. In the event that a resolution respecting the President's decision was defeated by vote of either House, no new decision may be transmitted pursuant to this subsection unless such decision differs in a material respect from the previous decision.

(c) For purposes of this section—

(1) continuity of session of Congress is broken only by an adjournment sine die; and

(2) the days on which either House is not in session because of an adjournment of more than 3 days to a day certain are excluded in the computation of the 60-day calendar period.

(d)(1) This subsection is enacted by Congress—

(A) as an exercise of the rulemaking power of each House of Congress, respectively, and as such it is deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in that House in the case of resolutions described by paragraph (2) of this subsection; and it supersedes other rules only to the extent that it is inconsistent therewith; and

(B) with full recognition of the constitutional right of either House to change the rules (so far as those rules relate to the procedure of that House) at any time, in the same manner and to the same extent as in the case of any other rule of such House.

"Resolution."

(2) For purposes of this Act, the term "resolution" means (A) a joint resolution, the resolving clause of which is as follows: "That the House of Representatives and Senate approve the Presidential decision on an Alaska natural gas transportation system submitted to the Congress on ————, 19 , and find that any environmental impact statements prepared relative to such system and submitted with the President's decision are in compliance with the Natural Environmental Policy Act of 1969."; the blank space therein shall be filled with the date on which the President submits his decision to the House of Representatives and the Senate; or (B) a joint resolution described in subsection (g).

42 USC 4321 note.

Referral to congressional committees.

(3) A resolution once introduced with respect to a Presidential decision on an Alaska natural gas transportation system shall be referred to one or more committees (and all resolutions with respect to the same Presidential decision on an Alaska natural gas transportation system shall be referred to the same committee or committees) by the President of the Senate or the Speaker of the House of Representatives, as the case may be.

(4)(A) If any committee to which a resolution with respect to a Presidential decision on an Alaska natural gas transportation system has been referred has not reported it at the end of 30 calendar days after its referral, it shall be in order to move either to discharge such committee from further consideration of such resolution or to discharge such committee from consideration of any other resolution with respect to such Presidential decision on an Alaska natural gas transportation system which has been referred to such committee.

(B) A motion to discharge may be made only by an individual favoring the resolution, shall be highly privileged (except that it may not be made after the committee has reported a resolution with respect to the same Presidential decision on an Alaska natural gas transportation system), and debate thereon shall be limited to not more than 1 hour, to be divided equally between those favoring and those opposing the resolution. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to. Debate limitation.

(C) If the motion to discharge is agreed to or disagreed to, the motion may not be made with respect to any other resolution with respect to the same Presidential decision on an Alaska natural gas transportation system.

(5) (A) When any committee has reported, or has been discharged from further consideration of, a resolution, but in no case earlier than 30 days after the date of receipt of the President's decision to the Congress, it shall be at any time thereafter in order (even though a previous motion to the same effect has been disagreed to) to move to proceed to the consideration of the resolution. The motion shall be highly privileged and shall not be debatable. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

(B) Debate on the resolution described in subsection (d)(2)(A) shall be limited to not more than 10 hours and on any resolution described in subsection (g) to one hour. This time shall be divided equally between those favoring and those opposing such resolution. A motion further to limit debate shall not be debatable. An amendment to, or motion to recommit the resolution shall not be in order, and it shall not be in order to move to reconsider the vote by which such resolution was agreed to or disagreed to or, thereafter within such 60-day period, to consider any other resolution respecting the same Presidential decision.

(6) (A) Motions to postpone, made with respect to the discharge from committee, or the consideration of a resolution and motions to proceed to the consideration of other business, shall be decided without debate.

(B) Appeals from the decision of the Chair relating to the application of the rules of the Senate or the House of Representatives, as the case may be, to the procedures relating to a resolution shall be decided without debate.

(e) The President shall find that any required environmental impact statement relative to the Alaska natural gas transportation system designated for approval by the President has been prepared and that such statement is in compliance with the National Environmental Policy Act of 1969. Such finding shall be set forth in the report of the President submitted under section 7. The President may supplement or modify the environmental impact statements prepared by the Commission or other Federal officers or agencies. Any such environmental impact statement shall be submitted contemporaneously with the transmittal to the Senate and House of Representatives of the President's decision pursuant to section 7(b) or subsection (b) of this section. 42 USC 4321 note. Submittal to congressional committees.

(f) Within 20 days of the transmittal of the President's decision to the Congress under section 7(b) or under subsection (b) of this section, (1) the Commission shall submit to the Congress a report commenting on the decision and including any information with regard to that decision which the Commission considers appropriate, Report, submittal to Congress.

Hearings. Report, submittal to Congress.

and (2) the Council on Environmental Quality shall provide an opportunity to any interested person to present oral and written data, views, and arguments on any environmental impact statement submitted by the President relative to any system designated by him for approval which is different from any system reported on by the Commission under section 5(c), and shall submit to the Congress a report summarizing any such views received. The committees in each House of Congress to which a resolution has been referred under subsection (d)(3) shall conduct hearings on the Council's report and include in any report of the committee respecting such resolution the findings of the committee on the legal and factual sufficiency of any environmental impact statement submitted by the President relative to any system designated by him for approval.

Congressional committee hearings.

Waiver, submittal to Congress.

(g)(1) At any time after a decision designating a transportation system is submitted to the Congress pursuant to this section, if the President finds that any provision of law applicable to actions to be taken under subsection (a) or (c) of section 9 require waiver in order to permit expeditious construction and initial operation of the approved transportation system, the President may submit such proposed waiver to both Houses of Congress.

(2) Such provision shall be waived with respect to actions to be taken under subsection (a) or (c) of section 9 upon enactment of a joint resolution pursuant to the procedures specified in subsections (c) and (d) of this section (other than subsection (d)(2) thereof) within the first period of 60 calendar days of continuous session of Congress beginning on the date after the date of receipt by the Senate and House of Representatives of such proposal.

(3) The resolving clause of the joint resolution referred to in this subsection is as follows: "That the House of Representatives and Senate approve the waiver of the provision of law ( ) as proposed by the President, submitted to the Congress on , 19 ." The first blank space therein being filled with the citation to the provision of law and the second blank space therein being filled with the date on which the President submits his decision to the House of Representatives and the Senate.

(4) In the case of action with respect to a joint resolution described in this subsection, the phrase "a waiver of a provision of law" shall be substituted in subsection (d) for the phrase "the Alaska natural gas transportation system.".

AUTHORIZATIONS

15 USC 719g.

SEC. 9. (a) To the extent that the taking of any action which is necessary or related to the construction and initial operation of the approved transportation system requires a certificate, right-of-way, permit, lease, or other authorization to be issued or granted by a Federal officer or agency, such Federal officer or agency shall—

(1) to the fullest extent permitted by the provisions of law administered by such officer or agency, but

(2) without regard to any provision of law which is waived pursuant to section 8(g) issue or grant such certificates, permits, rights-of-way, leases, and other authorizations at the earliest practicable date.

(b) All actions of a Federal officer or agency with respect to consideration of applications or requests for the issuance or grant of a certificate, right-of-way, permit, lease, or other authorization to which subsection (a) applies shall be expedited and any such application or

request shall take precedence over any similar applications or requests of the Federal officer or agency.

(c) Any certificate, right-of-way, permit, lease, or other authorization issued or granted pursuant to the direction under subsection (a) shall include the terms and conditions required by law unless waived pursuant to a resolution under section 8(g), and may include terms and conditions permitted by law, except that with respect to terms and conditions permitted but not required, the Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to include terms and conditions as would compel a change in the basic nature and general route of the approved transportation system or those the inclusion of which would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system. Terms and conditions.

(d) Any Federal officer or agency, with respect to any certificate, permit, right-of-way, lease, or other authorization issued or granted by such officer or agency, may, to the extent permitted under laws administered by such officer or agency add to, amend or abrogate any term or condition included in such certificate, permit, right-of-way, lease, or other authorization except that with respect to any such action which is permitted but not required by law, such Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to take such action if the terms and conditions to be added, or as amended, would compel a change in the basic nature and general route of the approved transportation system or would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system.

(e) Any Federal officer or agency to which subsection (a) applies, to the extent permitted under laws administered by such officer or agency, shall include in any certificate, permit, right-of-way, lease, or authorization issued or granted those terms and conditions identified in the President's decision as appropriate for inclusion except that the requirement to include such terms and conditions shall not limit the Federal officer or agency's authority under subsection (d) of this section.

JUDICIAL REVIEW

SEC. 10. (a) Notwithstanding any other provision of law, the actions of Federal officers or agencies taken pursuant to section 9 of this Act, shall not be subject to judicial review except as provided in this section. 15 USC 719h.

(b)(1) Claims alleging the invalidity of this Act may be brought not later than the 60th day following the date a decision takes effect pursuant to section 8 of this Act.

(2) Claims alleging that an action will deny rights under the Constitution of the United States, or that an action is in excess of statutory jurisdiction, authority, or limitations, or short of statutory right may be brought not later than the 60th day following the date of such action, except that if a party shows that he did not know of the action complained of, and a reasonable person acting in the circumstances would not have known, he may bring a claim alleging the invalidity of such action on the grounds stated above not later than the 60th day following the date of his acquiring actual or constructive knowledge of such action.

(c)(1) A claim under subsection (b) shall be barred unless a complaint is filed prior to the expiration of such time limits in the United States Court of Appeals for the District of Columbia acting as a

Special Court. Such court shall have exclusive jurisdiction to determine such proceeding in accordance with the procedures hereinafter provided, and no other court of the United States, of any State, territory, or possession of the United States, or of the District of Columbia, shall have jurisdiction of any such claim in any proceeding instituted prior to or on or after the date of enactment of this Act.

(2) Any such proceeding shall be assigned for hearing and completed at the earliest possible date, shall, to the greatest extent practicable, take precedence over all other matters pending on the docket of the court at that time, and shall be expedited in every way by such court and such court shall render its decision relative to any claim within 90 days from the date such claim is brought unless such court determines that a longer period of time is required to satisfy requirements of the United States Constitution.

USC prec. title I.

(3) The enactment of a joint resolution under section 8 approving the decision of the President shall be conclusive as to the legal and factual sufficiency of the environmental impact statements submitted by the President relative to the approved transportation system and no court shall have jurisdiction to consider questions respecting the sufficiency of such statements under the National Environmental Policy Act of 1969.

42 USC 4321 note.

SUPPLEMENTAL ENFORCEMENT AUTHORITY

Compliance order or civil action. 5 USC 719i.

SEC. 11 (a) In addition to remedies available under other applicable provisions of law, whenever any Federal officer or agency determines that any person is in violation of any applicable provision of law administered or enforceable by such officer or agency or any rule, regulation, or order under such provision, including any term or condition of any certificate, right-of-way, permit, lease, or other authorization, issued or granted by such officer or agency, such officer or agency may—

(1) issue a compliance order requiring such person to comply with such provision or any rule, regulation, or order thereunder, or

(2) bring a civil action in accordance with subsection (c).

(b) Any order issued under subsection (a) shall state with reasonable specificity the nature of the violation and a time of compliance, not to exceed 30 days, which the officer or agency, as the case may be, determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

Civil penalty.

(c) Upon a request of such officer or agency, as the case may be, the Attorney General may commence a civil action for appropriate relief, including a permanent or temporary injunction or a civil penalty not to exceed $25,000 per day for violations of the compliance order issued under subsection (a). Any action under this subsection may be brought in any district court of the United States for the district in which the defendant is located, resides, or is doing business, and such court shall have jurisdiction to restrain such violation, require compliance, or impose such penalty or give ancillary relief.

Jurisdiction.

EXPORT LIMITATIONS

15 USC 719j. 15 USC 717w.

SEC. 12. Any exports of Alaska natural gas shall be subject to the requirements of the Natural Gas Act and section 103 of the Energy

Policy and Conservation Act, except that in addition to the requirements of such Acts, before any Alaska natural gas in excess of 1,000 Mcf per day may be exported to any nation other than Canada or Mexico, the President must make and publish an express finding that such exports will not diminish the total quantity or quality nor increase the total price of energy available to the United States. 42 USC 6212. Presidential finding, publication.

EQUAL ACCESS TO FACILITIES

SEC. 13. (a) There shall be included in the terms of any certificate, permit, right-of-way, lease, or other authorization issued or granted pursuant to the directions contained in section 9 of this Act, a provision that no person seeking to transport natural gas in the Alaska natural gas transportation system shall be prevented from doing so or be discriminated against in the terms and conditions of service on the basis of degree of ownership, or lack thereof, of the Alaska natural gas transportation system. 15 USC 719k.

(b) The State of Alaska is authorized to ship its royalty gas on the approved transportation system for use within Alaska and, to the extent its contracts for the sale of royalty gas so provide, to withdraw such gas from the interstate market for use within Alaska; the Federal Power Commission shall issue all authorizations necessary to effectuate such shipment and withdrawal subject to review by the Commission only of the justness and reasonableness of the rate charged for such transportation.

ANTITRUST LAWS

SEC. 14. Nothing in this Act, and no action taken hereunder, shall imply or effect an amendment to, or exemption from, any provision of the antitrust laws. 15 USC 719*l*

AUTHORIZATION

SEC. 15. There is hereby authorized to be appropriated beginning in fiscal year 1978 and each fiscal year thereafter, such sums as may be necessary to carry out the functions of the Federal inspector appointed by the President with the advice and consent of the Senate under section 7. 15 USC 719m.

SEPARABILITY

SEC. 16. If any provision of this Act, or the application thereof, is held invalid, the remainder of this Act shall not be affected thereby. 15 USC 719n.

CIVIL RIGHTS

SEC. 17. All Federal officers and agencies shall take such affirmative action as is necessary to assure that no person shall, on the grounds of race, creed, color, national origin, or sex, be excluded from receiving, or participating in any activity conducted under, any certificates, permit, right-of-way, lease, or other authorization granted or issued pursuant to this Act. The appropriate Federal officers and agencies shall promulgate such rules as are necessary to carry out the purposes of this section and may enforce this section, and any rules promulgated under this section through agency and department provisions and rules which shall be similar to those established and in effect under title VI of the Civil Rights Act of 1964. Discrimination, prohibition. 15 USC 719o. Rules. 42 USC 2000d *et seq.*

REPORT ON THE EQUITABLE ALLOCATION OF NORTH SLOPE CRUDE OIL

Report to Congress. 43 USC 1651 note.

SEC. 18. Within 6 months of the date of enactment of this Act, the President shall determine what special expediting procedures are necessary to insure the equitable allocation of north slope crude oil to the Northern Tier States of Washington, Oregon, Idaho, Montana, North Dakota, Minnesota, Michigan, Wisconsin, Illinois, Indiana, and Ohio (hereinafter referred to as the "Northern Tier States") to carry out the provisions of section 410 of Public Law 93-153 and shall report his findings to the Congress. In his report, the President shall identify the specific provisions of law, which relate to any determination of a Federal officer or agency as to whether to issue or grant a certificate, permit, right-of-way, lease, or other authorization in connection with the construction of an oil delivery system serving the Northern Tier States and which the President finds would inhibit the expeditious construction of such a system in the contiguous States of the United States. In addition the President will include in his report a statement which demonstrates the impact that the delivery system will have on reducing the dependency of New England and the Middle Atlantic States on foreign oil imports. Furthermore, all Federal officers and agencies shall, prior to the submission of such report and further congressional action relating thereto, expedite to the fullest practicable extent all applications and requests for action made with respect to such an oil delivery system.

43 USC 1651 note.

ANTITRUST STUDY

Report to Congress. 15 USC 719 note.

SEC. 19. The Attorney General of the United States is authorized and directed to conduct a thorough study of the antitrust issues and problems relating to the production and transportation of Alaska natural gas and, not later than six months following the date of enactment of this Act, to complete such study and submit to the Congress a report containing his findings and recommendations with respect thereto.

EXPIRATION

15 USC 719 note.

SEC. 20. This Act shall terminate in the event that no decision of the President takes effect under section 8 of this Act, such termination to occur at the end of the last day on which a decision could be, but is not, approved under such section.

Approved October 22, 1976.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 94-1658, Pt. 1 (Comm. on Interstate and Foreign Commerce).
SENATE REPORT No. 94-1020 (Comm. on Commerce and Comm. on Interior and Insular Affairs).
CONGRESSIONAL RECORD, Vol. 122 (1976):
July 1, considered and passed Senate.
Sept. 30, considered and passed House, amended.
Oct. 1, Senate agreed to House amendments.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 12, No. 44:
Oct. 22, Presidential statement.